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UNITED NATIONS
New York and Geneva, 2011

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UNCTAD/DITC/TNCD/2010/5

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FOREWORD

In recent years, notwithstanding the set-back caused by the economic and financial crisis, global demand for services and international services trade has regularly increased, making the services economy and trade in services and important component of the development agenda, at the national and international levels. In 2008, the services economy was identified in the Accra Accord - the document adopted in Accra, Ghana, at the UNCTAD XII quadrennial conference, setting out UNCTAD´s mandate - as a new frontier for expanding trade, productivity and competitiveness. However, the Accra Accord also noted that positively integrating developing countries, especially LDCs, into the global services economy and increasing their participation in services trade, particularly in modes and sectors of export interest to them, remained a major development challenge.

The objective of this publication is to fill the knowledge and information gap on the impacts of various services sector and trade reforms on growth, development and poverty reduction. It is intended to provide policy makers and other affected stakeholders in developing countries and economies with policy analysis and case studies on services sector on the policy, regulatory and institutional options that can enable a country to promote economic growth, poverty eradication and sustainable development.

Two broad focuses were chosen for the publication. The first is the importance of policy, regulatory and institutional frameworks for the services sector. Regulatory failures, including the most recent failure to shield economies against excessive risk-taking in the financial system which led to the 2008 financial crisis, has drawn the attention of policy-makers but also of the general public to the need for adequate regulation. Governments have learned from past regulatory failures the importance of developing best-fit policies, supported by adequate regulatory and institutional frameworks, adapted to each country's local circumstances. However, the recent crisis in the financial sector has highlighted the nature of regulatory challenges which are continuously evolving and dynamic, not something to be solved once and for all. Because today's competitive markets are characterized by innovation, new business models and new product trends, regulators needed to adapt their regulation so as to avoid failures and crises. In this context, the role of the State - including that of reviewing, and where necessary renewing, policies, regulations and institutions on a regular basis - has become increasingly evident.

The second focus of the publication is on infrastructure services, a broad group of activities which includes services such as electricity, financial, telecommunication, transport and water services. In the context of the ongoing recovery and attempts to better prepare countries for future crises the international community has highlighted the importance of infrastructure services.. One notable example is the identification by the G20 of the need to secure financing for key infrastructure projects, which can unleash the growth potential of the developing countries. . This has led the G20 to set up a High Level Panel for Infrastructure Investment to produce recommendations in order to scale up and diversify financing for infrastructure needs, and identify, with multilateral development banks, a list of concrete regional initiatives. In a similar vein the recent UN LDC-IV Conference, which was held from 9 to 13 May, 2011 in Istanbul, Turkey produced a Programme of Action for the Least Developed Countries (LDCs) for the Decade 2011-2020, which refers in several instances to infrastructure services. It states that one of the major challenges facing LDCs is the lack of adequate physical infrastructure, and emphasizes that reliable and affordable infrastructure services are essential for existing productive assets and enterprises in LDCs to operate efficiently, thereby attracting new investment, connecting producers to market, assuring meaningful economic development and promoting regional integration. In light of this assessment it is suggested that LDCs take a number of actions on infrastructure including developing and implementing comprehensive national policies and plans for infrastructure development and maintenance, encompassing all modes of transportation and ports, communications and energy. It is also suggested that development partners could also contribute inter alia by providing enhanced financial and technical support for infrastructure development in line with LDCs' sectoral and development needs and priorities. This report therefore devotes particular attention to these two themes in its various chapters and case studies.

It is our hope that this publication will not only provide policy makers, trade negotiators and the broader trade community with new research and analysis on the increasingly important role of services for today's economies but also spark the interest of academics, research institutions and other interested stake-holders in further investigating the nexus surrounding services-related economic and social reforms, trade and development.

I would like to take this opportunity to thank the International Development Research Centre (IDRC) for its invaluable support in carrying out this research project.

Supachai Panitchpakdi
Secretary-General of UNCTAD

ACKNOWLEDGEMENTS

The publications has been edited by Mina Mashayekhi, Head of the Trade Negotiations and Commercial Diplomacy Branch (TNCDB), Division on International Trade in Goods and Services, and Commodities, UNCTAD, by Marcelo Olarreaga, University of Geneva and Centre for Economic Policy Research, and by Guido Porto, Universidad Nacional de La Plata, with the assistance of Martine Julsaint-Kidane, Economic Affairs Officer, and Liping Zhang, Senior Economic Affairs Officer, both from the Trade Negotiations and Commercial Diplomacy Branch (TNCDB), Division on International Trade in Goods and Services, and Commodities, UNCTAD.

The publication was prepared by the UNCTAD secretariat with the aid of a grant from the International Development Research Centre (IDRC), Ottawa, Canada, under the UNCTAD project "Development Implications of Services Trade Liberalization" (INT/0T/7AF), for which UNCTAD is thankful.

The authors of the various chapters are as follows:

Chapter I "Promoting sustainable growth and poverty alleviation in developing countries through their integration in the global services economy" was prepared by Mina Mashayekhi, Head, Martine Julsaint-Kidane, Economic Affairs Officer, and Liping Zhang, Senior Affairs Officer, all from the Trade Negotiations and Commercial Diplomacy Branch (TNCDB), Division on International Trade in Goods and Services, and Commodities, UNCTAD. The authors are grateful to other members of TNCDB for their inputs and comments, including Andrea Nascimento-Muller.

Chapter II "Managing the interface between regulation and trade in infrastructure services" was prepared by Mina Mashayekhi, Head, and Martine Julsaint-Kidane, Economic Affairs Office, both from the Trade Negotiations and Commercial Diplomacy Branch (TNCDB), Division on International Trade in Goods and Services, and Commodities, UNCTAD. The authors are grateful to other members of TNCDB for their inputs and comments.

Chapter III "Trade in financial services, financial crisis and development implications: what is important and what has changed?" was prepared by Mina Mashayekhi, Head, and Deepali Fernandes, Economic Affairs Officer, both from the Trade Negotiations and Commercial Diplomacy Branch (TNCDB), Division on International Trade in Goods and Services, and Commodities. The authors are grateful to Kern Alexander, Andrew Cornford, Ugo Panizza, Taisuke Ito and Mesut Saygili for their comments, inputs and views, and to Babette Ancery and Bo Young Lin for their contributions, research assistance and comments. Special thanks go to Dr. Y. V. Reddy, former Governor of the Reserve Bank of India, whose views the authors benefitted from.

Chapter IV "Services rules in Economic Parnership Agreeements: the movement of persons and establishment" was prepared by Elisabeth Tuerk, Legal Expert, Division on Investment and Enterprise, UNCTAD, and by Marie Wilke, Programme Officer for International Trade Law at the International Centre for Trade and Sustainable development (ICTSD). The authors thank Denisse Rodriguez Blanco for her research assistance, and Hasso Anwer, Martine Julsaint-Kidane, Mina Mashayekhi, Liping Zhang and Wamkele Meme, for their comments.

Chapter V "A topology of services expenditure by poor and rich households in developing countries" was prepared by Marcelo Olarreaga, University of Geneva and Centre for Economic Policy Research, by Mario Piacentini, OECD and University of Geneva, and by Guido Porto, Pablo Gluzmann and Mariana Marchionni, all from Universidad Nacional de La Plata.

Chapter VI "An overview of access to finance and poverty in the developing world" was prepared by Guido Porto, Natalia Porto, both from Universidad Nacional de La Plata, and by Marcelo Olarreaga, University of Geneva and Centre for Economic Policy Research. The authors are grateful to Martine Julsaint-Kidane, Mmatlou Kalaba, Mina Mashayekhi and Myriam Velia for their helpful and constructive comments on earlier version. They are also grateful to Laurence Bonapera for the logistics.

Chapter VII "Distributional incidence of access to services in Latin America" was prepared by Guido Porto, Pablo Gluzmann and Mariana Marchionni, from Universidad Nacional de La Plata, and by Marcelo Olarreaga, University of Geneva and Centre for Economic Policy Research. The authors are grateful to many colleagues at Universidad Nacional de la Plata for their contributions at different stages of this project. The authors would also like to thank Martine Julsaint-Kidane, Mmatlou Kalaba, Mina Mashayekhi, Myriam Velia, and Liping Zhang for their helpful and constructive comments.

Chapter VIII "Trade in services and poverty: services, farm export participation and poverty in Malawi and Uganda" was prepared by Jorge Balat, Yale University, and Guido Porto, University of La Plata.

Chapter IX "Privatization, competition and complementary services in rural Zambia" was prepared by Irene Brambilla and Guido Porto, Universidad Nacional de la Plata.

Chapter X "Brazil: postal services for financial inclusion and trade" was prepared by José Ansón, Laia Bosch Gual and Justin Caron, all from the Universal Postal Union.

Chapter XI "Services ownership and access to safe water: water nationalization in Uruguay" was prepared by Fernando Borraz, University of Montevideo, and Marcelo Olarreaga, University of Geneva and Centre for Economic Policy Research. The authors wish to thank Dra. María del Carmen Papramborda and Leticia Rodríguez for kindly providing data. They are also grateful to Cristián González, Guido Porto, Mina Mashayekhi and Liping Zhang for their helpful and constructive discussions.

Chapter XII "Road infrastructure and agricultural contracting services impact on rural production in Argentina" was prepared by Agustín Lódola and Rafael Brigo, both from Universidad Nacional de La Plata. The authors thank Roman Fossati and Fernando Morra for their assistance and Guido Porto for his comments and suggestions.

Chapter XIII "Child labour and services FDI: evidence from Vietnam" was prepared by Marcelo Olarreaga, University of Geneva and Centre for Economic Policy Research, Mario Piacentini, OECD and University of Geneva, and Nguyen Viet Cuong, National Economics University of Hanoi. The authors are grateful to Guido Porto and Liping Zhang for their helpful and constructive comments.

The design of the cover and the desktop publishing were carried out by Laurence Duchemin and Laura Moresino-Borini. Administrative and logistic support was provided by Faustina Attobra-Wilson. The publication was edited by John Pappas.

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OVERVIEW

This publication consists of twelve chapters. Chapters I to IV focused on issues concerning services trade policy-making (including trade liberalization at bilateral, regional and multilateral levels) and related development challenges, and regulatory and institutional dimensions of infrastructure services in particular the financial services sector. Chapters V to XIII are cases studies. These case studies have addressed the interface between services, trade and development in developing countries, in particular the linkages between services on one hand and poverty reduction, improved agricultural production and export performance, trade facilitation for SMEs, financial inclusion, reduction in child labour and improvement in health care on the other. The impact of various services reforms is analyzed in an in-depth manner with detailed description of methodology and data used. An attempt has been made to conduct quantitative analyses in different techniques combining econometrical modeling (regression analysis, matching, etc.) and household and enterprise surveys.

In Chapter I "Promoting Sustainable Growth and Poverty Alleviation in Developing Countries Through their Integration in the Global Services Economy", services trade and its liberalization is examined from a developmental perspective. While recognizing the positive benefits that trade liberalization brings to developing countries, it is suggested that flanking policies, including proper regulatory and institutional frameworks, should accompany liberalization efforts at both multilateral and regional levels and to correct some of the negative externalities and impacts that occur in the case of increased services trade and economic growth. The paper gives particular focus on the General Agreement on Trade in Services (GATS) of the WTO in achieving beneficial integration of developing and least developed countries into the services economy. It evaluates the level of success of this Agreement in light of the broader developmental objectives stipulated in the agreement as well as in light of alternative liberalization regimes (i.e. RTAs). Then it discusses approaches for improving the GATS framework to better promote the integration of developing countries in the global services economy by reviewing measures supporting the sustainable development of developing countries, including provisions for special flexibilities for developing countries, progressive liberalization, as well as for technical assistance.

The second chapter on "Managing the interface between Regulators and Trade in Infrastructure services" discusses the regulatory and institutional frameworks fro infrastructure services (e.g. telecommunications, transport, energy and financial services). It explores how to improve the design and performance of regulatory and institutional frameworks in developing countries. It particularly examines challenges for developing countries and suggests capacity-building options for them. In concluding that there is no "one-size-fits-all" model in terms of regulatory and institutional frameworks, it suggests that "best-fit-approaches" should take into account local country context of economic and social development, which should change over time in line with development levels.

Chapter III discusses various aspects relating to the financial services. It examines the impacts of the financial crisis on financial services development in developing countries. The impact of the financial crisis on negotiations in liberalizing financial services, in particular in the GATS context is also analyzed. Particular attention is given to Basel III and its impact on developing countries. It concludes that for financial services reform and liberalization to generate pro-development outcomes, they should be supported by appropriately designed, paced and sequenced policies composed of macroeconomic, prudential, regulatory and supervisory elements, to be determined only on a case-by-case basis adapted to the specificity of each country. For many Developing countries, this remains a challenge, which is further compounded by difficulties of properly managing capital-account liberalization. Since the development of proper regulatory systems is a long-term process, developing countries should be allowed sufficient time to adopt and implement their respective legislation and regulations catering to their specific needs.

Chapter IV analyzes the liberalization of movement of natural persons (mode 4) in the context of economic partnership agreement negotiations between EU and ACP countries with a view to indentifying the development benefits of EPAs for developing countries (in this case CARIFORUM). It finds that the CARIFORUM-EU EPA signed in 2008 provides improved market access in mode 4 for CARIFORUM especially for contractual services suppliers (CSS) and independent professionals (IP) delinked from mode 3. For CSS and IP, the

EU undertook commitments in more sub-sectors than in the WTO with more improvements for CSS than for IP. It concluded that EPAS would have produced more benefits to CARIFORUM countries if mode 4 , a priority for these countries had been addressed in a more meaningful manner by including more sub-sectors of their export interest and lowering the conditions for the entry of services suppliers.

Chapters V, VI and VII conduct an assessment of consumer expenditure of education, health, transport, financial services and other infrastructure services such as telecommunications was conducted in order to capture the relative importance of services expenditure in poor and rich households' total expenditure and explore its variation across countries, regions and services subsectors, as well as their correlation with GDP per capita, FDI flows, openness to trade and other aggregate variables. Results suggest that poor households may be relatively more affected by reforms in social services (education and health) than reforms in infrastructure services such as telecommunications and transport. They are also less exposed to changes in the price and quality of services associated with reforms in services trade policy. Poor households in Latin America and Asia have a relatively larger share of services expenditure than in Sub-Saharan Africa. A study on the distributional incidence of access to services in Latin America in an effort to explain the relatively higher shares of services expenditure by the rich in that region finds that the distribution of access to services is not an important determinant of the relatively higher shares of services expenditure by the rich, except in some services such as telecommunications. In most of the other sectors, even though a pro-rich pattern is observed in access to services, it remains relatively weak and it seems to be often explained mainly by "access" to high quality services.

Chapter VIII is a case study on the implication of certain services reform on cropping exports and poverty reduction in Malawi and Uganda. The case illustrates that the potential gains from trade arising from production of export crops destined to international markets depends to a large extent on the availability of "services" (such as transport services, marketing services and credit access services). These services facilitate farmers in those two countries to grow export crops, which positively contributes to poverty reduction in rural areas.

Chapter IX examines the cotton sector in Zambia and reaches the same conclusion as in the case studies for Malawi and Uganda that financial services (credit access services), transport services, marketing services and information provided by cotton purchasing firms to farmers through contract farming play an important role in the reduction of poverty, especially in rural areas in Africa. It is also found that more competition among such firms leads to higher costs for farmers via higher credit prices negatively impacting on cotton farmers, suggesting that there is a need to delve deep into the details when considering the poverty reduction impact of services reforms.

Chapter X studies the Brazilian postal services. The study reveals that postal network could be used to implement financial inclusion policies and facilitate trade for SMEs in relatively poor municipalities located in the rural and peri-urban areas. It also highlights the close link between access to finance and participation in export markets.

Chapter XI shows the importance of proper regulation in water supply sector is illustrated in the case study on water nationalization in Uruguay. In the case of natural monopolies, privatization itself is not sufficient to meet the essential needs of population for safe and affordable water. Regulating privatized firms is crucial to ensure an increase in the quality of water supply services.

Chapter XII examines the services role in Argentina's agricultural production. It finds that provision of road infrastructure services has a positive and statistically significant effect on agricultural productivity. Compared with other farmers, farmers benefiting from road investment have more productivity in expected value partly because available road infrastructure enables their access to agricultural services such as contracting farm services. Farmers who have access to agricultural services enjoy productivity higher than those who do not. Either road infrastructure or agricultural services has a direct and differential impact on the rural sector in Argentina.

Finally, Chapter XIII analyses the impact of FDI in the services sector on child labour has been found to be positive in the case of Vietnam based on repeated household and enterprise surveys. The marginal impact of entry by a foreign firm in the services sector on child labour supply is larger than that in the manufacturing sector, despite that the overall impact of FDI in the services sector on child labour has so far been smaller than that in the manufacturing sector partly due to the fact that FDI in services in Vietnam has been much smaller than in manufacturing.

PROMOTING SUSTAINABLE GROWTH AND POVERTY ALLEVIATION IN DEVELOPING COUNTRIES THROUGH THEIR INTEGRATION IN THE GLOBAL SERVICES ECONOMY

I

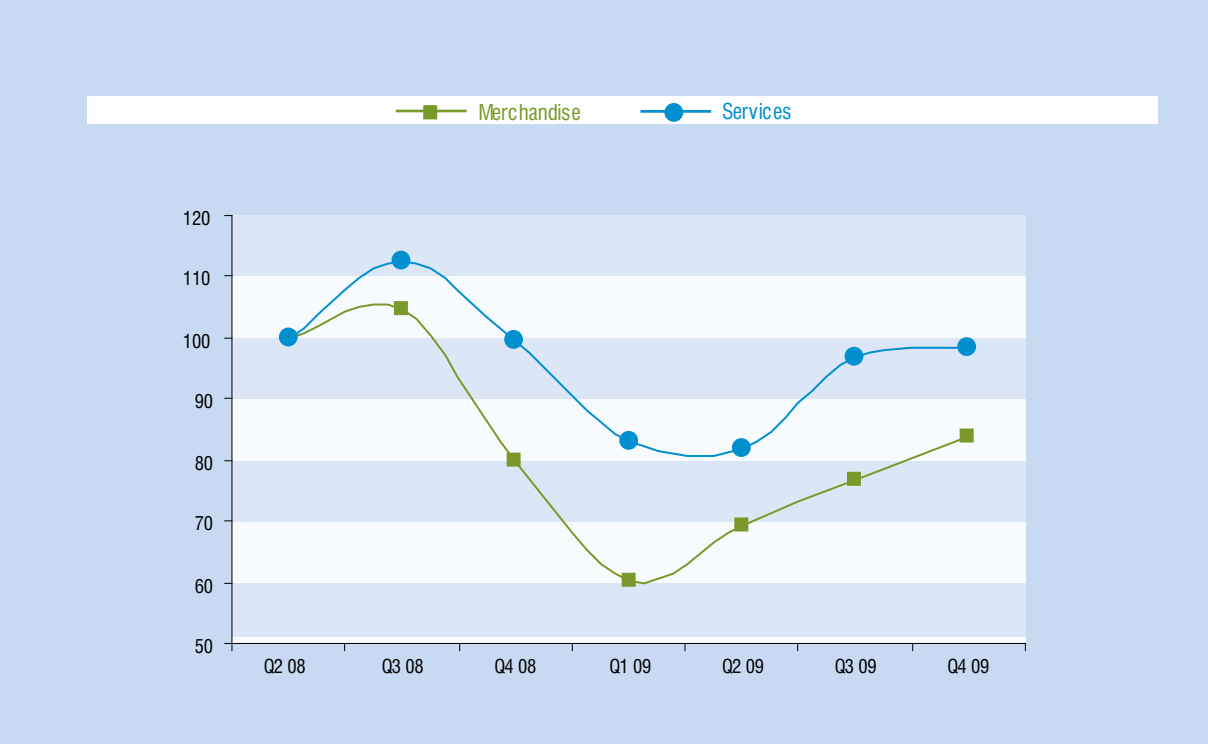
1. INTRODUCTION

Given the potential for development-enhancing and poverty-alleviating trade in services, including as promoted through the General Agreement on Trade in Services (GATS) the better integration of developing countries (DCs) in the global services economy should be of priority for governments across the world and the international community as a whole. The gains stemming from the liberalization of services could potentially be larger than in all other areas of international trade. It is now widely recognized that carefully designed and prepared liberalization can contribute to improve the economic performance of DCs through their integration in the world economy. This improved performance is, among other things, the result of increased competitiveness and market opportunities for DC exports and accompanying transfers of skills, information and technology. However, in order for broader development, social, and equity objectives to be achieved in DCs, it is important that trade liberalization is coordinated with policies to promote domestic supply capacity and related regulatory and institutional reform.

Efforts to build up DCs' services economies and exports must nevertheless be placed in the context of the fragile recovery of the world economy from the global economic crisis. After contracting by 2.1 per cent in 2009, world gross domestic product (GDP) is projected to increase by 3.3 per cent in 2010 and by 3.3 per cent in 2011.[1] Falling growth and trade levels, and weaker provision of essential services, inhibited poverty reduction and progress toward the Millennium Development Goals (MDGs), including Goal 8. A "developmental crisis" manifested in increasing unemployment, rising urban and rural poverty with falling personal incomes, and limited access to basic food, energy and essential services. The share of the working poor in DCs increased to 64 per cent in 2009, up from 59 per cent in 2007, and between 47 million and 84 million more people remained poor or fell into extreme poverty.[2] The poverty gap within and between countries increased. Fifty-three million more people will remain in extreme poverty by 2015 than otherwise would have, had the crisis not occurred.[3]

Fiscal stimulus, globally estimated at $2.6 trillion, was important in fostering recovery. At present an exit from expansionary counter-cyclical policies is under way, which means that the sustainability of recovery

Figure 1. Services and merchandise exports for 42 DCs and transition economies



Source: UNCTAD, based on the IMF Balance of Payments Database.

increasingly depends on private demand and structural factors. Unfortunately, high and persistent unemployment continues to hinder private demand growth. Moreover, the root causes of the crisis are yet to be effectively addressed, such as financial regulatory weaknesses, inequalities within and among countries, global imbalances and the incoherence of global governance.

The crisis affected services trade differently from merchandise trade. Fluctuations in services exports exhibited less synchronicity across countries, experienced lower magnitudes of decline, and recovered more completely. Even so, countries dependent on services exports were adversely impacted. Demand contracted more particularly in income-sensitive services – including tourism and travel, financial services, construction, retail and services related to merchandise trade, including transport – than in energy, health, education, telecommunications and some business and professional services which are regarded as necessities. While the lower volatility of total services exports highlighted the relative "resilience" of services trade to the crisis, gains associated with trade in services should not be considered automatic.

In the context of the ongoing recovering and attempts to better prepare countries for future crises the importance of services, and particularly infrastructure services, has been highlighted by the international community. The G20 Nations, for example, have determined as a key element for inclusion today's development agenda the need to identify and secure financing for key infrastructure projects that could help unleash the growth potential of the developing countries. As a concrete step to look into ways to harness investment in infrastructure in the countries that need it most the G20 set up a High Level Panel for Infrastructure Investment to produce recommendations in order to scale up and diversify financing for infrastructure needs, including from public, semi-public and private sector sources, and identify, with multilateral development banks, a list of concrete regional initiatives. The panel is to produce its recommendations by the end of 2011. Similarly the recent UN LDC IV conference which was held on 9 to 13 May, 2011 in Istanbul,Turkey produced a Programme of Action for the Least Developed Countries for the Decade 2011-2020, which refers in several instances to infrastructure services, stating that one of the major challenges facing least developed countries is the lack of adequate physical infrastructure, and emphazing that reliable and affordable infrastructure services are essential for efficient operation of existing productive assets and enterprises in least developed countries, attracting new investment, connecting producers to market, assuring meaningful economic development and promoting regional integration. In light of this assessment the document suggests that LDC take a number of action on infrastructure including to develop and implement comprehensive national policies and plans for infrastructure development and maintenance encompassing all modes of transportation and ports, communications and energy. It is also suggested that development partners could also contribute inter alia by providing enhanced financial and technical support for infrastructure development in line with least developed countries' sectoral and development needs and priorities.

Developing and least developed countries' (LDC) experience with liberalization has been mixed and some countries have remained marginalized in the world economy.[4] Certain preconditions may be necessary in order for countries to benefit fully from the opportunities offered by participation in the global services economy. These include coherent domestic services and development strategies; adequate regulatory, institutional and competition frameworks; as well as the necessary infrastructure. There may also be room for improving the multilateral trading system (MTS) to make it more supportive of DCs. Among the reforms of the system that can be imagined are a greater focus on the liberalization of services sectors and modes of supply of export interest to DCs; full operationalization and improvement of the special flexibilities in favour of developing and least developed countries (LDCs); the inclusion of measures effectively addressing developing and least developed countries' supply constraints; and the completion of the GATS framework (i.e. the GATS Rules and domestic regulation provisions) in a manner which is supportive of development.

However, even if the MTS were functioning perfectly this would not necessarily eliminate the negative environmental, social and gender impacts that are sometimes associated with privatization, liberalization and increased services trade. Liberalization should be tailored to produce not only positive economic results but also social and human development gains. Liberalization strategies and policies need to be formulated in such a manner as to minimize negative

externalities and maximize gains, while ensuring that all population sectors, in particular the poorest, benefit from them. In addition to reforms and improvements that can be brought to MTS and to GATS more specifically, there is need for adequate regulatory and institutional frameworks (RIFs), adapted to each country's circumstances, as well as flanking policies to accompany liberalization efforts.

Therefore DC integration in the global services economy needs to be evaluated not only in economic and trade terms but also according to the criteria developed by the international community for what liberalization of trade in services should achieve (that is, sustainable development). This vision is embodied in landmark declarations and documents including: the Millennium Declaration of the United Nations and the MDGs; the Doha WTO Ministerial Declaration; the Declaration and Plan of Implementation emerging from the World Summit on Sustainable Development (WSSD); the Monterrey Consensus on Financing for Development; the São Paulo Consensus and Spirit of São Paulo (developed in the context of UNCTAD XI); the findings and recommendations of the UN Millennium Project Task Force; the 2005 UN Secretary-General Report "In Larger Freedom"; and the Accra Accord adopted by UNCTAD Member States in the context of UNCTAD XII in 2008

The Millennium Declaration for example, cites as the central challenge for the world today to ensure that globalization becomes a positive force for all people. The declaration recognizes the opportunities offered by globalization while acknowledging that benefits are often unevenly shared and that costs are unevenly distributed. The Declaration therefore recommends that globalization be rendered fully inclusive and equitable, including through policies and measures which correspond to the needs of DCs and which are formulated and implemented with their effective participation. Among the fundamental values endorsed by the Declaration are: equality (no individual or nation be denied the opportunity to benefit from development as well as the equal rights and opportunities of women and men); solidarity (global challenges be managed in a way that distributes the costs and burdens fairly); respect for nature (the precepts of sustainable development be used to correct the current unsustainable patterns of production and consumption); and shared responsibility (responsibility for managing worldwide economic and social development be shared among the States of the world). Several services sectors, including education, health and services linked to the provision of safe drinking water are specifically identified in the Declaration as key elements for achieving globalization that benefits all.

Development and poverty eradication are central objectives identified in the Millennium Declaration. This basically implies the need to devote all efforts to freeing men, women and children from extreme poverty and making the right to development a reality for everyone. Success in meeting this objective depends, among other things, on achieving an open, equitable, rule-based, predictable and non-discriminatory multilateral trading system. The Declaration further emphasizes the need to assist DCs in mobilizing required resources needed to finance their sustained development and addressing the special needs of the LDCs. As can be seen from the above description, the Declaration goes well beyond simple economic and trade gains to encompass a much broader notion of sustainable development through trade.

The UN Millennium Project Task Force published (early 2005) a report titled 'Investing in Development, A Practical Plan to Achieve the Millennium Development Goals'. The report contains a series of findings and makes recommendations for the achievement of the MDGs. One of the group of experts' key recommendations held that high-income countries open their markets to DC exports through the Doha Trade Round and assist LDCs raise export competitiveness through investments in critical trade-related infrastructure, including electricity, roads and ports. With respect to services the Task Force advocated that liberalization of the movement of labour be adopted as a high priority in the Doha Round. It also proposed that DCs take commitments in Modes 1 and 3 in exchange for "real" offers of Mode 4 by developed countries.

As acknowledged at the High-level Plenary Meeting of the sixty-fifth session of the General Assembly on the Millennium Development Goals (September 2010), while there has been some progress toward the achievement of the MDGs (that is, the share of poor people is declining) successes are nuanced (the absolute number of poor in certain regions such as South Asia and sub-Saharan Africa is increasing and the number of people living in extreme poverty and hunger surpasses 1 billion). Moreover, impacts of the recent energy, food, financial and economic crises have led to setbacks with respect to poverty

eradication. Furthermore, a weak recovery will continue to compromise efforts toward meeting MDGs. In that context participating Governments reiterated that an effective use of trade and investment opportunities can help countries fight poverty. They also addressed the trade-off issue between benefits of accepting international rules and commitments in the areas of trade, investment and international development and constraints posed by the loss of policy space.[5]

The preamble of the Doha Declaration recalls that WTO Members seek to place the needs and interests of DCs at the heart of the Doha Work Programme. Positive efforts, including enhanced market access, balanced rules, well targeted, sustainably financed technical assistance and capacity-building programmes, be made to ensure that DCs, and in particularly LDCs among them, secure a share in the growth of world trade commensurate with the needs of their economic development. The Declaration also states WTO Members' determination that the Organization plays its part in securing LDCs' beneficial and meaningful integration into the MTS and the global economy. The great emphasis WTO Members placed on developmental aspects of the current round of negotiations throughout the Declaration is an indicator that the trade community acknowledged the need to have development at the heart of its initiatives and negotiations. However, the failure to conclude the Round, within the nine years since the Doha Ministerial Conference, indicates the difficulty of moving past noble objectives and hortatory language to negotiated and commercially meaningful trade outcomes. One recent report by UNDP identified the failure of the world's largest economies on their promise to put in place a trading environment conducive to the achievement of MDGs as one of the gaps in formulating the Global Partnership for Development.[6]

The WSSD developed targets, timetables and commitments to aid the fight against poverty and a continually deteriorating natural environment. The Conference was based on the premise that progress in implementing sustainable development has been extremely disappointing since the 1992 Earth Summit, with poverty deepening and environmental degradation worsening and that a new programme for production and consumption was needed. Commitments were made in Johannesburg – on expanding access to water and sanitation, on energy, improving agricultural yields, managing toxic chemicals, protecting biodiversity and improving ecosystem management – that would serve as the yardstick of success or failure in achieving sustainable development. The Conference concluded a global deal recommending free trade and increased development assistance but also commitment to good governance as well as a better environment.

The Monterrey Consensus (which emerged from the UN Conference on Financing for Development), also offers insight on the holistic approach that needs to be taken, in order to promote the sustainable development of DCs. The Consensus highlights that in pursuing the goal of eradicating poverty, achieving sustained economic growth and promoting sustainable development, it is necessary to address challenges of financing development. This observation is based on current estimates of dramatic shortfalls in resources required to achieve internationally agreed development goals, including those contained in the United Nations Millennium Declaration. Indeed, while globalization offers opportunities and challenges, DCs face special difficulties in responding to them. Domestic and international resources must be mobilized and international trade promoted as engines for development. Increasing international financial and technical cooperation for development; sustainable debt financing and external debt relief; and enhanced coherence and consistency amongst the international monetary, financial and trading systems should also contribute to the sustainable financing of development. The Declaration recognizes trade and services and more particularly the movement of natural persons, as one of the key issues of concern to DCs in international trade to enhance their capacity to finance their development. The Consensus also points to a number of specific services which are supportive of development. These include social, health, education, as well as financial services, (including banking, insurance and financial intermediation services) which are crucial for the financing of development.

The São Paulo Consensus and Spirit of São Paulo[7] recall that if globalization does offer new perspectives for the integration of DCs into the world economy and can contribute to improving the overall performance of DC economies, it has also brought new challenges for growth and sustainable development. Developing countries have been facing special difficulties in responding to these challenges. The role of the international community and of its organizations is therefore to explore how globalization can support

development, and how appropriate development strategies should be formulated and implemented in support of a strategic integration of developing economies into the global economy. This will, in particular, come from a greater understanding of the mutuality of interest between developed and developing economies in sustained and sustainable development. Moreover, the São Paulo Consensus re-emphasizes that trade is not an end in itself, but a means to growth and development. Trade and development policies are important instruments inasmuch as they are integrated in development plans and poverty reduction strategies aimed at such broad goals as growth, diversification, employment expansion, poverty eradication, gender equity, and sustainable development. Coherence and consistency among trade and other policies for maximizing development gains should be pursued at the national, regional and multilateral levels by all countries. In this context, the Consensus underscores the existence of new trading opportunities in niche services sectors where DCs have potential comparative advantages. Moreover, it emphasizes the contribution that access to essential services can have in terms of poverty reduction, growth and sustainable development. The Consensus also recalls the fact that DCs have continuously emphasized the important of effective liberalization of temporary movement of natural persons under Mode 4 of GATS to them. Finally, the Consensus underscores that efforts need to be directed at identifying and promoting environmental goods and services of actual and potential export interest to DCs, as well as monitoring environmental measures affecting their exports.

The Accra Accord[8] recognizes that "the services economy is the new frontier for the expansion of trade, productivity and competitiveness, and for the provision of essential services and universal access." It points out that despite of the growing services sector in the world economy and trade, positively integrating DCs, especially LDCs, into the global services economy and increasing their participation in services trade, particularly in modes and sectors of export interest to them remains to be a major development challenge.

Finally, in the context of global carbon emission cuts promoted by the UN Framework Convention on Climate Change (UNFCCC) and the 2009 Copenhagen Conference, social and economic development and poverty eradication in DCs were acknowledged as the first and overriding priorities. However, countries also agreed that a low-emission development strategy is indispensable to sustainable development.[9] The unavoidable move toward less carbon intensive economies will have impacts in terms of countries' competitiveness and by extension on international trade. Developing countries have already voiced concerns regarding the emergence of burdensome technical standards linked to process and production methods. Nevertheless, the liberalization of environmental goods and services as well as of climate-friendly services can be instrumental to achieving global climate change objectives.

In discussing what can or should be done to promote better integration of DCs into the global services economy this chapter adopts the broader sustainable development perspective adopted by the international community in these declarations rather than place focus on pure economic and trade issues. The chapter will be organized as follows.

Section II considers development gains that can be achieved through the liberalization of trade in services and the implications of such trade for the three pillars of sustainable development (economic, social and environmental). Section III examines flanking policies that must accompany the liberalization process in order to correct negative externalities and impacts that occur in the case of increased services trade and economic growth. It also surveys regulatory and institutional frameworks that are essential for services, particularly as a means to address market failures and promote various policy objectives. Section IV focuses on the GATS' and other regime contributions toward the integration of DCs in world services trade. The success of the GATS in achieving the beneficial integration of developing and least developed countries into the services economy is evaluated in light of alternative liberalization regimes but also in light of broader developmental objectives that the GATS should seek to achieve as set out in the Preamble of the GATS and Article IV. Section V contemplates approaches for improving the GATS framework to better promote integration of DCs in the global services economy. Measures supporting the sustainable development of DCs are reviewed, including provisions for special flexibilities for DCs, progressive liberalization, as well as technical assistance. The chapter then offers some concluding remarks.

2. DEVELOPMENT GAINS FROM INTERNATIONAL TRADE IN SERVICES

Over the last decades the services economy has gained in importance, contributing a growing share to gross domestic product (GDP) and employment in all countries. In 2008 services accounted for 66 per cent of world GDP and 39 per cent of world employment.[10] Services constitute 50 per cent of GDP and 35 per cent of employment in DCs. Infrastructure services – financial, transport, telecommunications, water and energy – are fundamental for development, including in providing universal access to essential services for attaining the MDGs on water, energy, health and education. Services have become a fundamental economic activity and play a key role in infrastructure building, competitiveness and trade facilitation. Indeed, an UNCTAD study on the determinants of export performance of merchandise goods points to the important role that services relating to the internal transport infrastructure can have in addressing supply constraints, thereby promoting countries' export performance. This is particularly more important at the early stages of development of the external sector.[11] UNCTAD services database shows that the share of services in total world trade has been increasing steadily with average annual growth rate of world services exports at 13.5 per cent between 2000 and 2008 – almost equal to that of merchandise exports at 13.6 per cent during the same period. Developing country exports expanded at a faster pace (15.6 per cent) than developed countries (12.6 per cent), resulting in their increased share of world exports in services from 22.8 per cent to 25.9 per cent. Least developed countries share remained stagnant at 0.5 per cent. In 2008 trade in services accounted for over

Box 1: The contribution of services to competitiveness of economies

The role of services as inputs into other sectors of the economy is crucial. Services have an important role to play in terms of their contribution to manufacturing output growth and productivity and a positive relationship has been found between the level of per capita income and the intensity of use of services in manufacturing industries. Part of the gains comes from the outsourcing of indirect production activities but also from certain structural changes in manufacturing industries, which raise their demand for services as intermediate input. This leads to lower operating costs and increased productivity. But the extent to which a manufacturing firm will use, in the production process, services procured from outside also depends on: (1) the pressures on the firm to improve its competitiveness, which in turn depends on the domestic and international competition it is facing, (2) the availability of services, which depends on the level of development of the services sector in the economy [and on the openness of the economy to imports of foreign services], and (3) the relative cost of in-house provision of services as against their procurement from outside agencies.[12]

The case of India is illustrative of this. Though service inputs contributed little to production of the registered manufacturing sector in India during the 1980s, this contribution increased dramatically during the 1990s from about 1 per cent in the 1980s to about 25 per cent in the 1990s. The services sector has increased its own demand by raising output growth and productivity of the manufacturing sector in the post-reforms period which should help the services sector, to a certain extent, sustain its growth performance. Trade reforms and liberalization undertaken in the 1990s played an important role in increasing the use of services in the manufacturing sector. Indeed, trade which increased competition in the domestic market was found to be responsible to a certain extent for the increase in the intensity of use of services in the manufacturing sector. This points to the possibility that the Indian services sector might not only succeed in sustaining its own growth but might also help in improving the growth rate of industrial sector in the near future.[13]

Single services sectors can also contribute significantly to the development of an economy. Tourism is one of the typical examples. The worldwide contribution of tourism to GDP exceeds 5 per cent and its annual turnover has been growing at a faster pace than GDP.[14] It has become a useful means to promote economic diversification and strengthen DC economies owing to its linkages with related services, manufacturing and agriculture sectors of an economy.[15] In the Seychelles, for example, tourism services not only generate income, foreign exchange, and employment but also serve as a catalyst for other economic activities such as agriculture, fisheries, crafts and manufacture. Tourism is also the source of government revenues which are used to finance a range of welfare services to citizens at low or very low cost and the development of infrastructure used by the whole community. Finally, tourism justifies and allows paying for the preservation of the natural environment and cultural heritage of the country. All of this contributes to making the Seychelles' economy globally more competitive.[16] For countries such as Cape Verde, Maldives and Samoa, tourism has been a decisive factor supporting their graduation from LDC status.

20 per cent of total world trade with world exports of services nearing $3.9 trillion.

During the financial crisis and subsequent global recession in 2008 to 2009, trade in services, as reflected in balance of payments, contracted less and recovered faster than trade in goods. Its relative "resilience" in the crisis implies that a strong services sector is conducive to building-up domestic economic resilience to external shocks. Many DCs including China and South Africa have thus incorporated the development of this sector into their post-crisis growth strategies. The sector can be particularly important for LDCs and small, structurally weak and vulnerable States. Specialization is important with regard to growing, resilient and employment-generating services sectors.

There are, however, differences in the development of the services economy and infrastructure services across countries and regions. According to UNCTAD database, services in 2008 accounted, on average, for 50 per cent of GDP in DCs, while for developed countries accounted for 73 per cent. Developing countries generally remained net importers of commercial services. The same database shows that the share of DCs in world total exports of services was 25 per cent in 2008 compared with 23.1 per cent in 2000. Average annual growth rates for services exports of developed countries increased from 4 per

Box 2: Gains through the movement of natural persons

Multilateral liberalization of temporary movement of natural persons – through commercially meaningful GATS commitments – can contribute to balance, predictability and equity in the multilateral trading system and thereby lead to increased development opportunities for DCs. Recent studies have shown that gains from the liberalization of the movement of natural persons could be larger than total gains expected from all the other negotiating items under current WTO negotiations. World welfare gains from liberalization of the movement of workers could amount to $156 billion per year if developed countries increased, by 3 per cent, their quota for the entry of workers from DCs.[17]

Another study computed gains of some $200 billion annually provided a temporary work visa scheme was designed and adopted multilaterally.[18] While a significant portion of movements currently taking place is from DCs to developed countries, there is also considerable movement of workers between DCs and some movement from developed countries to DCs. Remittances from workers are a major source of capital inflow for many DCs. In 20 transition economies and DCs including LDCs such as Haiti, Nepal, Lesotho and Samoa, remittances – a proxy measure of benefits from cross-border movement of natural persons – accounted for over 10 per cent of GDP.[19] In 2008, remittances to DCs reached $328 billion, equivalent to 2.3 per cent of aggregate DC GDP[20] while in 2003 it amounted to $93 billion. The total amount of resources remitted could, however, be two or three times higher, since a large number of transactions are realized through informal channels. During the recent financial and economic crisis breaking out in the second half of 2008, remittances remained relatively resilient compared to aid and other private capital inflows with officially recorded remittance flows to DCs amounting to $316 billion in 2009,[21] thus providing a buffer against economic shocks and important source of financing for development.

Remittances improve the ability of countries to finance development objectives, the foremost of which are poverty reduction and improvement of human capital. Their positive role is particularly pronounced for LDCs – for many low-income countries, remittances as a share share of GDP and imports are larger than in the case of middle-income countries. Middle- and lower-skilled workers tend to remit a higher proportion of their income. Policies are needed to support technology transfer that facilitates remittances or investments by making such transfers less costly.

A recent UNCTAD study[22] quantitatively analysed the extent to which remittances reduce poverty in DCs. Using panel data for 77 DCs (for the period 1980 to 2008), remittances were found to significantly reduce poverty in recipient countries. For a given level of GDP, a 10 per cent increase in remittances reduces the poverty headcount ratio by about 3.1 per cent and the poverty gap by about 3 per cent to 5 per cent.

Concerns abound that the movement of workers may result in sending countries to lose some scarce resources. Countries have been experimenting with unilateral, bilateral and multilateral mechanisms to prevent and alleviate brain drain.[23] However, empirical studies suggest that there is an "optimal level of migration" that stimulates pursuit of higher education at home and spurs economic growth. Scarce employment opportunities and the limited capacity for collecting income taxes may limit the actual costs for the individual and the home economy. "Brain circulation" is therefore probably a more appropriate term to describe the exchange of skills in international trade in services. Despite what is often stated, wages are not likely to decline in the host economy, as foreign services providers will not be perfect substitutes for national ones. Mode 4 liberalization is also possibly one of the best ways to reduce permanent or illegal migration and maximize gains for sending and receiving countries.

Box 3: The tourism sector in DCs

Many DCs have an important interest in tourism.[24] The sector contributes to economic diversification and job creation through linkages with the rest of the economy. The worldwide contribution of tourism to GDP exceeds 5 per cent.[25] Tourism is the main source of foreign exchange for one-third of DCs and one-half of LDCs, accounting for 40 per cent of GDP. It contributed to graduation from LDC status of Cape Verde and Maldives. Many WTO Members seek liberal commitments addressing remaining sectoral and modal barriers such as in Mode 3 (commercial presence) and in Mode 4 and anti-competitive practices.

For example, tourism and tourism-related services have the potential to positively contribute to such varied objectives such as: rural development, agricultural transformation; community enrichment, social empowerment (particularly for women), and preservation of cultural and heritage traditions. At the same time, there can also be negative social outcomes from tourism activities including: increased incidence of crime; spread of drugs and diseases, including HIV/AIDS; change or loss of indigenous identity and values; culture clashes; and ethical issues (child labour, prostitution and sex tourism).

cent during the period 1995 to 2000 to over 14 per cent during the period 2003 to 2008. For DCs, this latter figure was 18 per cent, compared to 3 per cent for the 1995 to 2000 period. In 2008 exports of services from DCs grew at 13.5 per cent compared with 10.6 per cent for developed countries. Developing countries' share in global imports of services has increased from 24 per cent in 2000 to 31 per cent in 2008. During the same period, developed countries share has declined from 71.04 per cent in 2000 to 65.37 per cent in 2008.

Least developed countries have continued to build up export capacities in services, which grew at an average annual rate of 7.9 per cent during 2003 and 2008 compared to 3 per cent during 2000 and 2003. Nevertheless, they still face substantial difficulties in participating in services trade, and their exports are particularly vulnerable to external shocks. In 2008, LDCs accounted for 0.5 per cent of world trade in services, (consisting primarily in transport and travel services) –their comparative advantage is in the export of labour-intensive services.

The above figures attest to the economic gains that can accrue from trade in services. Services can, however, also be viewed as important contributors to a sustainable economy. They can favour poverty reduction, including through the informal services sectors, which continue to play an important role in most DCs. Services can also contribute to gender equity, as many services firms are traditional employers of women. Moreover, certain specific services activities have direct favourable impact on health (services by doctors, nurses, midwives, as well as hospital services), the environment (sewage, refuse disposal, and sanitation services), and on the general welfare of the population (education, social services, sporting, and recreational services). Services trade, which allows for consumption beyond what can be produced locally, has the added effect of multiplying these different impacts. For example, in the case of DCs, trade in services through Mode 4, is considered to hold the potential for positively contributing to development through remittances that workers send back home.

The impact of other services sectors could, however, appear more problematic in terms of sustainable development if activities are not conducted in an appropriate and regulated context. Two such examples are in the transport services (with the pollution that can be associated with increased movements of products and people), and in the financial services (with the negative social impacts of economic crises in the absence of prudential regulation). Coordination and sequencing of regulatory reform and trade liberalization will go a long way in pursuing development and poverty alleviation through the growth of services sectors.

Services activities do not necessarily produce either all positive or negative results. Most often they tend to produce a mix of both and it will be for the authorities to ensure that gains outweigh any negative impacts.

Similarly, the impact on the environment can be complex. The fundamental paradox that underlies the environmental aspect of tourism is that most forms of tourism depend on either a built or natural environment (which will probably lead to increased investment and spending in these areas), but excessive tourism can degrade that same environment through pressures on natural resources such as water and energy, pollution and waste generation and damage to ecosystems.[26]

It also poses a growing threat to preservation of cultural resources.[27] Guidelines, principles and codes of behaviour at the local, national and international levels are therefore helpful to ensure that tourism activities lead to sustainable development. Proper capacity planning, zoning, redesigning the tourism product to promote ecotourism and cultural tourism, environmental regulations, and cultural preservation initiatives have become increasingly important as the sector matures.[28]

The impact of services on a sustainable economy will not depend only on the availability of services but also on who is providing the services and in what context. In the case of health and education for example, there may be significantly different impacts depending on whether a government is the main provider (in which case considerations such as universal access may be determinant) or whether the main provider consists of a combination of public and private interests.

Similarly, in cases where foreign competition is vibrant, gains that accrue to the DCs may be reduced (in the case of tourism, a substantial proportion of gains are realized by developed country tour operators as opposed to the countries of tourist destination). The overall impact of these services on the sustainability of DC development will, therefore, largely depend on the underlying characteristics of the markets (type of services being provided, type of consumers and type of service suppliers) as well as on the regulatory and institutional frameworks in place in DCs. The impact of services may also depend on the mode of supply through which they are being supplied (with the exception of a few financial services, cross-border supply can be considered particularly interesting from a sustainable perspective, as it may constitute a valuable alternative to both the movement of persons to supply services and the supply of services through goods). Therefore, a better understanding and grasp of these elements is crucial in assessing the potential for services trade as positive contributor to growth and sustainable development.

While countries can harness services trade for both economic growth and sustainable development, DCs

Box 4: New trading opportunities for DCs through cross-border supply and outsourcing of services

The development and spread of modern information and communications technology has allowed for an increasing share of international trade in services to take place through cross-border supply.

Linked to this phenomenon, recent technological developments in computer and related services are rendering the outsourcing of many services an increasingly efficient option for firms. Outsourcing is used by enterprises seeking to take advantage of low-wage countries, focus on core activities in fewer locations in order to save costs, and take advantage of productivity gains and access to additional skills. This is giving rise to new trading opportunities for DCs. Outsourcing has become an important source of export earnings for countries such as India whose commercial services exports currently account for as much as 25 per cent of total exports. China is also posting notable success in outsourcing services – in 2008 the value of implemented outsourcing contracts amounted to $4.69 billion and formalised new outsourcing contracts were valued at $5.84 billion. To accommodate this surge approximately 100,000 trained workers were employed, resulting as an important source of job creation (particularly for young graduates from colleges and universities who currently account for 82.9 per cent of the employees in this sector). Globally, outsourcing services demonstrate resilience in the times of crisis. In spite of the unprecedented post World War II economic crisis of 2008 and 2009, global outsourcing expenditures in 2009 were estimated to have reached $373 billion – a 14.4 per cent increase over 2008.[29] However, the fear that growth of services outsourcing may lead to employment losses in developed countries has given rise to protectionist tendencies, which may prevent firms from taking advantage of the gains to be made from outsourcing.

Overall, the trade of outsourced services is taking place between developed and DCs, as well as within each group, with DCs strongly involved in the rise of outsourcing. The gains for receiving countries could be enormous, given that the export earnings derived from outsourcing are often accompanied by a number of related advantages, including FDI, human capital formation and knowledge spillovers.

In order to capture the new trading opportunities from outsourcing, DCs can implement a number of domestic policies, relating among other things to infrastructure development; legal and regulatory framework improvements; human resource development; and so forth (international policies can also help). In addition, a moratorium could be placed on any restrictive policies relating to outsourcing (such as government procurement). In all these areas, there is need to explore options for the best way to arrive at meaningful liberalization.

need to ensure that the multiple characteristics of service sectors (potential for contributing positively to the economy while not losing sight of the negative externalities that may result) are taken into account and that adequate regulations, institutions and policies are in place to achieve the desired outcomes. Authorities must acknowledge that there exist certain interdependencies between trade and development policies which will not always lead to easy policy choices. Indeed, it may be difficult to allocate resources to trade-related objectives when faced with pressing development priorities (pandemics and widespread poverty) just as it may be difficult to allocate resources to long-term sustainable development objectives in the presence of more concrete and short-term economic rewards from trade.

There is a need to strike a balance between the objectives of efficiency and equity. Both the State and the market have an important role to play in the development process, and as such must streamline their respective roles in a complementary manner. Furthermore, as development of the private sector is critical for economic growth, the State is vital for designing and implementing development strategies, reducing poverty and attaining equitable income distribution, building physical and human infrastructure, addressing market failures where they occur, ensuring consumer protection, employment safety nets, and providing enabling macroeconomic conditions and a sound regulatory framework.

3. SUPPLEMENTARY MEASURES FOR ACHIEVING DEVELOPMENT-ENHANCING SERVICES TRADE: THE NEED FOR ADEQUATE REGULATORY AND INSTITUTIONAL FRAMEWORKS AND FLANKING POLICIES

In many respects, the various regimes for liberalizing trade in services are not enough to guarantee DCs' broader developmental objectives for building a competitive domestic supply and trade in services are achieved. Benefits are not automatic and there may be a number of burdensome costs associated with trade in services, arising principally from market failures. Regulatory and institutional frameworks (regulation and regulatory institutions) are essential tools for responding to market failures and mitigating economically and socially undesirable results while promoting development of services sectors. Regulation aims at achieving other key domestic policy objectives (development of domestic supply, consumer protection, climate change mitigation, as well as contributing to poverty alleviation, by ensuring universal access to essential services). The crisis exemplified the importance of regulatory and institutional frameworks. The financial market boom preceding the crisis was not matched by adequate national and global market regulations. The regulatory failure in the deregulated environment became manifest with regard to control of product safety for complex and high-risk financial products, consumer protection, risk management and leverage, regulation of non-traditional financial institutions, credit-rating agencies, assessment of systemic risk, capital adequacy regulation, moral hazard and incentive structure for compensation systems. Sound national regulations and institutional frameworks adapted to individual country conditions and capacities, and international regulatory cooperation, are essential in preventing future crises. However, regulatory systems also entail costs, through administrative and human resources required for their implementation and for businesses who have to comply with them.

Institutions and procedures are amongst the central determinants for the quality of regulations. Although various institutional approaches exist, perhaps the most prudent would be to adopt the "best-fit" system as it depends on specific services sectors economic attributes; technological considerations; as well as a country's economic, social, institutional and political endowment and human and administrative resources. Moreover, formally establishing regulatory and institutional frameworks is not sufficient in itself as credibility and stability will only come with experience and institutional strengthening. Also, broader policy and legal environments will have an impact on how functional regulatory systems can be.

Flanking policies can be seen as a tool to ensure that not only the economic effects of trade in services are taken into account by policy makers but also the cultural, social, environmental and distributional impacts. Flanking policies must accompany liberalization in order to ensure that sustainable development is achieved. Measures need to be put in place at both the domestic and at the international level.[30]

The type of costs or impacts that flanking policies will need to address include unemployment, raising prices of services, anticompetitive practices and a whole range of negative social and environmental externalities. Policies will have to be designed with the objective of, among other things, meeting development costs, limiting the risk of crowding-out of local players and potential job losses, ensuring safety nets, guaranteeing universal access to certain essential services or at least making services available to a greater proportion of the population, ensuring competition, maintaining health and safety standards, limiting urban sprawl, contributing to regionally balanced socioeconomic development, and reducing poverty, to name but a few.

Flanking measures can also be used to address supply-side constraints and ensure competitive outcomes. Addressing supply-side constraints involves, among other things, addressing DCs' lack of access to finance and new technologies, the high cost and low quality of distribution and transport services, the lack of requisite infrastructure services generally, and the lack of supporting institutions, including for SME-specific measures. Among the measures that can lead to increased competitiveness, of the services economy in DCs, are measures aiming to create an enabling environment for investment, technology and enterprise development; measures providing for the adoption and financing of information and communication technology (ICT); as well as measures for efficient transport facilities and trade facilitation

Box 5: Providing universal access to essential and infrastructure services

Essential services can serve as an example of services where flanking policies must accompany privatization and liberalization. Several services are in the general interest of the public and, indeed, essential for human life (health, education and the provision of water).

Consequently, governments must ensure the adequate provision of such services (including to the poor and marginalized). While traditionally, the provision of such services has rested within the public domain, the last decades have seen a trend of opening up essential services sectors to domestic and foreign competition. However, this has produced mixed results, sometimes increasing the price of services for the poor or entailing considerable adjustment costs.[31]

The same can be said for several key infrastructure services. Privatization without creating conditions of competition, or the increase of entry in sensitive sectors (financial) without adequate prudential supervision and full competition serve as examples.[32] If the transition process had been adequately managed and regulated, it would – in theory – have been possible to fully reap the benefits of privatization and liberalization policies. Research has been devoted to identifying the delicate combination of competition and regulation, required to make privatization and liberalization contribute positively to development. One policy recommendation that has come out of this research is the need for increased competition and for complementary regulations with a social purpose. A non-discriminatory universal service obligation is one example of such regulations. Some countries have successfully experimented with regulations to ensure universal services, with subsidy schemes or universal service obligations being possible options. Chile, in the case of telecommunications, has adopted a scheme involving several elements: a universal service levy (1 per cent) to generate finances, and a competitive bidding process to allocate funds. The latter should encourage operators to adopt the best technology and cost-saving practices. Ultimately, this system has allowed Chile to significantly increase the number of household telephones with a minimum level of subsidies.[33] Ghana established a fund – The Ghana Investment Fund for Telecommunications (GIFTEL), in operation since 2005 – with the aim to make telecommunication easily accessible across the country by developing the communications infrastructure in rural areas and thereby contributing to meeting Millennium Development Goals. To establish funds, the Government of Chile charges every licensed or authorized operator 1 per cent of contribution from their revenues. GIFTEL facilitates investment for eligible projects in under-served areas where commercially viable telecommunication services are not available. Funds are allocated on a competitive basis through an open bidding process based on the successful assessment of a plan's long-term financial sustainability. This assessment also reflects how inclusive the plan is with regard to local stakeholders, and in particular for those who are at a disadvantage.

Specific obligations may be placed on licensed operators in order to help facilitate policy objectives, which include specific interconnection responsibilities. According to the Government of Ghana's 2009 Budget Statement, under GIFTEL, 39 "common telecom facilities" were completed, which enabled the extension of service to 273 communities.[34]

Not all countries have been as successful though. India's experience in telecoms highlights the difficulties that can arise when implementing universal service obligations for private sector providers. While targets were set and stipulated in various license agreements, it was not possible to meet them. Inadequate enforcement mechanisms and overly ambitious targets were among the reasons for failure.

arrangements which help to reduce overall transaction costs. Among the more specific measures that can be considered in this context are subsidies and other support measures to service suppliers, incentives for consumers to choose domestically produced services and temporary safeguard mechanisms. The first will ensure that the suppliers can grow beyond infancy status and move on to become more efficient producers even when faced with foreign competition. Incentives for consumers to choose domestic goods are an indirect means of providing domestic services suppliers with a (captive) market large enough to allow them to expand their production. The third category of measures provides services suppliers with temporary relief from competition from foreign services suppliers in order to allow for adjustment. However, as discussed later, trade liberalizing commitments under international agreements may put certain limits on a country's ability to use these measures.

Competition issues are equally crucial in DCs as anti-competitive measures considerably reduce the positive effects of trade liberalization for consumers and enterprises, particularly SMEs. Competition law, institutions and authorities should be established in order to safeguard DCs against anti-competitive behaviour in their markets. Indeed, where adequate regulatory framework for competition is not in place, liberalization may imply the replacement of domestic monopolies and dominant players by foreign monopolies and dominant players.

By using flanking policies authorities attempt to integrate developmental, cultural, social, environmental and even national security perspectives in addition to the economic perspective in trade policymaking and economic planning. The overall objective is to strike a balance between different types of considerations. Flanking policies can either limit: trade activities (zoning regulations, operating hours, and so forth) or place conditions on the exercise of these activities (local content requirements, local materials, suppliers and services); requirements for the creation of employment opportunities, introduction of advanced technology, upgrading of local technology, or skills development; qualification requirements and technical standards, with the view to achieving specific economic, social and environmental results. This can be considered an important step toward managing the interaction between trade and broader development policies at the national level.

Countries without the necessary flanking policies may not reap the full benefits from liberalization and the costs of integration in world services economy may outweigh benefits. However, flanking policies should not be viewed as the panacea for all development related challenges linked to trade liberalization. There are certain limits to this approach.

Indeed, the emergence of various rule-based regimes for international trade means that the space for national economic policy – the scope for domestic policies – is now often restricted by international disciplines, commitments and global market considerations. Such trends can be exemplified by the inclusion of services in the multilateral trading system which brings domestic regulatory issues within the ambit of the WTO. This is in marked contrast with the GATT's focus on border measures. Article XXVIII of the GATS defines the very broad nature of measures covered by the Agreement which includes "any measure by a Member, whether in the form of a law, regulation, rule, procedure, decision, administrative action, or any other form". This new focus of GATS on domestic regulations may lead in certain cases to the difficulty of Members to change, adapt or improve their regulatory frameworks relating to services subject to scheduled commitments. Indeed, the extent of the 'right to regulate' a particular service sector contained in the preamble of the GATS, (Guidelines and Procedures for the Negotiations on Trade in Services) as well as the Doha Ministerial Declaration is related to a particular Member's liberalization commitments

From a DCs perspective, it is crucial to retain sufficient flexibility for regulatory and institutional building. Indeed, DCs will not always be in a position to adopt the type of frameworks or upgrade their institutions to the levels that may exist in more developed economies. For this reason, it is important that a wide range of policy options still remain available to governments in the course of liberalizing services sectors under GATS or other international arrangements. If international commitments were shown to constrain DCs developmental policy options it would prove particularly negative given the many policies (for supporting growth, poverty reduction, re-distribution, protection of the environment, and other social objectives) that need to be put in place in order for these countries to achieve a sustainable development of their economies. For example, strengthened and globally coordinated financial market regulations are important to address structural flaws in financial

regulatory systems precipitating the crisis. The Basel III higher banking capital requirement will be implemented by end 2012. But tighter financial sector regulations and increased high-income sovereign borrowing are estimated to reduce DCs' growth rates by 0.2 per cent to 0.7 per cent for a five-to-seven-year period.[35]

However, even where policy space is available, the policy mix necessary to produce desired results will be determined on the basis of 'trial and error' and on concrete experiences of what works and what does not work in each country. For example, not all options may be practical to implement, particularly for DCs. Since an adequate policy response will depend on country-specific national development potentials and socio-economic circumstances, as well as different initial conditions in terms of size, resource endowment, economic structure and location no easy, one-size-fits all approach can be developed. To date, a lack of understanding exists over exact functioning of various policy suggestions. Moreover there is even less understanding of how these options may play out in different economic and social scenarios and how different reforms should be sequenced. In order for privatization and liberalization to deliver expected benefits, more analytical work is required toward identifying ways of ensuring coherence between regulation and trade liberalization (how to create regulatory and trade agendas mutually supportive, and how to reconcile trade, development, social and equity objectives). Regulatory and institutional frameworks are crucial for allowing countries to balance multiple objectives pursued by governments and to ensure the involvement of all stakeholders. This is particularly important in the case of poverty alleviation as it is now acknowledged that there are important synergies among the MDGs. For example, gender and women's empowerment, more specifically, have large multiplier effects on poverty eradication. This relation stems from the strong correlation found between the gender gap, economic development and national competitiveness. Similarly, integrating climate change and poverty reduction policies will become ever more important, in an era where adaptation and low-carbon development and diversification (toward services and other activities more respectful of the environment) are becoming essential components of countries' broader development strategies.

4. THE GATS' AND OTHER REGIMES' CONTRIBUTION TO THE INTEGRATION OF DEVELOPING COUNTRIES IN SERVICES TRADE

It should be noted that liberalization of trade in services through the GATS is but one among many policy options available to governments for developing, regulating and liberalizing services sector. Broadly, options for countries range from domestic reform measures aimed at developing the local services industry (including through privatization) and autonomous liberalization (decided either independently or in the context of broader reforms, including under the aegis of the international financial institutions), to bilateral and regional economic integration or trade agreements. The GATS, and its contribution to integrating DCs into the global services economy, can therefore be evaluated in comparison to these alternative means for achieving liberalization.

GATS

The GATS is the first multilateral framework of principles and rules for progressive liberalization of trade in services and as such can be considered an important tool for achieving the integration of countries into the global services economy. Indeed, GATS allows WTO Members to negotiate reciprocal benefits in exchange for locking-in policy reforms in the services sector.

It is difficult to clearly determine and evaluate the impact of the results of the Uruguay Round GATS negotiations and their effect on the integration of DCs in the global services economy and on their development. Isolating the impact of the Uruguay Round negotiations from the impacts of other measures and regimes for liberalizing services is an arduous task.

Given the difficulty of assessing the value of commitments in terms of trade balance or development impact the coverage of trade commitments by WTO Members has often been used as a proxy measure and only very general and qualitative analyses have been undertaken at this stage. Members' specific commitments vary widely in sectoral and modal coverage, extent of limitations to market access and national treatment. In general, there is a correlation between the degree of development of the services sector and the coverage of the sectors offered. However, it should be noted

that this does not necessarily mean that DCs with an interest in developed country markets are well served since developed countries have largely excluded some important services sectors, for example audio-visual, maritime services, and specific sub-sectors in business services, as well as Mode 4 from their commitments. The emphasis of most commitments put forward by all countries, including developed countries, is on commercial presence mode of supply and movement of persons in the form of intra-corporate transferees. Until recently perhaps, most DCs were not in a position to benefit from the commercial presence mode of supply given the high cost of establishment in developed countries and the weaknesses of DCs' firms in terms of financial and human capital and access to distribution networks, information channels and technology. Sectors of particular interest to DCs in Mode 4 such as tourism-related services, construction and engineering, business services, health-related services and maritime transport, are included in the commitments of many developed countries. However, only top-management personnel are allowed to move to provide these services while DCs' interests reside in natural persons with medium-to lower-skill levels.

The Mode of supply through movement of natural persons has been committed in nearly all schedules by "horizontal" commitments in the limited categories of intra-corporate transferees (managers, specialists, executives) and business visitors. The commitments do not indicate sectoral specificity or specific occupational categories. The value of these commitments is limited in light of their connection with Mode 3 commercial presence commitments. Moreover, it should be noted that national treatment in most cases is left unbound. Finally, most of the commitments in Mode 4 are still subject to economic needs test (ENTs). Economic needs test could act as quota restrictions.

The Uruguay Round commitments of both developed countries and DCs can generally be considered to have been mainly status quo commitments. Whilst DCs may acknowledge that the consolidation of the status quo has guaranteed security of access, which can favourably impact on trade and investment in services, the potential of the Uruguay Round commitments for significantly increasing their integration into the global services economy can be considered relatively limited. Indeed, even where market access and natural treatment has been granted, DC services and services suppliers may not be able to out-compete more efficient competitors from developed countries. However, from the DC position, status quo commitments have represented a higher level of concession as they reflected recent reforms, supported among other things, by the international financial institutions.

Given the complexities associated with quantifying barriers and limitations to market access or national treatment and the bindings on different modes of supply of services the development of quantifiable criteria has not been as equable as in the case of goods trade. While identifying quantifiable values, either for the existing level of market access or for the proposed liberalization, remains a challenge. Several attempts are being directed to improve available data and analysis of the services economy.[36]

An attempt is possible to assess the success of the current Round in achieving the integration of DCs into the global services economy (based on the views of DCs).[37] The initial 71 offers and 31 revised offers that have, to date, been submitted already allow for a preliminary assessment of the current negotiations' potential for increasing DC participation in trade in services. Such an analysis is useful to defer waiting until the end of the Round to assess whether the stated developmental objectives are achieved. Moreover, Negotiating Guidelines and Procedures for the Negotiations specifically provide that – in addition to the on-going assessment exercise the results of which should allow to adjust the negotiations (Paragraph 14) – there shall be regular review of progress in negotiations to consider the extent to which Article IV is being implemented and to suggest ways and means of promoting the goals established therein (Paragraph 15). In general, offers do not show considerable increase in sectoral coverage. They also only show modest improvement in the level of liberalization commitments. Minimal progress has been shown in liberalizing modes and sectors of export interest to DCs. Several of the initial offers and revised offers seem to negate previous commitments taken or to produce no real change in the level of commitment (even where modifications have been introduced). This is done either by redefining the sector or sub-sector to which a commitment applies or by moving from one partial commitment to another one.

A review of the offers in Mode 4 demonstrates that while commitments to provide market access for new categories of persons are offered (that is, persons entering for career development purposes, graduate trainees, contractual service suppliers and independent professionals) by a few countries, offers have far fallen short

of expectations from DCs and LDCs in terms of sectoral coverage, quota removal and economic needs test or labour market test. There is no indication of real progress in the liberalization of Mode 4 in skill levels of interest to DCs – due mainly to importing country concerns over implications of liberalizing Mode 4 for their labour market. In some cases, a few limitations are removed, new categories of services suppliers are introduced or the definition of professionals broadened. However, these changes remain limited to highly skilled professionals related to Mode 3. More efforts are needed to expand the scope of categories delinked from Mode 3 as requested by a group of DCs and LDCs in their respective collective requests submitted in 2006 in accordance with the decision of the 6th WTO Ministerial Conference in Hong Kong. Furthermore, there is no indication of an attempt to streamline or increase the efficiency of processing mechanisms for visa and work permits and making them transparent to facilitate entries of Mode 4 services suppliers. Negotiations to set disciplines for domestic regulatory measures, including qualification requirements and procedures which have a direct bearing on Mode 4, have been on-going for many years and Mode 4-related regulatory measures are unlikely to be placed under strong disciplines due to concern from importing countries. This implies that liberalization commitments in Mode 4 may not be very 'meaningful' from the perspective of many DCs.

With development of information and communications technology, more and more DCs have shown interest in exporting outsourcing services, mainly through cross-border supply. In services relevant to outsourcing such as business services, telecommunications services and financial services, existing offers show some progress with improved commitments and an increase in new commitments. Still there is ample room to improve offers, in particular given the low level of offered bindings on Mode 1. Barriers include commercial presence required under Mode 1 or outright prohibition on outsourcing. Therefore commitments could range from substantial liberalization to binding existing liberalized markets. Developing countries have particular interest in tourism as it is a major component of world trade, ranking fourth after fuels, chemicals and automotive products and accounting for over 30 per cent of world commercial services exports in 2008. One of the most promising features of the tourism sector's strong performance in recent years is that growth in arrivals is greatest in DCs. In many small DCs and LDCs, tourism dominates their services exports. In over 150 countries, tourism is among the five top-export earners, and in 60 countries it accounts for the number one export. It is the main source of foreign exchange for one-third of DCs and for one-half of foreign exchange of LDCs, accounting for up to 40 per cent of GDP. Although this is the sector with most commitments in the Uruguay Round, many barriers exist, such as: limitations on foreign capital thresholds; discrimination against foreign franchises; lack of means to facilitate temporary entry of skilled personnel; procedures used for formulating and administering travel warnings; and anti-competitive practices (including abuse of market dominance, and discriminatory use of information networks). This sector has attracted relatively more offers in the Doha Round and improvements have been offered by some Members. Nevertheless, additional efforts are required to address existing barriers requested for removal by DCs.

While most favoured nation treatment (MFN) is considered to be the fundamental principle and pillar of the multilateral trading system, few initial offers and revised offers indicate that countries are abandoning MFN exemptions. S meagre 10 per cent of the over 400 existing MFN exemptions have been offered to be removed. There are worries regarding a substantial number of MFN exemptions to be maintained at the end of the Round. This can be cause for concern as the impact of the exemptions has not yet been assessed and potential negative repercussions on DCs deflected. Finally, in the cover pages to their offers certain WTO Members refer to the notion of reciprocity.

Most DCs are still at the early stage of services development and their domestic supply and export capacity require development through proactive government policies. While the GATS request-offer process naturally builds upon bargaining and exchange processes, flexibility should be maintained for DCs and reciprocity should not be requested of them. The exemption of LDCs from making liberalization commitments in the Doha Round not only relieves them from such burdensome requests and offer negotiating process, it also ensures that they will have more autonomy in regulating and developing their services sectors in line with their own situation and needs.

Autonomous domestic reforms

Domestic measures to develop the local services industry, (though they can be elaborated before liberalization of trade in services by themselves)

may have widespread impact on liberalization once it occurs. Indeed, measures that will affect such elements as the domestic competitive environment, access to finance and development of skills and know-how will, at a later stage, impact positively or hinder the ability of domestic services and services suppliers to compete in international markets. The advantage of such domestic policies, as of autonomous liberalization, is that they can pass through a stage of regulatory and institutional experimental trial and error and can ultimately be reversed if authorities realize that intended results are not being achieved.

The choice of reform policies for services sector ranges from preserving the role of the government in the provision of services, and more particularly those with public goods characteristics, to full privatization and liberalization of the sector. All these may be viable, or not depending on the prevailing economic and social conditions in a country and in international markets.

Regional trade agreements

While domestic choices and domestic environment are crucial in allowing countries to reap the benefits of trade in services, the different regional or international regimes for the liberalization on trade and services are also key enabling environments for a DCs' successful integration into the world economy. The most interesting among alternative regimes is possibly that of regional trade agreements (RTAs).[38] The last years have seen a proliferation of RTAs covering trade in services. Some agreements are signed only among developed or DCs, while others have a combination of signatories. Some of these agreements follow the GATS approach toward market opening (the positive-list hybrid approach)[39] while others use the North American Free Trade Agreement- (NAFTA) inspired negative-list approach.[40] Similarly, with regard to content, they either represent standstill commitments (which is closer to what the GATS model described earlier) or real liberalization. In terms of the substantive provisions, some RTAs simply mirror the GATS (with respect to domestic regulation or recognition issues), others go beyond it (so-called GATS plus agreements, with respect to a priori transparency.[41] Also, some RTAs exist that fall short of relevant GATS provisions (parts of NAFTA-type agreements, excluding the local level from the coverage of the agreements).[42]

Multiple negotiating processes have resulted in an increasingly complex and overlapping network of rules, where obligations differ in various aspects. Multi-layered rules have posed immense challenges to the administration capacity of DCs participating in various RTAs. Therefore, it is difficult to assess whether regional agreements go beyond the multilateral trading system in achieving the integration of DCs in the global services economy (even though in the case of North-South RTAs, the liberalization envisaged is possibly deeper and faster than the one achieved at the multilateral level).

Where RTA negotiations follow a negative list approach towards liberalization, they tend to result in DCs binding their market opening at a stage more liberal than their multilateral commitments under GATS. Such far-reaching commitments may not always positively impact on DCs' integration in the international trade in services, particularly if they are negotiated in asymmetrical conditions, e.g. between a Northern country and a South- South regional grouping, with the latter not having completed its own integration process. In fact, such circumstances could impede South-South trade from growing, as it may be overtaken by the respective North-South imports. Thus, questions whether, how, and with whom to pursue services liberalization in a regional context, are crucial. They need to be taken carefully, and on the basis of the countries specific, economic, social and developmental situation and objectives. A step-by-step approach beginning with South-South regional liberalization before moving to the multilateral arena may allow for more sustainable introduction of the domestic industry to foreign competition.

On a more positive note, DCs may also use RTAs proactively – with a view to furthering their developmental objectives. For example, for RTAs among a smaller subset of countries, more headway on certain issues of developmental importance is possible than for negotiations at the multilateral level, where convergence is slower in materializing. Certain aspects of regulatory coordination and harmonization are a point in case. In the case of the Andean Community for example, certain regulations concerning transport, financial, and telecommunications services are being harmonized. In other areas, RTAs might also allow for lessons to be learnt for the multilateral trading system. The movement of natural persons might serve as an example.[43] For instance, several regional agreements, including the Caribbean Community (CARICOM)[44]

Box 6: SADC negotiations for a RTA on trade in services

The Southern African Development Community (SADC) negotiations, as contained in the Maseru Ministerial Declaration adopted in June 2000 follow a three-track implementation plan utilizing the GATS-Plus approach, SADC approach and the consolidation of the two approaches to develop a regional negotiating strategy. The following services sectors are earmarked for liberalization commitments: communications; transport; financial; tourism; construction; and energy.

Under the GATS-Plus approach, sectors subject to commitments at the WTO level become the starting point of negotiations. The main advantage with this approach is that negotiators will be able to rely on experience they have already acquired under the GATS negotiations and to utilize the GATS guidelines and procedures, where appropriate. The SADC approach involves the analysis and implementation of work already undertaken by the relevant SADC sector coordinating units dealing with services sectors. This also entails the involvement of all stakeholders in the negotiations so that the necessary expertise and particularities of a sector or country are taken into consideration during the negotiations. The consolidation of these two approaches, GATS-Plus and SADC, leads to the identification of the progress already achieved and the level of binding commitments at the WTO of the countries in the region. The level of work already undertaken, at the national, regional and multilateral level, can subsequently be used as the basis for regional negotiations and decisions then taken at the regional level will act as a means for developing proposals, requests or offers for the multilateral negotiations.

To initiate discussions and make comparable assessments between Member States, data on laws and regulations affecting trade in services at the national level have been collected and recorded in an agreed template format. The templates basically give the status quo of the sector and serve as the basis for negotiations. Member States will also utilize templates in developing their schedules of commitments. SADC Member States have agreed to the elements for an annex to the trade protocol on trade in services. The annex serves as the framework for liberalizing trade in services at the SADC level. The ultimate aim of the liberalization process is that each Member State will treat the services emanating from other Member States, and the suppliers of such services, in the same way as its own services suppliers, and the services they supply.[46]

and NAFTA[45] have achieved more liberalization in the movement of natural persons than under GATS. Indeed, to date, GATS-like liberalization of trade in services through Mode 4 has not led to commercially meaningful commitments for movement of DC service providers. These examples are illustrative of how RTAs may in some cases achieve a better integration of DCs than that of the multilateral trading system. Thus, RTAs, including North-South RTAs, can be helpful insofar as they are pursued with clear developmental objectives. Moreover, they may result in the negotiation of operational, development oriented obligations and cooperation mechanisms to build services supply capacity, particularly in infrastructure services.[47] Another advantage is that RTA negotiations can provide negotiating countries with a reason to undertake an overall and comprehensive assessment of the condition of their services trade, their regulatory environment as well as their sectoral performance. Ultimately, information obtained through this process can also feed into the countries' negotiating positions in the GATS negotiations. Finally, South-South RTAs can enhance cooperation and collaboration amongst DCs. Such cooperation can span a wide array of forms, ranging from cooperation between services regulators, to broader forms of cooperation, including for infrastructure, competition or trade-facilitation related purposes.

This section endeavoured to show that in many respects it is possible to envisage going beyond what GATS provides for, particularly when seeking to achieve meaningful liberalization of trade in services with a view to achieving better integration of DCs in the global services economy, including through alternative trade negotiating fora. It nonetheless makes sense to seek to improve the results of liberalization achieved in the multilateral trading system by influencing the domestic environment in which such liberalization will take place. This can be achieved (as indicated previously) prior to liberalization measures or at the same time, including through adequate flanking policies which ensure that liberalization leads not only to economic growth but also allows for the kind of results called for in the Millennium Declaration and São Paulo Consensus.

In addition to flanking policies and reform policies in the services sector, measures could also be put in place in the GATS or broader WTO context. There is some concern that the current developmental aspects of the GATS, as in other WTO agreements, are not leading to expected results. With this in mind the follow

Box 7: ACP-EU economic partnership agreements (EPAs)

The Cotonou Agreement (2000) between ACP countries and the EU which replaces the Lomé Convention establishes a comprehensive framework for ACP-EU relations. Among the objectives at the heart of the Agreement are: economic development; the reduction and eradication of poverty; and the smooth and gradual integration of ACP States into the world economy. One means for achieving these objectives will come from the conclusion between groups of ACP countries and the EU of WTO-compatible trading arrangements. The EPA negotiations should also contribute to capacity building, including measures to enhance competitiveness, strengthen regional integration and upgrade infrastructure. An EPA should build upon and strengthen the regional integration process and complement and support national strategies, policies of adjustment and structural transformation. While there is no firm obligation under the Cotonou Agreement to liberalize trade in services, Parties have agreed on the objective of extending their partnership to encompass liberalization of services (Article 41(4)). Services liberalization should be progressive, in principle based on the positive-list approach, and adapted to the level of development of ACP countries and regions concerned both in overall terms and in terms of their services sectors and sub-sectors and to their specific constraints. They should also be underpinned by the principles of special and differential treatment (SDT), asymmetry and positive regional discrimination. Given the importance of a sound regulatory framework, it is agreed that Parties would retain the right to regulate, and to introduce new regulations on the supply of services within their territories in order to meet national policy objectives.

The Economic Partnership Agreement (2008) between the Caribbean Forum of ACP States (CARIFORUM) and European Community provides improved rules for the temporary movement of natural persons (Mode 4). It categorizes services providers accessing the other Party's market by length of stay allowed, skill levels, and according to their link to a legal entity or self-employment. Economic partnership agreements under Mode 4 commitments are strengthened by rules, cooperation, and dialogue on tourism, "infrastructure" services, such as telecommunications and maritime transport, and e-commerce.

In addition, the European Commission made WTO-Plus market access commitments on contractual service suppliers (CSS) in 29 services sub-sectors. Of the 29 commitments for CSS, 22 activities have no restriction on market access, national treatment, or economic needs tests.[48]

While governments in the region implement the relevant legislative instruments, business must increase export capabilities and ensure that service suppliers are eligible for entry under the EPA.

section reviews existing developmental provisions of the GATS. Discussion is centred on current attempts being carried out in the Committee on Trade and Development to render certain SDT provisions of the GATS more effective and operational, as well as the pros and cons of this approach. Finally, suggestions are made for developmental provisions that could be included in new negotiating areas under the GATS.

5. IMPROVING THE GATS REGIME

The section examines whether the GATS Agreement allows countries to fully benefit from opportunities offered by participation in the global services economy and if the Agreement is in need of improvement. As indicated earlier, one of the main questions in this context is whether the Agreement preserves the fundamental rights of DCs to regulate their services economy and whether it allows them to put in place relevant domestic regulations pertaining to liberalization of trade in services and development. In order to answer this question, main obligations of the GATS that could affect policy flexibility of the GATS are discussed. Given the bottom-up nature of the GATS, the more constraining obligations are not the general obligations which cover such elements as most-favoured nation treatment and transparency but rather the specific commitments on market access, national treatment and additional commitments.

Articles XVI, XVII and XVIII as constraints to policy flexibility?

Articles XVI (Market Access) and XVII (National Treatment) provides for the obligations that WTO Members should assume vis-à-vis foreign services and services suppliers, in specific sectors, sub-sectors, and modes inscribed in their schedules. Such obligations could raise problems as concerns countries' policy flexibility.[49] More specifically, Article XVI prevents Members from imposing a number of limitations on market access granted to foreign

services and services suppliers, unless these are specified in the schedule of commitments. The Article provides the following lists of prohibited measures: limitations on the number of service suppliers; limitations on the total value of service transactions or assets; limitations on the total number of service operations or on the total quantity of service output; limitations on the total number of natural persons that may be employed in a particular service sector; measures which restrict or require specific types of legal entity or joint venture through which a service supplier may supply a service; and limitations on the participation of foreign capital.

Article XVII does not provide a specific list of prohibited measures but indicates that "in the sectors inscribed in its Schedule, and subject to any conditions and qualifications set out therein, each Member shall accord to services and service suppliers of any other Member, *in respect of all measures affecting the supply of services*, treatment no less favourable than that it accords to its own like services and service suppliers."(Emphasis added).

WTO Members retain the largest policy flexibility when they take no specific commitments in a given sector. When they do decide to take commitments under Articles XVI, XVII and XVIII they can still retain flexibility by putting limitations and conditions to their commitments. However, this requires that countries have a good understanding not only of the measures that they are currently implementing but also insight on the measures that they may wish to impose in the future.

A recent dispute settlement case relating to services exemplified the type of constraints that can bear on Members' policy flexibility on the basis of the provisions for specific commitments. In the United States gambling case[50] the exact scope of Article XVI was interpreted by the Appellate Body (AB). Indeed, in assessing whether the United States regulation banning internet gambling was a prohibited measure under Article XVI.2 the AB ruled that the prohibition in Paragraph (a) of the Article of Numerical Quotas should be understood to include any restriction that has the effect of a quota. Similarly, the limitation on the total number of services operations or on the total quantity of services output in Paragraph (c) prohibits Members from applying measures that results in a zero quota. This interpretation substantively expands the scope of Article XVI which was previously considered as relatively straightforward since it provides a list of the prohibited market access restrictions. The Article must now be viewed as more complex and as covering not only quantitative restrictions per se, but also substantive and qualitative restrictions.[51]

This ruling seems to indicate that other measures covered by Article XVI could also be interpreted in such a broad manner. Therefore, WTO Members should review their domestic legislation to assess whether they are maintaining measures that have the effect of the prohibited measures listed by Article XVI. The case also highlights once again the need for careful drafting of schedules of specific commitments.

It is possible to consider that the interpretation of Article XVII could lead to similarly broad interpretations by a panel or the AB given the similarity in the structure of the two articles (both indicate what measures Members may not maintain unless specified in their schedules). Article XVII may even be more difficult to implement given that it does not provide a list of the prohibited measures.

In the Mexico-Telecom case[52] several of the issues that the panel had to take a decision on were linked to Article XVIII (Additional Commitments) as they dealt with obligations that Mexico was said to have taken under the Reference Paper on Telecommunications. The panel's finding that Mexico had failed to fulfil its commitments under the Reference Paper highlights that even where Members accept to take part of, or all of the additional undertakings of the Reference Paper on a voluntary basis,[53] it may still be relatively difficult for them to ensure that their domestic regulation will be found to be in compliance with these obligations. For example, the panel found that actions by services suppliers that were required by Mexico's Federal Telecommunications Commission were inconsistent with that country's GATS commitments under the Reference Paper. It seems unlikely that Mexico would have taken additional commitments if it had not intended to abide by them. This illustrates the fact that countries may not always realize, when taking on commitments, the extent to which these will limit their future policy options.

The case also underscores the need for countries taking commitments to have sufficient foresight on the type of policies that they may wish to take in the future. Indeed, Mexico tried to justify imposing higher interconnection rates on foreign services suppliers in order to strengthen its domestic infrastructure and services capacity. This is indeed provided for by Paragraph 5(g) of the annex on Telecommunications

– "a developing country Member may, consistent with its level of development, place reasonable conditions on access to and use of public telecommunications transport networks and services necessary to strengthen its domestic telecommunications infrastructure and service capacity and to increase its participation in international trade in telecommunications services." However, for this option to remain available, WTO Members must schedule conditions to the commitments. The annex adds that "such conditions shall be specified in the Member's Schedule", which Mexico had not done, forgoing in this manner any opportunity to use this possibility in the future.[54]

Capital account management, control and financial liberalization commitments under GATS

The financial crisis originated in developed countries in late 2008 due to financial regulatory failure was transmitted to DCs through cross-border movement of capital, adversely impacting their economic and social development. This fact points to the importance of having facility for DCs to regulate cross-border movement of short term capital. Capital account management can be effective for them to weather such crisis, especially when combined with prudential regulation of financial intermediaries. However, certain types of financial liberalization commitments under GATS may make it difficult to exercise such control. Article XI.2 of GATS requires that a WTO Member "shall not impose restrictions on any capital transactions inconsistently with its specific commitments regarding such transactions", except for balance of payments reasons. Footnote 8 to Article XVI adds that Members are obliged to permit capital to flow freely to the extent that such capital movement is "essential" for cross-border supply of a financial service or "related" to the services provided through commercial presence. This implies that Members having undertaken financial liberalization commitments under Mode 1 and Mode 3 are required to simultaneously open their capital account, although they are not required to entirely open their capital account. In other words, if a country makes a commitment to liberalize trade in a particular financial service in the GATS, "it is also making a commitment to liberalize most capital movements associated with the trade liberalization commitment."[55] Examples of some financial services supplied across border are: acceptance of deposits; lending; and trading in securities.

The strength of the link between financial liberalization commitments and liberalization of capital movement seems to be determined by definitions of "essential" and "related" capital flows under Mode 1 and Mode 3. However, GATS does not contain their definitions. In the absence of such definitions in the GATS itself, they remain to be clarified through future dispute settlement cases. For countries who have made financial liberalization commitments under Mode 1 and Mode 3, the only possibilities for them to use capital account management and control is to invoke prudential carve-out or balance of payments difficulties. In either case, certain criteria must be met. Thus, in order to preserve flexibilities for use in the future, coherence between trade negotiators and financial regulators are important in making commitments on financial liberalization under GATS.

The permanent nature of GATS commitments

Another challenging element for WTO Members is that their GATS commitments are quasi irreversible. GATS Article XXI provides the conditions and the mechanisms for the modification and withdrawal of Members' scheduled commitments. To date, only three WTO Members (EU, United States and Bolivia) have initiated such a procedure. The EU invoked this procedure in order to harmonize the commitments of the recently acceded States to the community's commitments. The United States decided to withdraw gambling services from its schedule of commitments after losing the case brought against it by Antigua and Barbuda. Bolivia requested to withdraw the previous Government's commitment to open up its hospitals and health care sector to foreign corporations. It can nonetheless be questioned whether more flexibility would not be needed in the case where a Member realizes that its scheduling does not allow for it to maintain all the measures that it deems necessary to reach its policy objectives. A solution that could be considered is to have commitments (possibly in the most sensitive sectors of a Member's offer) first go through an initial 'trial phase' of five years (until the following negotiating round) and then either be confirmed or suspended (this would be a one-time opportunity for Members to do this). This solution would need to be carefully considered, including determining what would need to be done in the case of Mode 3 commitments where foreign enterprises had already established their presence in the domestic market. The situation of these firms could be considered separately from that of firms located

in other countries which would not face the same losses in terms of investments (by the grandfathering of those firms already present in the market).[56]

The difficulties arising from the lock-in nature of the commitments also evolve from fast technological changes that can occur in the area of services and notably in the manner in which they are delivered. This may point to the need for flexibility in modifying commitments in light of technological change. Since the Uruguay Round negotiations, trade in services actually taking place through Mode 1 has certainly grown to levels that are in no way reflected by Members' levels of commitments. Development of telecommunications networks, advances in information technology and the advent of electronic commerce have all contributed to a dynamic new environment for trade in services which has led to a boost in trade, including in sectors where commitments were previously considered technically infeasible.

Some WTO Members consider that the principle of technological neutrality is sufficient to deal with this issue and GATS jurisprudence has adopted a liberal pro-trade stance in dealing with this issue. In the gambling case between United States and Antigua and Barbuda, both the panel and AB concluded that cross-border on-line gambling services were covered by the United States commitments as United States did not explicitly exclude this type of delivery means. In the United States vs. China case on audio-visual products, the same interpretation was repeated.[57] In both cases, the panels and AB appear to have expanded interpretations of scheduled commitments in a way not envisaged by Members. Indeed, Members developed an understanding on this principle during the telecommunications negotiations held subsequent to the Uruguay Round which basically imply that a commitment (in basic telecoms) applies regardless of the means used to supply that service or the form in which it is supplied – unless specified in the commitment that it only covers a particular means or form of supply. However, there is no agreement between Members on whether this principle can be applied to their Uruguay Round commitments or any new commitments or whether this should be the case for any sectors other than basic telecommunication services. Indeed, the point could be made that the understanding reached in the context of basic telecommunications does not have a binding legal status and should not be confused with application of such a concept to all GATS commitments in all sectors, past and future. Such automatic extension of commitments is not necessarily in line with the notion of progressive liberalization and the positive list approach at the heart of the GATS. Moreover, it may even be detrimental if technological innovations led to opportunities for DCs to develop certain new domestic services industries – process for which certain policy flexibility may be necessary. It could be preferable to have a review mechanism that could be initiated between rounds when Members feel that technological changes warrant a re-listing or extension of GATS commitments

The fact that modifying commitments seems almost impossible may lead countries wishing to retain policy

Box 8: The development provisions of the GATS

The different development provisions of the GATS respectively:

- State that liberalization of trade in services should aim to achieve the development of DCs;
- Recognize the right of Members, and particularly DCs, to regulate, and to introduce new regulations, on the supply of services within their territories;
- Call on the facilitation of the increasing participation of DCs in trade in services and the expansion of their service exports including, inter alia, through the strengthening of their domestic services capacity and its efficiency and competitiveness;
- Call for liberalization in priority in sectors and modes of interest to DCs;
- Request that special priority be given to the least-developed country Members;
- Indicate that the process of liberalization should take place with due respect for national policy objectives and the level of development of individual Members, with appropriate flexibility for individual developing country Members; and
- Provide for technical assistance to DCs, including by making available information on recent developments in ICT and assisting in transfer of technology, training and other activities.

Box 9: Modalities for the special treatment for LDC members in the services negotiations

The main elements of development flexibility included in the Modalities can be summarized as follows:

- Particular account shall be taken of the serious difficulty of LDCs in undertaking negotiated specific commitments;
- LDCs are facing serious difficulty in addressing a number of complex issues simultaneously, and lack institutional and human capacities to analyse and respond to offers and requests – this should be factored into the negotiating process;
- Members shall exercise restraint in seeking commitments from LDCs, they shall generally not seek the removal of conditions which LDCs may attach when making access to their markets available to foreign services;
- There shall be flexibility for LDCs for opening fewer sectors, liberalizing fewer types of transactions, and progressively extending market access in line with their development situation. Least developed countries shall not be expected to offer full national treatment, nor are they expected to undertake additional commitments under Article XVIII of the GATS on regulatory issues which may go beyond their institutional, regulatory, and administrative capacities;
- Members shall give special priority to providing effective market access in sectors and modes of supply of export interest to LDCs, through negotiated specific commitments;
- Members shall take measures, in accordance with their individual capacities, aimed at increasing the participation of LDCs in trade in services. Such measures could include: i) strengthening programs to promote investment in LDCs; ii) reinforcing export/import promotion programs; iii) promoting the development of LDCs' infrastructure and services exports through training, technology transfer, enterprise level actions and schemes, intergovernmental cooperation programs, and where feasible, financial resources; and iv) improving the access of LDCs' services and service suppliers to distribution channels and information networks, especially in sectors and modes of supply of interest to LDCs;
- LDCs have indicated that Mode 4 is one of the most important means of supplying services. Members shall, to the extent possible, consider undertaking commitments to provide access in Mode 4, taking into account all categories of natural persons identified by LDCs in their requests;
- LDCs shall be granted appropriate credit for their autonomous trade liberalization. In addition, Members shall refrain from requesting credits from LDCs;
- In developing any multilateral rules and disciplines, Members shall take into account the specific interests and difficulties of LDCs;
- Targeted and coordinated technical assistance and capacity building programmes shall continue to be provided to LDCs. Technical assistance shall also be provided to LDCs to carry out national assessments of trade in services.

It is important that LDCs and other WTO Members ensure that they are effectively being implemented. Regular reporting on the implementation of the modalities to the Special Session of the Council for Trade in Services (CTS) could be one means of ensuring that they do not remain simply words on paper but actually contribute to the strengthening of the weakest Members of the multilateral trading system.

flexibility in specific areas to take no or very limited specific commitments. The question can be raised as to whether or not it would be preferable to allow for certain flexibility to delist or re-list commitments rather than to oblige them to adopt such cautious position.

Implementing and improving GATS provisions for development

While the above may be the more constraining Articles of the Agreement, other GATS Articles were included with the specific intention of favouring DCs. These include the GATS Preamble and Articles IV (Increasing Participation of Developing Countries), XIX (Negotiation of Specific Commitments), Article XXV (Technical Cooperation) and other provisions providing for technical cooperation such as the annex on Telecommunications.

Negotiating documents for this current Round have also been drafted with the inclusion of developmental elements. The Guidelines and Procedures for the Negotiations on Trade in Services (the "Negotiating Guidelines") begin by recalling the main developmental provisions of the GATS. Nevertheless, these guidelines also provide, that to ensure the effective implementation of Articles IV and XIX.2, the Council for Trade in Services in Special Session, when

reviewing progress in negotiations, shall consider the extent to which Article IV is being implemented and suggest ways and means of promoting the goals established therein. The Negotiating Guidelines also introduce concrete elements to address DCs constraints – the requirement for the needs of smaller delegations to be taken into account, for example through the scheduling of meetings in sequence rather than in parallel. Finally, the Modalities for the Special Treatment for Least Developed Countries similarly provide specific elements for the treatment of LDCs.

While these provisions and guidelines are very important, they may remain good intentions unless DCs regularly monitor their implementation by WTO Members. One way to successfully monitor implementation and contribute to the review of negotiations would be through the use of benchmarks. Indeed, additional trade and development benchmarks could be elaborated in the context of the services negotiations in order to assess how effectively negotiations are contributing to DCs' integration in the international trading system and the benefits that they are deriving from negotiations. The benchmarks could attempt to measure the negotiations' expected contribution to: i) the development of DCs supply capacity and competitiveness; ii) Developing countries' increasing share in world services trade; iii) the openness international markets to developing country exports and the openness of DC markets to foreign imports; iv) the reduction of poverty and gender inequality; and v) contribution to other sustainable development objectives, including employment generation, skills development, technological innovation, and improved use of environmental resources. Additionally, improving existing measures for development flexibility – where their implementation has proven unsatisfactory in the past – is one possibility for achieving the increased participation of DCs in world trade in services. Finally, it may also be useful to consider including developmental elements in new areas, currently still under negotiations. These could touch upon areas of market access (and the recognition of qualifications necessary to make such access commercially meaningful), domestic regulation, safeguard measures, and disciplines for subsidies. These latter two approaches will be discussed in more detail.

When seeking to favour the increased participation of DCs in the global services economy, progress can be sought with respect to the operation of provisions providing for different treatment for DCs and LDCs. The GATS, similar to other WTO agreements, contains development-related flexibilities in favour of DCs. However, as with many of the other SDT provisions under WTO agreements, countries have raised concerns that the provisions do not necessarily lead to desired results. The Doha Work Programme includes a mandate for WTO Members to review all SDT provisions with a view to strengthening them and making them more precise, effective and operational. More specifically, the Doha Declaration,

Box 10: Improving the development-related provisions of the GATS

The following are among the mechanisms that could be envisaged to make development-related provisions of the GATS more effective:

i) The setting of benchmarks on financial and technical cooperation and other arrangements in favour of DCs;

ii) Notifications by developed country Members regarding how they are contributing to the objectives enshrined in the developmental provisions, of the GATS;

iii) Monitoring by the CTS and possibly the CTD as to whether the provisions are leading to the desired outcomes;

iv) Effect market access, including through quotas or preferential access, for DC and LDC services suppliers (particularly in Mode 4 and Mode 1); and

iv) The inclusion of developmental provisions in the new GATS rules to be developed (for domestic regulation, safeguards and subsidies).

In any event, of importance is whatever provisions are finally adopted, they be targeted to address the interests and constraints of DCs, commensurate with their level of development, regulatory and institutional preparedness, and drafted in clear and enforceable language.

in conjunction with the Decision on Implementation-Related Issues and Concerns, mandates the Committee on Trade and Development to identify which of those SDT provisions are mandatory, and to consider the implications of making mandatory those which are currently non-binding. This mandate is being carried out by the Committee on Trade and Development (CTD) in special sessions, although part of the work has also been passed on to relevant WTO bodies (the CTS in the case of the proposals relating to services).[58] The "July Framework" adopted by the WTO General Council in 2004 provided that the CTS would come forth with recommendations on specific proposals by July 2005. The timeline was not met and there has been little discussion on this issue in the services negotiations since then.

Proposals on SDT under GATS that were submitted principally dealt with GATS Articles VI and V and market access for DCs and LDCs.[59] The proposals strive to render developmental aspects of the GATS more precise, effective and operational. For example, The African Group submitted a proposal for the development of periodic benchmarks for financial and technical cooperation by developed country Members designed to achieve the objectives of Article IV. Developed country Members would also be obliged to report twice yearly on their level of compliance to targets set out by the Committee on Trade and Development for the operationalization of Article IV. The African Group also suggested that developed country Members reserve quotas for the supply of services by DC suppliers and also suggested that developed countries not adopt horizontal limitation with respect to the movement of natural persons from DCs. The group of LDC WTO Members also put forth a proposal for multilaterally agreed criteria to be established for giving priority to LDC under Article IV.3 as well as a timeline for developing further disciplines and obligations under the Agreement.[60]

While efforts to make existing provisions precise, effective and operational are a worthy endeavour, the question nevertheless remains whether the current GATS framework is sufficient for embracing a broader developmental approach which goes beyond the objective of increasing DCs' participation in trade in services toward taking into account social, environmental and human welfare factors. Since the existing GATS framework could be construes as still falling short of addressing all dimensions of development, it may be useful to assess whether new developmental provisions could be introduced in the course of current negotiations with a view to assist DCs integrating successfully into the global economy and reaping greater benefits from globalization. The following are some, but by no means exhaustive, suggestions of areas where improvements could be sought.

Preferential measures in favour of DCs

More effort needs to be devoted toward devising methods in which developed countries can provide preferential treatment to DCs under the various regimes for services liberalization. Among the envisaged mechanisms at the multilateral level are the following: i) within market access quotas, preferential allocation for services and service suppliers of DCs; ii) special provisions in developed countries' procurement regimes according preference to DCs' services suppliers (including to their small- and medium-sized suppliers); iii) support for regulatory development and institution building (including through financing, technical assistance, information exchange and partnership between institutions and other collaborative projects at government and association level); iv) elimination of ENTs vis-à-vis services and services suppliers of DCs; and v) assistance to DCs services suppliers for meeting the various (visa, language and other) requirements for supplying services in their markets.

Least developed countries have proposed for a MFN waiver in order to allow non-LDC Members to "give special priority to providing effective market access in sectors and modes of supply of export interest to LDCs" provided for in Article IV and in the LDC modalities. This waiver will permit non-LDC Members to grant preferential market access to LDCs without extending the same treatment to other Members. Such preference is expected to facilitate effective access of services and services suppliers from LDCs to foreign markets, including Mode 4 (which is identified to be the major export interest of LDCs in the Doha Round). Similar consideration could also be given to DCs' request for preferential market access so as to increase their participation in international trade in services.

It is important to note that there may be even more scope for preferential treatment for DCs and LDCs at the regional level. For example, in the context of the EU-ACP EPAs preferential treatment could be granted to the various groups of countries negotiating with the

EU. In the context of services more specifically, it is envisaged that the EU would be in a position to provide preferential treatment more readily to these groups of countries rather than make GATS commitments that will be multilateral to all WTO Members. Among the specific areas where such preferential treatment could be granted are: market access in various sensitive services sectors; increased liberalization and specific quotas for supply of services through Mode 4; and facilitation of the recognition of qualifications of service suppliers from DCs.

Introducing policy flexibility in the future disciplines on domestic regulation

Though in some cases, obligations Members accept to undertake are clear, (as shown previously) in other situations the exact scope of obligations are not well defined. The fact that GATS is still a relatively new agreement and that many provisions have not been tested, may make some countries fear that taking binding commitments will prevent them from adopting policies that they feel are necessary for their development. Moreover, the GATS negotiations in certain areas may reduce governments' policy space further.

Among the areas currently under negotiation where such concerns may be particularly relevant are in negotiations for disciplines on domestic regulations according to GATS Article VI.4. Article VI.4 mandates the development of necessary disciplines to ensure measures relating to qualification requirements and procedures, technical standards and licensing requirements and procedures do not constitute unnecessary barriers to trade in services. In pursuing this mandate, one objective of WTO Members could be to ensure that DCs' export interests are not hindered by overly burdensome qualification and licensing requirements and procedures as well as technical standards. Given DCs export potential under Mode 4, questions relating to where and how effectively visa issues are dealt with are particularly important. For example, some DCs have had negative experiences with administrative procedures for obtaining visas and entry permits. They are thus determine to ascertain to what extent disciplines under Article VI.4 could help address and overcome these difficulties,[61] or to ascertain what alternatives exist – transparency being one such option (in the case of professionals as service providers, making readily available in a consolidated form, information on all measures pertaining to the movement of natural persons).

Whatever the form of disciplines adopted, DCs need to take into account asymmetry in regulation and institution development between them and more developed countries. The right to regulate is of particular importance for DCs, as many of them do not yet have an optimal regulatory and institutional framework in place. Thus, DCs must ensure that any possible future disciplines do not prejudge their flexibility to undertake regulatory and institutional reform or their ability to meet public policy objectives. Financial regulatory failure leading to the global crisis, unprecedented in the post-World War II period and the proposed regulatory reform agenda in G20, indicate the paramount importance of adequate regulatory autonomy to effectively respond to evolving economic and social needs. Specific consideration may need to be given to DCs' need for flexibility and ways of implementation (regarding concepts of transparency, less trade restrictiveness, or national policy objectives currently in discussion under the Article VI.4 mandate) and technical assistance in the context of regulatory reform. Ultimately, to maximize developmental gains, future disciplines on domestic regulation should facilitate DC exports, particularly through mouvement of natural persons.

Emergency safeguard mechanism, subsidies and government procurement as instruments for preserving policy space

Another area where the importance of preserving policy space appears clearly is in negotiations for an emergency safeguard mechanism. Indeed, discussions on an emergency safeguard mechanism (ESM) draw attention to the need for countries to preserve the flexibility and the possibility of implementing measures to address adjustment costs of liberalization. Major changes that often accompany trade liberalization call for governments to monitor, re-evaluate, and sometimes re-regulate sectors in function of evolving market realities. The same realities that justify the need for an emergency safeguard mechanism (difficulty in predicting impact of liberalization commitments, sector prone to unforeseen developments) account for the need for policy space. The adoption of an emergency safeguard mechanism, possibly in addition to the introduction of other measures, could contribute to embrace liberalization and its gains with the assurance that they will be able to adjust to changes brought about by liberalization in a satisfactory manner. Negotiations on possible ESM have been identified as areas of

developmental importance, albeit characterized by lack of consensus on the key issues of the desirability and feasibility of such measures. There are several grounds on which to justify ESM in services.

The nature of services trade renders it prone to developments which may not have been foreseen by governments in conducting liberalization commitments, and a safety belt could assist countries in their liberalization efforts. It could also help address adjustment costs and losses due to liberalization and reform (unemployment) within a particular window of time. Such safeguard mechanisms could generally be considered a favourable element for DCs. Measures to be taken could include such considerations as the subsidization of affected sectors or the imposition of quantitative restrictions. Moreover, ESMs could contain SDT provisions for DCs, among other things with a view to preventing the number of suppliers from DCs from decreasing below a certain level or average level from a recent representative period if a quantitative restriction is imposed on Mode 4 suppliers or by granting the right to seek an extension of an ESM application period only to DCs. Nonetheless, a number of concerns would remain which would be in need of addressing such as: fear of abuse; the fact that Mode 4 is possibly the easiest target; and the risk of creating an overly burdensome mechanism.

Subsidies have been used and are still being used to achieve economic, social or environmental objectives. Many governments subsidize services sectors such as air, maritime, public railway transport, telecommunications, utilities, (water and electricity) and public-good-type services (education and health).[62] There are 107 Members extending subsidies to transport (of which 32 subsidize maritime, 22 air transport and 16 road transport). Forty-nine Members extend subsidies to financial services, 28 Members to telecommunication services, and 22 Members to energy services.[63] During the crisis, the hardest affected countries extended massive subsidies to their financial services sector.

Studies have found evidence that in many cases countries provide export support to services suppliers (companies and natural persons).[64] Export support in services is either granted in general to all services exports, or is granted to some specific services.[65] Many countries extend support measures available for trade in goods to services activities, and also implement particular programmes to support services exports.[66] Available figures confirm that the amount of aid provided is far from negligible.[67] Such subsidies to services industries can have a detrimental effect on international trade, in particular to DC exports. Negotiating disciplines to address trade-distortive effects of subsidies, mandated by Article XV of the GATS, could result in a more favourable situation for DCs. Unfortunately, negotiations have for now not moved beyond the exchange of information, principally in relation to examples of services-related State-support measures. Few countries have provided information to the WTO. In order to further the work in this area Members were called upon to provide information on their services subsidies by the end of August 2010, but as of the publication of the publication not a single Member has done so. The lack of a definition of services subsidies has been said to pose difficulty in information exchange. However, the genuine reason seems to be a lack of interest from Members to discipline subsidies in services, including export subsidies.

Discussions have also relied largely on information contained in trade policy reviews. The preliminary discussions on definitions and principles, have sought to draw on the Agreement on Subsidies and Countervailing Measures and the Agreement on Agriculture, while keeping in mind specificities of services.

Developing countries and developed countries differ in their use of export subsidies, the former tending to rely on a more selective approach and the latter tending to use, among other things, export promotion regimes, export financing and export guarantees.[68] These two groups of countries also differ in their capacity to subsidize. Negotiations on subsidies disciplines must pay attention to the special concerns of DCs, subsidies aimed at building competitiveness in priority service sectors and meeting social and development objectives and the priority removal of trade-distorting subsidies of developed countries. This would contribute to a more equitable and non-discriminatory multilateral trading system. Notification of developed countries' subsidy programmes, including those implemented under regional integration schemes, must be encouraged.

Government procurement is another policy tool widely used. Traditionally governments use "buy national" or domestic preference measures to build supply capacity of local industries and SMEs as well as to pursue such objectives as promotion of disadvantaged community, ethnic groups,

environmental and social protection. In their efforts to mitigate the adverse impact of the recent financial and economic government procurement has become a spotlight in various economic stimulus packages. WTO Members' views remain divergent on the issue of including market access and non-discriminatory (MFN and National Treatment) treatment into the framework of GATS and discussions on government procurement have not led to any convergence of such positions. Given the strategic importance government procurement has proven to have in the economic development history, DCs may need to consider the extent of policy flexibilities they wish to preserve in the negotiations on government procurement under GATS.

Continued need for targeted and effective technical assistance

Devising provisions for development flexibility may not be sufficient as many DCs still face difficulty in implementing trade agreements due to lack of financial, human and technical resources. Flexibilities such as longer time-frames for implementing certain rules must be supplemented with technical and financial assistance to DCs for implementing their commitments, devising appropriate policies for the development of the local services industry and infrastructure, and strengthening their domestic regulatory and institutional frameworks. Capacity building will also be needed for participating in regional and multilateral negotiations as well as in the work of standard-setting organizations.

Increasing substantially aid for trade with effective delivery can help developing countries to build trade-related infrastructures and competitive supply capacities, including at the sectoral level. However, aid for trade currently remains concentrated, with the top ten recipients accounting for 45 per cent of total aid for trade commitments while least developed countries received 25 per cent.

During the negotiations on future disciplines for domestic regulation, several concrete proposals for granting targeted and effective technical assistance to DCs were put forth (in 2006).[69] The following are among some of the proposals:

i) Technical assistance on mutually agreed terms and conditions (credits, grants, training in necessary technical and administrative skills and technology transfer in the form of computer-based administrative functions) regarding the establishment and strengthening of DCs' capacities to regulate the supply of services to meet national policy objectives and implement multilaterally-agreed disciplines on domestic regulation;

ii) Technical assistance on mutually agreed terms and conditions, including comprehensive advice on ways and means, aimed at assisting DC services suppliers meet relevant requirements and procedures in export markets;

iii) Technical assistance to encourage and facilitate active participation of DCs in relevant international standards-setting organizations. Moreover, the operation and implementation of these measures be periodically examined by the Council for Trade in Services.

6. CONCLUSION

Developing a sustainable services sector is vital for all countries. Given its relative resilience, and economic importance, the development of the services sector, particularly infrastructure services, is indispensable for realizing robust economies, higher economic growth and welfare improvement. Infrastructure and other dynamic sectors can contribute to poverty alleviation and human development, thereby furthering the achievement of the Millennium Development Goals (MDGs). Developing country integration in the global services economy, through new export opportunities, needs to be supported and facilitated. Coherence and consistency among trade and other policies implemented at the national, bilateral, regional and multilateral levels by countries are equally important in maximizing contributions of such policies toward development. The economic crisis has challenged prevailing economic orthodoxies and policy prescriptions, and shifted policy focus from a narrow perspective of external balances and price stability to accelerated growth and structural rebalancing, as well as addressing persistent unemployment and growing poverty. This calls for a redefinition of growth strategies, including services-related ones, for all countries.

Preconditions for ensuring development gains include measures aimed at the appropriate sequencing and pace of reform, domestic supply capacity building and increased competitiveness, and universal access

by all, especially the poorest, to essential services.

Services trade can create employment opportunities and promote poverty alleviation and human development. Adopting a participatory multi-stakeholder approach (involving trade negotiators, regulators, legislators, professional associations and civil society) in the formulation of policies and appropriate regulatory frameworks would ensure that particular concerns are taken into account. It must be recognized that regulatory reform entails adjustment costs and necessitates regulatory capacity and institution building, as well as technical assistance.

Assessment of trade in services and policy reform can help DCs improve their national policy frameworks and to negotiate more effectively at the international level. Moreover, knowledge of the economy gained from the assessment exercise would allow tailoring the process of integration into the world economy to the level of economic development of each country and the capacity of its institutions and enterprises. Indeed, experience of DCs reveals that, for positive outcomes to result liberalization must proceed at a constant speed, commensurate with local actors and conditions. Moreover, the regulatory framework and social safety net must be adequate, with a competitive business environment and suitable accompanying policies to ensure that economies enhance capacity to integrate beneficially into the world economy.

From a sustainable development perspective it is important that governments and international organizations keep in mind the wide-range of impacts that can and should be measured in determining the type of assessment to carry out. When deciding to embark on assessment in the context of trade negotiations, governments should not only determine the policy priorities but should also determine the type and manner of impact they deem most crucial to the determination of their negotiating position and future trade policy. They will also have to decide on whom to involve in the process. In order to allow for the broadest range of concerns and interests to be dealt with in the assessment, governments should consider adopting a participatory, multi-stakeholder approach.

Among the possible focuses for assessment are the following:

- Economic and financial impacts;
- Human development and poverty impacts;
- Human rights impacts;
- Health and the health care system impacts;
- Sustainability of the economy impacts;
- Employment impacts; and
- Education and cultural policy impacts.

Finally, a repeated or recurring process may be necessary as opposed to one-time assessment. These options are not mutually exclusive, but rather can be combined to complement each other. The importance of sequencing reforms is well established in theory, but the specific content of this sequencing is less clear, and having a number of benchmarks on how to proceed would facilitate decision-making. It should be recognized that there is no "one size fits all" policy framework, either across services sectors or across countries.

Trade policies of DCs should suit their needs and circumstances, be integrated into broader development policies and aimed at reducing poverty, supporting growth, sustainable development as well as gender equality. In implementing national trade and trade-related policies, DCs must pursue a strategic and appropriately sequenced approach to liberalization after careful analysis and assessment of their domestic services economy.

Overall, DCs should be able to arrive at a point where their participation in world services trade leads to economic gains that outweigh costs (including adjustments costs), accompanied by net social and net environmental gains. The challenge is to elucidate what policy framework should be used for what sectors and under what national and international conditions in order for services to contribute positively in DCs to the three pillars of sustainable development.

Given that development is said to be at the heart of the Doha Work Programme, and in order to implement the MDGs, GATS negotiations should seek to ensure better prospects for DCs in terms of a more balanced and equitable distribution of benefits from trade liberalization. Liberalization in Mode 4 and sectors of particular interest to DCs will be the litmus test in this respect. The review and evaluation of the services negotiations – which shall determine the extent to which Article IV is being implemented – will also prove crucial for assuring development gains.

NOTES

[1] ..World Bank (2010). Global Economic Prospects.

[2] ..DESA (2010). World Economic Situation and Prospects 2010 (WESP 2010).

[3] ..IMF/World Bank (2010). The MDGs after the Crisis.

[4] ..It is important to note that there are marked differences in the development of the services economies of the different DCs. There appears to be trend toward growing concentration of services exports in a few DCs. In 2008, twelve DCs including China, India, The Republic of Korea, Malaysia, Thailand, Mexico, Egypt and Brazil accounted for 73 per cent of service exports of all DCs, compared to 69 per cent in 2004. UNCTAD Handbook of Statistics 2009.

[5] ....See General Assembly Document A/65/L.1 Keeping the Promise: United to Achieve the Millennium Development Goals, adopted by consensus 22 September 2010.

[6] ..UNDP, 2010, What Will It Take to Achieve the Millennium Development Goals? - An International Assessment.

[7] ..Outcome of the eleventh United Nations Conference on Trade and Development, held in São Paulo, Brazil on 13–18 June 2004.

[8] ..Outcome of the twelfth session of the United Nations Conference on Trade and Development, held in Accra, Ghana on 20–25 April 2008.

[9] ..Copenhagen Accord. of 18 December 2009.

[10] .UNCTAD Handbook of Statistics 2009.

[11] .Marco Fugazza, Export Performance and Its Determinants: Supply and Demand Constraints, Policy Issues in International Trade and Commodities Study Series No. 26, New York and Geneva, UNCTAD, 2004.

[12] .Banga, Rashmi and Bishwanath Goldar, Contribution of Services to Output Growth and Productivity in Indian Manufacturing: Pre And Post Reforms, New Delhi, Indian Council For Research on International Economic Relations, Working Paper no. 139, 2004.

[13] .Ibid.

[14] .National Services Policy Review of Nepal, New York and Geneva, UNCTAD, 2011.

[15] .TD/B/C.I/8, UNCTAD (2010).

[16] .Michel, Rosalie, "Tourism and Social Development in Seychelles", in Development Bulletin 60, December 2002.

[17] .Alan Winters et al., Negotiating the Liberalization of the Temporary Movement of Natural Persons, Commonwealth Secretariat,March 2002. See also, UNU/WIDER, Efficiency Gains From the Elimination of Global Restrictions on Labour Mobility, 2003.

[18] .See Dani Rodrik, Centre for Economic Policy Research, 2002; skilled and unskilled workers from DCs would be allowed employment (quota set at 3 per cent of developed countries' labour force) in developed countries for 3-5 years and be replaced on their return.

[19] .Migration and Development Brief 12, World Bank, April 23, 2010.

[20] .UNCTAD, Report of the Ad-Hoc Expert Meeting on Contribution of Migrants to Development: Trade, Investment and Development Linkages held on 29 July 2009, page 6.

[21] .World Bank (2010c). Migration and Remittances Factbook 2011.

[22] .Impact of Remittances on Poverty in Developing Countries: the Case Study of India. UNCTAD (2010).

[23] .Among the mechanisms that countries have envisaged or used are return programmes that fund the return of workers and help them to establish in their home country; compensations paid by receiving countries or the emigrants to the source countries; and tax holidays for returnees. For a detailed description of the different mechanisms see B. Lidsay Lowell, Policy Responses to the International Mobility of Skilled Labour, International Migration Papers 45, International Migration Branch, Geneva, ILO 2001.

[24] .Note by the UNCTAD Secretariat on the Contribution to Tourism and Development (TD/B/C.I/8).

[25] .World Tourism Organization, 2010.

[26] .Rashad Cassim, Wendy Jackson and Lucille Gavera (eds.), International Trade in Services andSustainable Development: The Case of Tourism in South Africa, Trade Knowledge Network, 2004.

[27] .TD/B/C.I/8, UNCTAD (2010).

[28] .Ibid.

[29] .Estimated by XMG, a Canadian-based ICT Research and Advisory Firm at http://www.xmg-global.com/cidver/press_releases/varticle.html?id=31&aid=4 accessed on 10 July 2010

[30] .Note by the UNCTAD secretariat on Universal Access to Services (TD/B/COM.1/EM.30/2).

[31] .Notes by the UNCTAD secretariat on Services, development and trade: the regulatory and institutional trade4 opportunities for developing countries (TD/B/C.I/MEM.3/8).

[32] .Indeed, while countries retain the main responsibility for their economic and social policies, domestic measures need to be complemented and supported by an enabling global environment, which is essential for DCs to integrate successfully into the world economy. Among the measures that need to be achieved at the international level is the coherence and consistency of different economic and trade measures.

[33] . Aaditya Mattoo, Economics and Law of Trade in Services, 2004, World Bank.

[34] . Universal Access and Service Funds, 2009 update from Intelecom, available at http://www.inteleconresearch.com/pages/documents/UASFFunds2009update-Oct2009.pdf.

[35] . UNCTAD (2010), Evolution of the international trading system and of international trade from a development perspective: The impact of the crisis-mitigation measures and prospects for recovery, TD/B/57/3.

[36] . The void in statistics on trade in services is not total and several existing statistical domains can be used as a starting point for the compilation of data on trade in services. Among the useful sources are the: IMF Balance of Payments (BOP) data; Foreign Affiliates Trade in Services (FATS) data; and Manual on Statistics of International Trade in Services (MSITS). However, none of these cover services trade comprehensively implying that assessment of trade in services will continue to rely on qualitative information to supplement the quantitative data and to resort to proxy measures.

[37] See for example Proposed Liberalization of Mode 4 Under GATS Negotiations, Communication from Argentina, Bolivia, Chile, China, Colombia, Dominican Republic, Egypt, Guatemala, India, Mexico, Pakistan, Peru, Philippines and Thailand, TN/S/W/14, 3 July 2003 and Review of Progress in Negotiations, Including Pursuant to Paragraph 15 of the Guidelines for Negotiations, Tourism Services, Communication from Brazil, Colombia, Dominican Republic, El Salvador, India, Indonesia, Nicaragua, the Philippines and Thailand, TN/S/W/23, 29 September 2004.

[38] Luis Abugattas Majluf, Swimming in the Spaghetti Bowl: Challenges for Developing Countries under the "New Regionalism", New York and Geneva, UNCTAD, 2004, (UNCTAD/ITCD/TAB/28).

[39] For example MERCOSUR, ASEAN or the EU-Mexico FTA.

[40] For example ANZERTA or the Andean Community.

[41] Negative-list agreements may serve as another example, as they tend to result in greater degree of liberalization than that currently enshrined in the GATS.

[42] Similarly, some agreements allow countries to exclude whole sectors from their coverage (as opposed to the GATS, which does not consider a priori exclusion), while others tend to contain sectoral exclusions that are wider than those in the GATS. Moreover, RTAs have generally made little progress in developing disciplines on non-discriminatory domestic regulation, potentially affecting trade in services, and also slight progress on addressing safeguards and subsidies.

[43] For example for North-North (ANZERTA) and South-South (CARICOM, the Andean Community), as well as for North-South RTAs (NAFTA).

[44] Towards SADC Services Liberalization: Balancing Multiple Imperatives, New York and Geneva, UNCTAD, 2009.

[45] These are business visitors, professionals, intra-corporate transferees and traders and investors.

[46] These categories are: (i) persons engaging in non-wage earning activities of a commercial, industrial, agricultural, professional or artisanal nature, non-wage is defined as self-employed; (ii) managerial, technical and supervisory staff of economic enterprises, including the spouses and immediate dependent family; (iii) temporary services-providers; and (iv) university graduates, media-workers, sportspersons, artist and musicians.

[47] The negotiation of a RTA entails a series of challenges for DCs. Imbalances in negotiating strength and capacities may create pressures and result in the adoption of far-reaching obligations, which – ultimately – do not reflect the particular country's development priorities.

[48] Natalie Rochester, "Turning Mode 4 commitments into business: The CARIFORUM - European Community EPA", in Trade Negotiations Insights, Volume 7, Number 10, December 2008/January 2009.

[49] . WTO Members retain the largest policy flexibility when they take no specific commitments in a given sector. When they do decide to take commitments under Articles XVI, XVII and XVIII they can still retain flexibility by putting limitations and conditions to their commitments. However, this requires that countries have a good understanding not only of the measures that they are currently implementing but also insight on the measures that they may wish to impose in the future.

[51]. United States – Measures Affecting the Cross-Border Supply of Gambling and Betting Services, WT/DS285/AB/R.

[52] Pauwelyn, Joost, "WTO Softens Earlier Condemnation of U.S. Ban on Internet Gambling, but Confrims Broad Reach into Sensitive Domestic Regulation", ASIL Insight, April 2005. Some commentators feel, however, that this interpretation of the range of measures covered by Article XVI may be broader than the drafters may have anticipated and that the ruling blurs the line between measures covered by Article XVI and by Article VI (Domestic Regulation). See WorldTradLawn.net Dispute Settlement Commentary.

[53] . Mexico – Measures Affecting Telecommunications Services, WT/DS204/R.

[53] . Though the Reference Paper is a document agreed upon by Members each country can decide which obligations it wishes to take.

[54] This is similar to the case of a number of other policy tools (subsidies and universal service/universal access obligations to service providers) which remain available to WTO Members. However, in order for DCs to use them in the interest of their domestic service suppliers and consumers, they must schedule conditions and limitations to market access and national treatment in all sectors where they take GATS commitments.

[55] . S/C/W/312, S/FIN/W/73, WTO (2010).

[56] For a similar approach see for example Thailand's commitments for banking and other financial services where a measure relating to foreign equity participation may be envisaged for a period of up to 10 years, with foreign shareholders who enter in this period being grandfathered thereafter with respect to the absolute amount of their equity holding.

[57] . "China – Measures Affecting Trading Rights and Distribution Services for Certain Publications and Audio-visual Entertainment Products" (WT/DS363/AB/R, 2009).

[58] In early 2003, the Chairman of the General Council suggested an approach for addressing agreement specific proposals on SDT. The proposals were divided into three distinct categories: category I is composed of those proposals on which there appears to be a greater likelihood of reaching an agreement; category II consists of proposals under negotiation and which are being considered by different WTO bodies so as to elicit a better response within the framework of negotiations or at the technical level; category III groups all proposals on which Members have wide divergences of views. See General Council Chairman's Proposal on an Approach for Special and Differential Treatment (JOB (03)/68). Category I include 4 proposals relating to the GATS (for Articles IV.3, XXV, IV, and Paragraph 6 of the annex on Telecommunications). Category II includes 3 proposals relating to the GATS (for Articles IV, IV.3, and V.3). Category III contains no GATS-related proposals.

[59] . See the proposal by the African Group, TN/CTD/W/3/Rev.2 and the proposal by the LDCs, TN/CTD/W/4/Add.1.

[60] . See respectively WTO documents TN/CTD/W/3/Rev.2 and TN/CTD/W/4/Add.1.

[61] . Communications from Colombia (July 2004).

[62] . Subsides and Trade in Services, S/WPGR/W/9.

[63] . Source: WTO Secretariat, S /WPGR/W/25/ADD.5, 2007

[64] . Refer to UNCTAD forthcoming study on subsidies.

[65] . The first case would, for example, be the regime in place in Brunei Dar as Salaam where all services exports benefit from preferential tax treatment. Refer to APEC (2003) op.cit.

[66] ECLAC (2003), Francisco Prieto: Fomento y Diversificación de las Exportaciones de Servicios, Serie Comercio Internacional, División de Comercio Internacional e Integración, Santiago de Chile, Diciembre.

[67] In the case of Australia, for example, for which the latest TPRM Report provides disaggregate data, assistance to exporters of services amounted to A$1.35 billion in the five years from 1997 until 2002, being granted to almost every services sector through direct financial assistance, funding to institutions and tax expenditures available to exporters. This amount is almost 30 per cent of all support to services reported during the same period. (WTO S/WPGR/W/25/Add.4 page 7)

[68] E. Brau et al., Officially Supported Export Credits: Developments and Prospects, IMF, 1995; IMF, World Economic and Financial Surveys, 1995. In the case of the United States, the Department of Commerce lists 161 export programmes administered by different agencies. The situation is similar in EC and other OECD countries, which employ multiple programmes. OECD, Export Credit Financing Systems in OECD Member and Non-Member Countries, 2002 Supplement.

[69] Elements for Draft Disciplines on Domestic Regulation", Communication from Brazil, Colombia, Dominican Republic, Peru and the Philippines, Room Document; Trade-related Concerns of Small, Vulnerable Economies in the Working Party on Domestic Regulation, communication from the SVE Group, Job(06)/66/Rev.1; Pro-development Principles for GATS Article VI:4 Negotiations, communication from the ACP Group, Job(06)/136/Rev.1; Proposed Disciplines on Domestic Regulation under Article VI.4 of the GATS, communication from China and Pakistan, Job(06)/158.

MANAGING THE INTERFACE BETWEEN REGULATION AND TRADE IN INFRASTRUCTURE SERVICES

II

1. INTRODUCTION

Infrastructure services sectors (ISS) such as telecommunications, transport, energy and financial services (FS) are fundamental for the efficiency, growth and competitiveness of economies, for human development and for the attainment of the Millennium Development Goals (MDGs). Vibrant ISS can catalyse economic diversification and enhance domestic supply capacity and competitiveness, while providing opportunities for employment, investment and trade. In increasingly competitive and liberalized economic environments, governments must focus on how key developmental, social, environmental and other national policy objectives may be achieved through regulatory and institutional frameworks (RIFs) for ISS. Trade, industrial, services and macroeconomic policies should be carefully tuned to achieve the desired combination of goals associated with the development of ISS.

Infrastructure services sectors are closely linked to, and are central inputs for other economic activities, including industrial uses and households. They also constitute important economic sectors by themselves, as world ISS markets are extremely large and are expanding rapidly in response to growing population and climbing income levels, particularly in developing countries (DCs). In recent years, the global demand for ISS has expanded rapidly in response to growing population and climbing income levels, particularly in DCs. The combined annual revenue of ISS services has been estimated at $14.5 trillion or 20 per cent of total world (GDP) in 2008.[1] In the United States, ISS directly contribute $3.8 trillion or 37 per cent of total US GDP.[2] Transport, storage and communications services in DCs represented about 7 per cent of GDP while wholesale, retail trade, restaurants and hotels accounted for 13 per cent of GDP in 2008. In this regard, ISS do not only exercise a fundamental support function on the overall economy but also represent an important component of the worldwide GDP in itself. Infrastructure services sectors are a major source of employment, accounting directly for roughly 10 per cent of worldwide employment (telecoms 0.5 per cent; electricity and water together 1 per cent; transportation 6 per cent, and FS 3 per cent of world employment). Trade in ISS is substantial and continues to increase. Together, ISS account for over 35 per cent of global services trade: transportation representing 22.5 per cent; financial services 10.2 per cent; telecommunications 2.3 per cent, and electricity and water over 2 per cent (2007).

Among the key characteristics of some ISS are the fact that they are network services; natural monopolies and the backbone of economic development. Some ISS are public goods or feature specific characteristics (that is, economies of scale or scope). Many are highly capital-intensive, with sunken assets that cannot be easily redeployed in other activities. In selected ISS, technological progress has diffused these characteristics (that is, novel telecoms services). Financial services, while not typical network services or natural monopolies, deserve particular attention, because of the importance of viable and stable financial systems for economic growth and development.

2. THE EVOLUTION OF ISS REGULATION

Historically, many ISS were provided by governments. Three decades ago a global trend emerged toward increasing commercialization and privatization (including public–private partnerships (PPPs), concessions or built-operate-transfer contracts (BOTs)), competition and trade in ISS. In some cases, the participation of foreign services suppliers was encouraged through trade liberalization policies so as to supplement domestic supply when there was insufficient national presence or as a means to increasing access to more efficient suppliers and best technologies. The reasons behind these shifts are several, including insufficient financial capacity of governments or the need to redirect budgets to other needs, less than optimal services management, as well as attempts to increase productivity and access to new technologies. Countries developed national regulatory systems as important components of these reforms. Regulatory systems include both regulatory measures, namely legislation, directives, standards and procedures that direct market transactions toward desired results (that is, regulatory substance), and regulatory institutions that have the responsibility of developing, implementing, monitoring and enforcing regulations (that is, regulatory governance).

Effective policy, legal and regulatory frameworks, backed by institutional support, contribute to efficient provision of ISS and higher social welfare by promoting development of services sectors, responding to

market failures and mitigating economically and socially undesirable results. A country's ability to provide effective RIFs for ISS is central for overall economic performance. Frequently, the establishment of independent regulatory agencies (IRAs) is central to such reforms. However, the infrastructure reforms to increase the quality and efficiency of ISS which many DCs and countries with economies in transition embarked on in the 1990s led to mixed outcomes. Regulatory systems were not successful or sufficient in all countries, and significant gaps remain regarding the quality and availability of ISS between developing and developed countries. The recent financial crisis is the latest example of international risk, even for those countries with strong and sophisticated RIFs of experiencing regulatory failures. This underlines the need for a rethink and proper design of RIFs and points to the enabling and developmental role governments continue to assume.

3. KEY REGULATORY AND INSTITUTIONAL ISSUES

Infrastructure services sectors regulation can be organized into several broad and sometimes overlapping categories, including technical regulation, economic regulation and competition regulation. Technical regulation is often specific to each sector. It involves setting and enforcing production and process standards dealing with issues such as safety and security, quality, reliability, customer relations or environment and climate change. Technical standards tend to be linked to physical aspects and the maintenance of infrastructure networks and services. Economic regulation aims at ensuring competitive market structures in industries characterized by market failures (information asymmetries, natural monopolies, externalities) and at creating stable and competitive market environments which encourage investment, private participation and efficient ISS provision. It also aims at achieving other key domestic policy objectives, such as protecting consumers, developing domestic supply capacity, protecting the environment, mitigating climate change and ensuring universal access to essential services.

Price regulation, for example, has implications for market structures, inter-firm competition, and investment and consumer welfare. The challenge lies in determining prices that strike a socially acceptable balance between the interests of investors and consumers. Sufficient rates of return would allow transnational corporations (TNCs) to implement sustained physical investment programmes to serve future consumers. Price regulation is at the core of ISS regulation. In the past, under-pricing, while required for public policy reasons including universal access, was a common policy issue, often resulting in under-supply, sub-optimal quality of services and government subsidies. The two main pricing approaches are (a) rate of return (RoR) and (b) price caps. There is also a hybrid approach in which some cost changes are automatically passed through to tariffs. Existing research shows that the type of pricing regime has a bearing on overall ISS performance.

With RoR regulation, prices are set to cover firms' capital and operating costs and an agreed "fair" return on investment. The cost estimation is based on past costs and future forecasts adjusted for inflation. For the regulated company, this method provides predictability and stability for future levels of profit. For the regulator, the approach allows it to attract investors as returns are subject to less risk than those of an average firm. Nevertheless, RoR regulation has been questioned on several grounds: it could create a negative public opinion of regulators as the regulated companies may seek to maintain high profits; it could underestimate capital depreciation, which is problematic in industries needing to adapt to exogenous technological progress (telecommunications); and it could create incentives to inflate costs to raise revenues.

With price cap regulation, prices for services are set up-front and firms' returns vary according to the level of incurred capital and operating costs. This approach is used in industries that regularly need to adapt to exogenous technological changes. In this case, the approach provides better incentives for capital replacement. It has proven effective in sectors where information asymmetry is prevalent between the regulator and the regulated. Price caps can promote cost reduction and productive efficiency. The main challenge is designing an incentive that motivates a cost-reducing attitude and an optimal level of effort during the whole period of the concession. This aspect is particularly relevant for monopolies.

A third and more sophisticated methodology of "revenue cap" puts a ceiling on the revenue that operators may obtain over a given period. This methodology is based on cost, but the revenue

is adjusted for end-use efficiency gains. Energy saving by consumers is therefore encouraged by the operator. Out of the three pricing options, revenue cap may appear to be the most attractive, as it promotes demand-side efficient use of utilities. Presently this feature is particularly relevant as climate change has become a central concern for all. No rule of thumb exists, however, as to which pricing approach is most suitable for any given country.

With price regulation a key operational challenge remains limited data availability. Regulators are faced with the problem of information asymmetry between them and the service providers while data requirements for determining the appropriate tariffs are demanding. One means to address this situation is by measures promoting enhanced transparency, through independent reporting or auditing.

Universal access regulation aims at enhancing access to essential services for the poor, remote and marginalized. Frequently, poor consumers remain left out of network services and hence, a key policy choice addresses the balance between connecting the unconnected and making services more affordable for those already connected. Sometimes, additional, new providers in the market can help expand services delivery to the un-served. Often, regulation is required in order to support community-based initiatives; subsidies; and universal service obligations (USOs) imposed on the service provider to expand service delivery to certain un-served areas or to deliver at affordable prices. The allocation of subsidies toward or the imposition of universal service obligations on, service providers to extend services delivery at an affordable price to otherwise un-served remote areas or poorer segments of the population are among the means to achieve universal access. Many countries have opted to create a fund to help advance universal access objectives. Such funds are often used to provide subsidy support to firms to undertake additional investment in extending infrastructure and improving maintenance operations in poor urban and rural areas. A large proportion of subsidies in ISS are captured by the energy sector. Governments subsidize those sectors or activities that exhibit positive externality such as high potential to boost economy-wide productivity growth, technological progress or support human development. Subsidies can have negative side effects given their fiscal implications and the inherent risk of unduly favouring some groups at the expense of other groups. A key issue, in developing countries, is targeting subsidies toward those that are in need. Subsidies are allocated in ISS markets either in the form of consumption subsidies or access subsidies. Problems arise due to the regressive properties of subsidies – larger subsidy proportions is allocated to richer users and as it is difficult to measure the consumption of poorer users, these users are unable to take advantage of subsidies based on quantities consumed. Therefore, not accurately targeting access subsidies is a major problem.

Universal service obligations are central when, under normal commercial profitability considerations, suppliers do not provide the service. If they are to provide workable solutions, USOs should: be realistic and clearly defined; leave sufficient incentives for implementation; be adaptable – though not arbitrary; and, take account of technological changes. In addition, procedural aspects including: multi-stakeholder processes for developing USOs; consumer protection; proper monitoring of targets; and, information requirements are also important. Challenges relate to funding and financing USOs through transfer programmes, including subsidies, universal service funds, welfare payments or special budget allocations. Universal service obligations raise many concerns, including: doubts over their efficiency and effectiveness; belief that they may impede competition in markets; impact on companies' financial viability (when firms cannot recover investments); or, their failure to protect consumers. Implementation difficulties relate to inadequate enforcement mechanisms and overly ambitious targets. Therefore, DCs require flexibilities and the possibility of trial and error implications when implementing USOs.

Competition-related considerations aim at introducing competitive market structures in industries characterized by market failures resulting from economies of scale or scope, information asymmetries, externalities, natural monopolies and attendant income and wealth distribution effects. In most ISS, reforms (such as privatization, corporatization, and break-up of vertically integrated state-owned-utilities) have led to increased need for competition policy and regulation. In markets where competition is unlikely to develop (natural monopolies), price and services regulation becomes particularly important. The unbundling of services and technological innovations often allows for competition in most segments of the value chain. In some ISS, ensuring access to bottleneck facilities is

a key challenge to be addressed through competition regulation. In a number of countries, telecoms regulation is almost entirely applied competition policy (EU telecoms directives are based on EU competition policy rules). In FS, competition concerns relate to switching costs (consumer finance); externalities (e-finance); access to network services (payments, distribution and information systems) and challenges arising from trends toward mergers and acquisitions (M&As) and from more complex and global FS markets. Cross-cutting concerns arise from firms that charge excessive prices or adopt tactics to prevent new competitors from entering the market.

The main challenges with investment policies and regulations relate to: size of infrastructure investment needs; gaps in financing; and, the need for balancing different policy objectives to ensure that investment positively contributes to host countries (that is their productive capacities). Costs and benefits of transnational corporation (TNC) participation depend on host country policies and regulations (including price regulations). While foreign direct investment (FDI) and other TNC participation can complement DCs' domestic infrastructure services firms. Transnational corporation participation can also bring new regulatory challenges (that is: increasing the number of stakeholders under regulation; market power; crowding-out; State monopolies turned into foreign private monopolies; renegotiation of concession contracts; TNC withdrawal). While particularly pronounced in DCs, more advanced regulatory systems also face similar challenges. Adequate RIFs are required to enhance TNC participation and generate optimal outcomes regarding affordability, access and other pro-development outcomes.

Consumer protection regulations address, among other things: answering and resolving consumer complaints; offering fair billing/payment options; number portability (telecoms); quality of service and universal service; installation or repair time; or, service cancellation conditions. Frequently, consumer protection regulations are cross-cutting, relating to the

Box 1: The importance of ISS Regulation – the case of FS

The global financial crisis exemplified the paramount importance of adequate RIFs in financial services where the cost of market and regulatory failure can be extremely high. Reasons for regulating include addressing market failures; avoiding moral hazard; achieving prudent objectives of ensuring the viability, integrity and stability of financial systems; pursuing domestic development objectives, including UA; and other objectives. Financial deregulation took place among broader trends, including intensifying financial globalization; integration and consolidation of FS suppliers; proliferation of financial instruments often beyond control and understanding of regulators; growing equity markets and innovation in information technology. The attendant challenges resulted in a parallel trend to adopt new regulations – so called "re-regulation" – with focussed instruments, institutions and practices that have become more important in the new deregulated environment. Rapid developments have made it difficult for both developed and DC regulators to keep up, as highlighted by the current crisis. Many cite regulatory and institutional failures as major reasons for the current financial crisis (that is, lack of effective regulation for new, complex and opaque financial products, hedge funds and credit rating agencies; excessive leverage creating vulnerabilities). Use of derivatives to spread financial risk was largely unregulated and not transparent. Weak underwriting standards combined with unsound risk management added to the problem. Even in advanced countries, policymakers, regulators and supervisors did not appreciate and address the build-up of risks, spurring calls for proper reform, regulation and oversight. Some point to what they perceive as other weaknesses of regulatory systems: moral hazard –regulators shying away from setting strict industry standards and instead opting for self-regulation; excessive trust in the corrective forces of the market and consequent pursuit of policies of minimum interference with open markets and international trade; and overly close relations between FS suppliers and regulators (distorting and reducing the effectiveness of regulation). The current crisis also shows deficiencies of the international FS governance system. Challenges are particularly serious for DCs and countries with economies in transition, given their special needs regarding financial development and stability. However, it is these countries which may have the greatest difficulty in developing the institutional and regulatory frameworks for their FS. Even in successful industrialized countries, establishing these frameworks requires considerable resources and a great deal of time. The various reform options are mainly aimed at bringing about a more stable financial sector which can provide long-term financing to productive investment projects. Many also seek to achieve a more socially efficient and equitable market through regulation. There is a need for international coordination, sharing of information, and for regulators to aim at similar standards to avoid a race to the bottom in financial regulations. However it would be a mistake to impose a common regulatory standard given there is no single regulatory system that is right for all countries. Countries with different levels of development and regulatory capacity need to adopt different regulatory approaches. By increasing the participation of developing countries in various agencies responsible for financial regulation and for guaranteeing international financial stability, those agencies may develop a better understanding of different regulatory requirements.

Box 2: Regulatory impact assessments

An important tool for improving the competence, credibility and legitimacy of regulatory institutions are regulatory impact assessments (RIAs). These can be performed on an *ex ante* or *ex post* basis. In the first case RIAs contribute to refining regulatory reforms by systematically assessing benefits and costs of regulations, usually prior to implementation. Such *ex ante* RIAs are promoted by in OECD States through the OECD Guiding Principles for Regulatory Quality and Performance. They are also increasingly used in DCs and can support capacity-building. *Ex post* reviews are pre-scheduled, periodic, independent reviews of regulatory performance and impact, which look at both substantive and governance-related issues. Such reviews, particularly when they involve the publication of recommendations, can offer important lessons learned. For example, the reviews of the Presidency and National Treasury in South Africa, have evaluated the national electricity regulatory authority, concluding that it had not yet implemented a robust approach to price regulation. Questions have been raised whether complex and resource intensive *ex ante* RIAs are the best use of DCs' scarce human and administrative resources. *Ex post* assessments and attendant lessons learned can provide useful and pro-development alternatives.

purchase of numerous goods and services, and hence to infrastructure services as well. Specific instruments can enhance consumers' participation in regulation, such as in citizen report cards allowing consumers to express their opinion on service provisions (price, quality, efficiency, adequacy of services).

While the case for regulating ISS is widely acknowledged, less agreement exists over what constitutes good regulation. For regulation to promote economic growth, social welfare and environmental sustainability and to result in outcomes that meet the expectations of key stakeholders (consumers, operators, investors) it needs to be effective (achieve planned goals) and efficient (achieve goals at minimum cost). Effectiveness depends on two aspects: the first concerns regulations – the quality of regulatory decisions; the second relates to institutions and procedures – the quality of regulatory governance. Efficiency and effectiveness need to be pursued in the context of other public policy objectives, such as health and safety, poverty eradication, universal access, environmental quality, and cultural or ethical goals.

Technology and innovations, leading to more complex and new services, have altered the context and content of ISS regulation. In the information and communication technology (ICT) sector, for example, rapid technological evolution has acted as a driver and enabler of reform. Voice-over-Internet-Protocol (VoIP) services have gradually replaced traditional public switchboard telephone networks, requiring technological neutrality of regulatory practices. In FS, e-finance and technological advances have reduced the role of financial intermediaries, facilitated cross-border trade and spurred innovative retail financial products (that is, derivatives, swaps, and so forth) and financial entities (hedge funds). While attractive, (higher yields) these products are also more risky, requiring regulators to adapt to these new realities.

Several approaches and criteria have been identified to assess RIFs' effectiveness including: (a) autonomy from political authorities; (b) transparency before institutional and non-institutional stakeholders; (c) accountability to the executive, legislative and judiciary; and (d) tools for institutional development. Several institutional factors are prone to regulatory failure. These comprise (i) limited regulatory capacity; (ii) limited accountability (leading to the risk of collusion between various interested parties); (iii) limited commitment (often evidenced by the recurrence of contract renegotiation); and (iv) limited fiscal efficiency. Institutional capacities of national regulatory authorities can considerably compromise regulatory process and outcome.

Institutions and procedures (regulatory governance) are amongst the central determinants for the quality of regulations. Specific institutions for implementing and supervising sectoral policies and regulations are novel – until the 1990s, the majority of infrastructure services were public and self-regulated or regulated by a ministry. Policies and tariffs reflected political concerns more than efficiency and economic sustainability considerations.

There are two main institutional approaches: regulation by contract; and regulation by agency. The two can also be combined. Under the first, objectives are pursued through the establishment of contracts outsourcing service provision, often by way of tenders or PPPs. Under the second, a regulatory agency or institution is established to oversee the functioning of a given sector. The choice of the "best-fit" system depends on the sector's economic attributes, technological considerations, the host country's economic, social,

institutional and political endowment and human and administrative resources.

Regulatory contracts (including PPPs, service contracts, management contract, leases, affermages and concessions) are typically used in the context of private sector participation, but can also help improve the performance of state-owned utilities. When regulating by contract, investment decisions are directly made by the government, requiring a good understanding of the functioning of the market and anticipation of different situations that may arise. Given the difficulty of providing for all possible scenarios, contracts should include re-opener clauses. Contract implementation and enforcement require monitoring which can pose capacity-related problems in DCs. Difficulties in regulating by contract without pre-existing regulatory agencies were experienced in Latin America and the Caribbean. Key challenges relate to possibilities that investors behave strategically. In the case of PPPs it is particularly important that the private partner's objective (that is, to maximize profits) be aligned with the government's objective to deliver efficient and effective services. This can be done by the government specifying the quantity and quality of the services it requires, and by the two parties agreeing upon the price of the services concerned when concluding the contract. Various forms of PPPs can be considered, including through management contracts or investment funds. However, there may also be some trends across sectors. PPPs have yielded good results in telecommunications, but less so in electricity and water.[3]

When regulating by agency, a government establishes a legally defined process by which terms of supply (including prices) are formulated and enforced. The regulatory agency has the capacity to adapt to changing conditions, and as a result, there is less need to anticipate all eventualities. The responsibility of institutions' regulators varies between advisory and decision-making powers, over few or many issues and regulating private or public entities. Sometimes regulators are closely linked to policy-making, with regulators determining – together with government – the right "policy mix" for achieving a particular "objective mix".

Some IRAs have been in place for several decades, while others were established recently. Generally, IRAs are established to facilitate private participation in ISS. Many IRAs have had positive sector results, particularly in telecoms and electricity, but less so in water and transport. Formally establishing IRAs is not sufficient. Instead, what matters is credibility and stability, and recently established IRAs must begin by building their role and reputation and overcoming institutional fragility. It can take time to effectively build and entrench governance, management and organizational systems and practices, particularly in DCs that lack qualified staff, funding, and legal traditions supporting IRAs. Large gaps can exist between "law" and "practice", that is, regarding regulatory independence. High turnover of commissioners suggests evidence for political expediency undermining regulatory independence.

RIFs entail costs, through administrative and human resources required for their implementation and for businesses that must comply with them. Governments face numerous choices when establishing IRAs. One such choice is between a single-sector and a multi-sector regulator (for two or more sectors). Benefits cited for multi-sector regulators include: the potential to take advantage of commonalities in different ISS, leading to similar regulatory issues; economies of scope in regulating sectors together; better use of scarce human and financial resources shared across sectors; effective management of firms operating in more than one sector; greater facility in addressing linkages between sectors; and, better ability to resist political interference (because broader constituencies give IRAs greater independence from sectoral ministries). Moreover, focussing on a single sector can prove difficult as sectors are interlinked and mutually influence each other. Given resource constraints, particularly in professional and human capital, DCs might benefit from multi-sector regulators. Other choices relate to establishing functional regulators (dealing with functional issues such as universal service across sectors instead of numerous issues specific for a particular industry); industry-specific regulators (infrastructure regulators regulating only infrastructure); or, infrastructure and content regulator.

Coordination between regulators and between competition authorities and other regulatory authorities is important for achieving coherence and improvements to ISS. The case of Indonesia's commission for the supervision of business competition (KPPU) demonstrates the relevance of harmonizing competition law and regulation governing the sector and signing a memorandum of understanding to facilitate cooperation between competition authorities, regulatory agencies and

the Government of Indonesia. The memorandum of understanding can be used to raise sector regulators' awareness of the existence of competition law and allow early involvement by the competition authority in the drafting of regulations to ensure compliance with the competition law. KPPU also took the initiative of monitoring implementation of the competition-related provisions after the regulations had entered into force. Regular interaction and collaboration between services policymakers, regulators, trade negotiators and civil society are essential to improve regulatory outcomes.

Countries' broader policy and legal realities matter, as even well-staffed IRAs have difficulties operating in environments where courts, commercial law systems and other governmental institutions are dysfunctional. Moreover, regulators can be driven into policy debates and policy development, leading to further strains for fragile institutions.

4. DEVELOPING COUNTRIES' CONSTRAINTS IN ISS REGULATION

The quality and credibility of regulatory decisions largely depend on the competence of regulatory staff. The greater the discretion enjoyed by the regulator, the greater the need for trained, experienced and competent staff. Scarcity of qualified staff is among the most serious constraints faced by regulators. Capacity-building and high-quality, relevant training are thus vital for improving regulatory performance.

A recent global survey of regulators identified lack of specialized skills as a major problem (30 per cent of respondents cited insufficient training as a significant constraint, and 61 per cent viewed training as deficient and lacking continuity).[4] ISS regulators often require significant numbers of highly skilled professional staff, including accountants, economists, lawyers and engineers. However, the problem of certain low-income and small countries is not only finding sufficient staff but also having staff-related costs which are in line with the number of consumers to which services are provided. A study of 13 Asian countries found that 80 per cent of regulators had no access to training and that regulatory offices were usually understaffed.[5] Properly staffing regulatory institutions carries high fixed costs, particularly for small, low-income DCs, and is difficult to achieve. Skills and experience required for regulators are highly specific, and the most competent and qualified staff are often attracted to the private sector. Targeted training and human capacity-building, attractive employment conditions and hiring from diverse backgrounds can help attract such staff.

Training and capacity-building are central to developing the human capital of DCs. Often, curricula with trainers from industrialized countries and little opportunity for subsequent learning and ongoing professional networking give insufficient attention to the specific needs of DC regulators. Regional training centres (such as South Asia Forum for Infrastructure Regulation; African Forum for Utility Regulators (AFUR); and, Regional Electricity Regulators Association (RERA)) can help.

Outsourcing regulatory functions to external contractors is common in developed countries and DCs alike, with regulators sometimes dedicating up to one-third of their budgets to it. According to a 2004 World Bank survey, most regulators (75 per cent) outsource regulatory tasks and plan to continue doing so.[6] Of regulators that do not yet outsource, 90 per cent plan to do so. Outsourcing can enhance institutional effectiveness by improving regulatory competence, independence and legitimacy. Decisions regarding which functions to outsource can vary over time. Outsourced functions include: consulting or technical support for regulators; advisory services or expert panels; performance auditing; preparation of public consultation documents; and, dispute resolution to name but a few. Outsourcing, including to expert panels, can be particularly attractive in the short to medium term, but can also be politically sensitive. It requires sound contract management and effective skill transfer, and should complement rather than substitute the building of local regulatory capacity.

Twinning involves pairing regulatory institutions and staff with similar mandates and goals. It can promote effective institutional capacity-building and has been used by different bilateral cooperation agencies since the early 1980s. Twinning has proved successful for cross-country transfer of technical skills, knowledge and best practices. Twinning commonly occurs on a North-South basis but is also increasingly common on a South-South basis, as exemplified the twinning arrangement between Jamaica and the United Republic of Tanzania on utilities regulation.

Combining international and local expertise: Many DCs rely on international consultants for drafting new regulations based on elements of RIFs that are successfully applied across countries. Instead of replicating key structural attributes of other countries' RIFs, DCs benefit from adapting solutions to national human and institutional capacities, varied market structures and different degrees of government participation. In some cases, required local expertise is lacking and in need of development. For example, Costa Rica developed local expertise by including training for its government and industry personnel encompassing the terms of reference of external consultants.

If combined with a phased approach, hybrid approaches allow for experimentation and a gradual build-up of human and institutional capacity. Many African countries initially establish hybrid regulatory structures, often linked to sectoral ministries. Such structures then tend to evolve into fully independent and effective regulatory agencies. Hybrid approaches are also implemented in price-setting: Thailand successfully combined price-caps and rate-of-return approaches.

Adopting a gradual approach: At times, regulators begin with the minimum RIF necessary to achieve certain objectives. This allows DCs to establish a regulatory agency which initially enjoys limited regulatory discretion and outsources certain functions. As staffs become more experienced, monitoring capacities are developed and credibility acquired, the regulator gradually takes on further responsibilities.

Research shows that effective RIFs can be greater determinants of ISS performance than ownership or management style. So both state-owned enterprises (SOEs) and the private sector provision can be relevant for specific infrastructure services depending on the sector and specific country condition. However, differential regulation may be required in each case. Therefore it is important adequate attention be given to developing and monitoring the institutional dimensions of regulation. The corollary to the need for regulations to be best fit to prevailing national conditions is the need to constantly adapt the institutional structure and process to new conditions. Regulators are faced with the challenge of maintaining a predictable environment in times of unpredictable economic, social, technological and environmental changes. The institutional design of the regulator needs to be flexible enough to adapt to market and other realities while not compromising its credibility.

5. THE INTERFACE BETWEEN TRADE AGREEMENTS AND ISS REGULATION

Regulation exists at different levels – national, regional and international. The global trend toward regionalism also manifests itself in ISS, with regional trade in infrastructure services increasing (including South–South) and regional trade agreements (RTAs) covering ISS (particularly through services and, or investment liberalization chapters). Many RTAs contain specific provisions on regulatory and institutional issues, including cooperative mechanisms, training, regional centres of excellence, and so forth. In EU integration, capacity-building and technical assistance are offered to assist new or future Members implement the "*acquis communautaire*", which covers key aspects of ISS regulations and institutions in a more liberalized and competitive environment. Regional cooperation continues to play an important role in building effective RIFs. Regional regulation is often associated with regional integration, harmonization and cooperation. The development of cross-border infrastructure networks, or infrastructure sharing, often occurs at the regional level underpinning regional integration.

Pooling resources regionally also occurs for regional training centres that disseminate local knowledge in regional context. They can help create networks of regulators and improve understanding of local challenges and problems through research and training on sector reforms and regulatory trends to ensure relevance to the needs of regulators in the region. Successful examples include the Southern Africa Development Community (SADC), the South Asian Telecommunications Regulators' Council, and the Latin American Inter-American Telecommunication Commission.

Regional expert panels allow for more efficient use of scare resources and greater continuity and consistency in technical assistance. They can assist with the development of harmonized regulatory regimes in support of regional integration. There are also regional associations of regulators. SADC actively pursues regional cooperation in IS regulation. In the telecoms sector, national telecom regulatory authorities cooperate through the Telecommunication Regulators' Association of Southern Africa on regulatory harmonization and on capacity-building through a regional training network. A framework for developing capacity of the regulator at both national and regional levels is therefore important.

International regulatory cooperation and cooperative mechanisms are important in addressing cross-border externalities, and overcoming regulatory and institutional constraints, including resource and capacity constraints at the national level. The substantial majority of countries today are engaged in some form of bilateral, regional or international cooperation. Formal and informal cooperation focuses on "hard" infrastructure facilities and policies and regulations. "Softer" forms of cooperation include regional regulatory agencies, expert panels and associations, information exchange, regional training and research, and "twinning" activities. These forms of cooperation are not an alternative to regulation. An UNCTAD survey using questionnaires covering 66 regulatory authorities in ISS shows that information exchange and participation in international associations are the most frequently used forms of such cooperation, followed by participation in regional agencies and expert panels.[7]

There are close linkages between international rules to liberalize services trade and RIFs for ISS. Typically, barriers to services trade are not tariffs, but rather domestic regulations. Hence, when liberalizing trade in services, multilateral and regional negotiations directly address countries' regulatory measures. The inclusion of services in the multilateral trading system and regional trade agreements (RTAs) has raised concerns over the potential conflict between the liberalization and regulation of services and the impact of trade rules on national regulatory autonomy – that is, whether trade agreements limit regulators' ability to regulate, if so to what extent and whether such interaction is justifiable.

The General Agreement on Trade in Services (GATS) recognizes a governments right to regulate (RtR) in numerous places, included in the Preamble and Article XIX (progressive liberalization), both stressing the particular need of DCs to exercise this right. Also, the GATS' positive list approach of taking market access and national treatment commitments and a Members right to attach conditions and limitations to commitments can help preclude undue constraints on sovereignty and regulatory prerogatives.

Further issues regarding the RtR arise from the GATS' coverage of key regulatory tools ("laws, regulations, rules, procedures, decisions, administrative actions, or measure of any other form") and institutions (central, regional or local governments and authorities; non-governmental bodies in the exercise of powers delegated by central, regional or local governments or authorities) and provisions for specific institutions (Telecommunications Reference Paper (RP) requiring IRAs). The GATS also affects regulatory flexibilities – including for dynamic evolvement of RIFs – through market access and national treatment commitments. Nevertheless, experience with modifying commitments and attendant compensation requirements remains limited.

Box 3: Regulatory issues in the two GATS disputes

Several core issues rose in the only two GATS dispute settlement cases – the Mexican Telecommunications (Telmex) case and the United States Betting and Gambling case – and also relate to the impact of GATS on national regulation. In the first dispute the United States contended, amongst other things, that Mexico failed to ensure that Telmex, (the largest operator, interconnected US cross-border suppliers of services on cost-oriented) sufficiently unbundled charges as required by the Telecom Reference Paper which Mexico had adopted. The Panel concluded that the difference between the costs presented to it and the settlement rates was "unlikely to be within the scope of regulatory flexibility allowed by the notion of cost-oriented rates" of the Reference Paper[8]. Only costs related to interconnection itself can be reflected in prices and costs for general development of the network and for universal service programmes were not considered relevant to determining the cost basis for interconnection rates. While it was acknowledged that a Member State's regulator can choose from several pricing approaches to regulate interconnection rates and the requirement for reasonable, cost-oriented and unbundled rates suggests a limited flexibility in terms of the ultimate results of the pricing approach selected. The case illustrates the need for governments to involve their trade and telecommunications authorities to work closely together to make sure the trade commitments under the GATS are consistent with realistic telecommunications reform agendas

The United States Gambling case which focussed, among other things, on whether the United States measures fell within the scope of GATS Article XIV's General Exceptions relating to the protection of public morals and, or public order and whether these measures were a disguised restriction on trade in services demonstrated that specific commitments on market access preclude even non-discriminatory (regulatory) prohibitions. This second case also points to the need for regulatory authorities to pay attention to their country's WTO commitments when designing or implementing regulatory measures in sectors liberalized under the GATS.

Box 4: Temporary movement of persons to supply ISS

The liberalization of the temporary movement of natural persons (mode 4) in such professional categories as accountants, engineers and technicians could be particularly relevant for the development of ISS. However, managing this liberalization may remain a challenge as long as national laws and regulations dealing with immigration and labour do not distinguish between mode 4 categories and the general pool of immigration. Moreover, where market access exists it is often rendered meaningless by the non-recognition of the qualifications of services suppliers. Mexico's experience with its free trade agreements (FTAs) in relation to professional services illustrated how trade agreements can contribute to liberalizing the movement of categories of persons relevant for supplying ISS. It also reveals that developing countries should encourage their professionals in various sectors to form strong national associations to express their interest in the FTA negotiations.[9]

GATS obligations can guide toward good regulatory practices. Provisions on transparency (Article III), to avoid arbitrariness (Article VI.1 on administering measures in a reasonable, objective and impartial manner); for due process (Article VI on judicial, arbitral or administrative tribunals or procedures for prompt review of administrative decisions affecting trade in services – albeit subject to compatibility with constitutions) serve as examples. Some GATS provisions go beyond procedural and institutional elements and also address the substance of regulatory measures (FS understanding requiring access for new FS).

As part of the Doha Round, negotiations are underway for the establishment of multilateral disciplines on domestic regulations regarding licensing requirements and procedures, qualification requirements and procedures and technical standards, so as to ensure that they are, among other things, consistent with the criteria listed above and do not constitute unnecessary barriers to trade in services. One outstanding issue deals with whether there should be a "necessity test", which some consider likely to pose greater strains on national regulatory autonomy, and, if so, whether it should apply to all services sectors where liberalization commitments are made, or only to specific sectors (such as accounting). Special and differential treatment (SDT) would be part of disciplines, (transition periods). Developing countries have expressed that they need more room for adapting their regulation to changing circumstances given their lower levels of development of domestic regulation, effective SDT and support in building their RIFs.

Some bilateral and multilateral liberalization requests focusing on the telecoms sector contain regulatory elements and a call for commitments to all provisions of the RP, and that there be no limitations on the establishment or number of service suppliers (for example quotas, exclusive service suppliers or geographic restrictions within a Member State's territory). Negotiations on market access, rules (subsidies and government procurement) and domestic regulations all need to provide flexibility and policy space for DCs' regulatory experimentation and RtR.

Many South–South and North–South Agreements include provisions relating to RIFs, including cooperative mechanisms. The EU–CARIFORUM Economic Partnership Agreement (EPA) – particularly the telecoms and financial chapters – contains regulatory provisions (transparency, public participation, multi-stakeholder approach to regulation, international harmonization, definitions for "regulatory authority" and suggestions for designating UA policies). South–South Agreements, (Andean Free Trade Agreement and MERCOSUR) contain sector-specific regulatory frameworks (for the telecoms sector) which complement liberalization.

While barriers to international trade in services appear to stem largely from the differences in regulatory systems the emphasis of trade agreements and focus of policy-makers should not be on a reduction of regulations per se, but on the management of regulatory diversity reflecting each country's legal traditions on the content and form of its regulations. This fact makes the harmonization of services regulation through trade agreements, especially at the multilateral level, difficult and raises questions about its desirability. Close collaboration between regulatory authorities (including competition authorities in charge of sector regulations) and trade ministries including policy advice and assistance for RIFs in relation to trade liberalization negotiations is crucial.

Addressing the interface between trade and regulatory issues goes beyond the analysis of how trade agreements affect regulation and policy

space. It requires the coordination of services trade liberalization and regulatory reforms and the promotion of information exchange and dialogue between the trade and regulatory communities. Irrespective of whether the impetus is provided by a trade negotiation (at bilateral, regional or multilateral level) or by a regulatory reform initiated autonomously by a government, in ISS, it is essential that policy-makers and, or regulators consider the trade implications of regulation and for trade negotiators to assess the impact of trade commitments on policy space. This leads to the need for policy-makers, regulators, and trade negotiators to "learn to speak the same language". For some this will require moving beyond a sole focus on market access and non-discrimination while for others this will imply learning to integrate trade-related impacts in a cost-benefit analysis of regulatory reforms.

International regulatory and trade cooperation can play an important role in support of national efforts to create effective, efficient and workable RIFs in developing countries.

6. CONCLUSION

For reform of, and trade in ISS to generate pro-development outcomes, they need to be accompanied by appropriate policies and RIFs. The latter must be credible, sustainable and able to face multiple challenges arising from the increasingly heterogenic and complex characteristics of infrastructure services markets. Hence, government has a primordial role to play.

RIFs need to be adapted to local realities. A RIF's success depends on its compatibility with a country's needs and circumstances, and institutional and human resource endowment. DCs may wish to select from different regulatory options, creating hybrid models that are appropriate for their individual country contexts. Effectively adapting best-practice blueprints to local needs requires local expertise and knowledge. Best-fit models can change over time, as regulatory independence and capacity are built, turning gradualism and experimentalism into key success factors. It is also essential that RIFs be securely located within the political, constitutional and legal arrangements of individual countries. Complementarities between different institutional arrangements make it difficult to alter national systems in a piecemeal fashion. Unorthodox, home-grown solutions, as suggested by Rodrik,[10] could achieve desired outcomes at lower costs for DCs. Multi-stakeholder consultations, including on poverty aspects and involving civil society, consumer groups and the private sector, are also important.

International trade agreements affect RIFs, by removing regulatory measures, placing constraints on governments' regulatory prerogatives or inducing good regulatory practices. The suitability of international commitments for local economic, social and regulatory specificities is decisive for overall outcomes. Concerns arise when international obligations mandate one particular approach that might not be well-suited for all. Developing Countries require flexibilities for choosing commitments that best suit them. As RIFs evolve, trade rules might lag behind and include outdated obligations. Accordingly, agreements would need to be sensitive to countries' specific regulatory, economic and social requirements. Regular interaction and cross-fertilization between trade negotiators and services policymakers, regulators and civil society can help improve regulatory and pro-development outcomes.

Additional research is needed to assist developing countries to identify and implement RIFs that can best deliver development gains. Focus areas could include: identifying the different policy regimes required for regulating privately and publicly owned enterprises, understanding how RIFs need to evolve as countries move along the development path and clarifying whether trade liberalization commitments in ISS have impacted economic and regulatory developments.

NOTES

[1] UNCTAD (2010a). TD/B/C.I/MEM.3/5.

[2] US ITC (2010).

[3] Report of the Multi-year Expert Meeting on Services, Development and Trade: the Regulatory and Institutional Dimension on its first session, held at the Palais des Nations, Geneva, from 17 to 19 March 2009, TD/B/C.I/MEM.3/3.

[4] Tremolet, Sophie, and Niraj Shah (2005). "Wanted! Good Regulators for Good Regulation: An Evaluation of Human and Financial Resource Constraints for Utility Regulation." Report by Environmental Resources Management and Tremolet Consulting for the World Bank, Washington, D.C.

[5] Study cited in Parker, D et al. (2008). Infrastructure regulation and poverty reduction in developing countries: A review of the evidence and a research agenda. The Quarterly Review of Economics and Finance 48: 177–188.

[6] Trémolet, S. (2007). Outsourcing Regulation: When Does It Make Sense and How Do We Best?

[7] Manage It? PPIAF Working Paper No. 5. Washington, D.C., World Bank.

[8] Survey conducted in the context of the UNCTAD Multi-year expert meeting on services, development and trade: the regulatory and institutional dimension. The Report on the UNCTAD Survey of Infrastructure Services Regulators is available at: http://www.unctad.org/Templates/Page.asp?intItemID=5376&lang=1.

[9] WT/DS204/R, para. 7.203.

[10] Report of the Multi-year Expert Meeting on Services, Development and Trade: the Regulatory and Institutional Dimension on its second session, held at the Palais des Nations, Geneva, from 17 to 19 March 2010, TD/B/C.I/MEM.3/6.

[11] See for example, Dani Rodrik and Arvind Subramanian (2003), The Primacy of Institutions (and what this does and does not mean). Finance & Development. June.

TRADE IN FINANCIAL SERVICES, FINANCIAL CRISIS AND FINANCIAL SERVICES TRADE: WHAT IS IMPORTANT AND WHAT HAS CHANGED?

III

1. INTRODUCTION

Financial Services are a key infrastructure component of trade in goods and services. An efficient financial services (FS) sector is crucial for economic development, and a central infrastructural sector with strong backward and forward linkages with the overall economy. It can leverage economic development by improving productivity, facilitating domestic and international transactions, broadening the availability of credit for small- and medium-enterprises (SMEs) and households, channelling domestic savings, facilitating firm entry and competition, attracting FDI, and enhancing efficiency. The sector is also closely linked to trade (obtaining letters of credit and insurance in international financial network) as well as to the supply of other services sectors. Insurance services, for instance, have the capacity to not only mobilize and channel savings, but at an individual level to improve the quality of life of individuals and increase social stability. Within the services economy, the financial services sector is one of the more developed but also more complicated services sectors in terms of heterogeneity, sophistication of products, regulatory development and the emergence of new issues.

Previous financial crisis in Asia, Argentina, the Russian Federation and the ENRON debacle clearly demonstrate the cost of failure in the FS sector. The World Bank called the Asian crisis one of the most acute periods of financial instability this century in terms of the loss of output and its implications for poverty and unemployment.[1] More recently the financial crisis whose origins were in the United States sub-prime mortgage have drawn media attention to this sector, specifically the importance of regulatory and supervisory frameworks.[2] The collapse of a global housing bubble in 2007 and the ensuing global economic crisis caused the values of securities tied to real estate pricing to plummet leading to the failure of major financial institutions (both private and public) in the United States and Europe. The IMF estimates that large United States and European banks lost more than $1 trillion on toxic assets and bad loans from January 2007 to September 2009.[3]

Given the importance of the sector, the impact of the financial crisis and the lessons that can be learnt, ensuring national and global financial stability to support economic stability is a global public good.[4] This chapter attempts to give an overview of the importance of and recent developments in the FS sector, specifically as they relate to the interests of developing countries. This chapter draws on UNCTAD's work in the FS sector including observations made by experts during UNCTAD meetings on financial and insurance services and the regulatory and institutional aspects of infrastructure services.

This note considers in Part I the importance of the financial sector and its role in the national economy. In particular it weighs the arguments for and against financial liberalization including capital account liberalization. Part II provides an overview of financial markets, tracing developments prior to and subsequent to the financial crisis. It focuses on global market trends, specifically the potential of microfinance, South-South trade in financial services, outsourcing in the financial services sector and Islamic finance. Part III takes a closer look at the financial crisis in terms of its causes, costs, potential impact on developing countries and more broadly policy implications for the financial sector as a whole. Part IV considers briefly the role and importance of regulation. In particular it examines the kinds of approaches countries adopt toward regulation in the FS sector and the formulation and implications of adopting international standards. Part V looks at the post crisis development in the financial regulatory landscape specifically developments in the US, EU and Basel Committee on Banking and Supervision. It then sets out the possible implications this evolving regulatory landscape could have for global co-operation and developing countries. Part VI focuses on the trade aspects of financial services. It looks at financial services trade liberalization in the World Trade Organization and at a bilateral and regional level. It then examines possible interlinkages between financial services, trade commitments, and the bail out packages and financial sector interventions made in light of the financial crisis.

2. IMPORTANCE OF THE FINANCIAL SECTOR AND ITS DEVELOPMENT IMPLICATIONS

According to some authors there are two, possibly co-existing relationships between the financial sector and economic growth. One such relationship occurs when the financial sector has a supply-leading relationship with growth, and where economic growth can be induced through the supply of financial services.

The other relationship is characterized by a demand-following relationship whereby the demand for financial services can induce growth of financial institutions and their assets. Developing countries (DCs) have supply-leading patterns of causality of development and have considered locally incorporated insurance institutions or State-owned monopolies an essential element of economic development.

The FS sector in many DCs can be characterized by isolation from global capital market, high levels of government intervention, restrictive regulations, limited product differentiation and shallow domestic markets. During DCs early development phases, relatively closed banking sectors served them quite well (such as India and China). Subsequently, with economies becoming more complex, their FS system also gradually became more open to trade and foreign direct investment (FDI). Financial sector reform has generated much discussion specifically the issues of capital account liberalization and liberalization of trade in financial services. Financial liberalization is broadly the removal of distortions in domestic financial systems that impede efficient allocation of capital. It includes elements of domestic deregulation, internationalization of financial services and capital-account opening.

2.1. Liberalization of the domestic financial services sector

The 1990s saw a move toward greater privatization and liberalization undertaken either autonomously or as a result of bilateral, regional and, or, international obligations. Largely as a result of this liberalization, there has been an expansion of financial markets and increasing financial depth.[5] The central challenge faced by regulators in developing countries revolves around how to manage the relationship between commercial objectives of private operators on the one hand and development objectives of governments on the other hand.

Arguments for liberalization include the introduction of greater competition, including foreign entry benefiting the consumer, increasing efficiency, and transferring management skills and technologies. Foreign firms can help re-capitalize failing domestic firms. Inefficient domestic banking structures serve as an important motivation for FS liberalization – as has been seen in Asia and Latin America. More recently, opening securities exchanges to foreigners has increased inward capital flows, thus catalysing economic growth. At the theoretical level, there are many arguments in favour of adopting the liberalization of FS trade. Nevertheless, debates circulating over the relative virtues of openness and protection, in FS, raise concerns that must be addressed. These concerns include:

a) Consideration of the role which foreign FS providers would play in the domestic economy. Following from the strategic function of FS for countries' economic and social development, the suggestion is to avoid the postulation that the domestic FS system is dominated solely by foreign providers – possibly allowing for abuse of market dominance. On the other hand weaknesses of the domestic financial system are best improved through importing foreign know-how and allowing foreign banks to establish;

b) Foreign FS providers are likely to impact national providers – entry of foreign firms can lead to a decline in profitability of existing firms. Some governments may wish to maintain a certain national presence in the domestic market or to provide temporary support to national suppliers. At the same time, national competitors could be much less advanced compared to foreign FS providers entering the market, especially in niche segments;

c) Universal Access to FS (UA) related concerns also prevail. Concerns exist that foreign FS providers will engage in "cherry-picking",[6] operating only in profitable market segments, neglecting other important sectors of the economy (such as retail banking in rural areas). In parallel, to the above there are also real concerns that internationalization – through lower profit margins and pressure to cut costs – could result in the closing or streamlining of branches;

d) Structural concerns relate to fears that opening-up to foreign FS providers may lead to capital flows abroad and the risk of worsening a country's balance of-payments position. Foreign FS providers are more likely to invest in domestic savings abroad rather than in the local economy, and in so doing may exacerbate difficulties regarding domestic savings;

e) Concerns also relate to the difficulty of properly managing the liberalization process – in many developing countries, weaknesses of institutions

and domestic regulatory frameworks make it difficult to monitor more complex financial institutions and regulate international transactions and operations in international FS markets. This concern has become more acutely emphasized with the on-going financial crisis.

For privatization and liberalization to have a successful outcome, it is important to define their objectives at the outset – in line with national development objectives – and to ensure more effective regulatory and supervisory regimes, as a prerequisite in the context of liberalization of FS sectors.[7] More recently, during discussions at the UNCTAD Multi-year Expert Meeting on Services 2010, there was a broadly expressed view that the magnitude of the economic and social implications of the crisis was such that it had led to a rethinking of the orthodox paradigm that liberalization and deregulation of financial services is always the optimal choice. In the wake of the crisis, many countries that had deregulated their markets are now seeking to re-regulate them, in order to restore to their financial markets and the economy.

The financial crisis has challenged assumptions on which previous regulatory approaches were largely built, and in particular the theory of rational and self-correcting markets.[8] The realization that in this globalized world "shocks" emanating from a single segment of the financial sector of a country can be transmitted to others and have economy wide effects, has raised fundamental questions about the wisdom of global financial integration of developing countries.[9] It has been pointed out that financial market liberalization at multilateral and bilateral level may limit the ability of developing countries to regulate financial institutions and instruments, manage capital flows, or protect themselves from the effects of financial market protectionism in ways which support financial stability, economic growth, and the welfare of vulnerable consumers and investors.[10]

An IMF Report, 2009[11] echoes these sentiments, by highlighting the complex implications that globalization of financial institutions has for the financial stability of developing countries. From the perspective of individual institutions, globalization can help diversify risks and improve financial stability. However, as recent events indicate, severe crises more easily be transmitted across borders. To address wider systemic risk, a comprehensive approach to prudential supervision and market regulation is needed. Emerging and developing countries are thus presented with new challenges to strengthen institutions and improve coordination.[12] The experience of this financial crisis also supports the case for a more fundamental rethinking of global financial governance with a view to stabilizing trade and finance.

In any event while the pros and cons of liberalization of financial services trade has its own set of opponents and proponents, UNCTAD's discussions and findings have clearly highlighted that in order for the FS sector to generate pro-development outcomes, it requires to be supported by appropriate macroeconomic, prudential, regulatory and supervisory frameworks and adjustment policies. For many developing countries, designing and implementing such policies continues to remain a challenge, further compounded by the difficulties of properly managing capital-account liberalization.[13]

2.2. Capital account liberalization

The increase of capital flows between countries can make national financial systems more vulnerable to external shocks and macroeconomic conditions. Experiences with capital-account liberalization emphasize the importance of preconditions for liberalization to generate benefits.[14] The most controversial issues surrounding capital account liberalization is the relationship between financial liberalization, crises and long-term economic development. There tends to be a disconnect between economic theory and actual world events.

Substantial empirical evidence suggests a close link between liberalizing a financial system and economic and financial crises particularly in developing countries.[15] Kaminsky and Reinhart's (1999)[16] paper, while exploring the links between banking crises, exchange rate crises and financial liberalization, found that banking crises and currency crises are closely related and that banking crises are often preceded by financial liberalization.[17] Demirguc-Kunt and Detragiache (1998) found that where banking systems are not sufficiently developed, with capital account liberalization, banks become vulnerable to external economic shocks. Further financial liberalization could lead to an intensification of competition among banks and hence to greater moral hazard and risk-taking than before. Vulnerability is reduced with institutional development and strengthening of the banking system through prudential regulation.[18] Empirical

research shows that there has been a sharp increase in banking and exchange rate crises since the 1980s,[19] the most recent being the crisis that originated in the United States sub-prime mortgage market.

The Asian crisis provided a first-hand observation of the role of capital account liberalization in causing or exacerbating that region's severe economic downturn. Most economists would now agree that even if premature financial liberalization without adequate prudential regulation was not the root cause of the crises in countries such as Thailand, Republic of Korea and Indonesia, nevertheless, it greatly contributed to the occurrence of the crisis and to its depth. Indeed, the economic fundamentals prior to the crisis of the affected countries were better than those of India, which was spared the crisis because of its control over capital account. Similarly, China managed to avoid the crisis as it had not liberalized its capital account,[20] and also continued to have fast economic growth.

Over the last two decades the volatility and the pro-cyclicality of private capital flows to developing countries is a reasonably pronounced feature of international capital movements.[21] Such in-flows come in surges, often bearing little relationship to the economic fundamentals of the country and leave the country when they are most needed (in a downturn).[22] In developing countries, volatile capital flows can have a greater relevance given factors such as weak domestic financial systems, frequent economic shocks and the possibility of bullish market runs.

In analysing capital account liberalization it is customary to distinguish between short-term capital flows (portfolio flows and short-term bank loans) and long-term capital flows (FDI). In light of the recent deep economic and financial crises in Asia, Latin America and the Russian Federation, many economists today accept that free short-term capital flows could have seriously adverse consequences for developing countries. Particularly, as these flows are often volatile subject to surges and sudden withdrawals. While long-term capital flows, particularly FDI, are regarded as more stable and could have a positive influence on long-term economic development,[23] some hold the view that the inter-relationship between FDI and capital account liberalization is also a sensitive one.[24]

In a broad sense those in favour of capital account liberalization argue that it would lead to global economic efficiency and optimal allocation of world savings, thereby enhancing social welfare. Capital account liberalization could facilitate the diversification of investment and savings portfolios enabling corporations to raise capital in international markets at a lower cost. For instance free capital movements could help increase world welfare through transferring resources from ageing populations and lower rates of return in developed countries to younger populations and higher rates of return in newly industrializing countries.

The theoretical case against unfettered capital movements for maximizing the gains from trade and world economic welfare has been made by a number of economists from different schools of thought. Within the neoclassical tradition, Stiglitz (2000) argues that the concept of free movements of capital is fundamentally different from that of free trade in goods. The theory that financial liberalization leads to global economic efficiency, based on the analogy with free trade in goods, is flawed on several counts. Capital flows are subject to asymmetric information, agency problems, adverse selection and moral hazard. Although such problems may also occur also in trade in goods and services, they are intrinsic to financial flows and are far more important. There are also diverging views about the price formation process in asset markets such as stock markets and currency markets. Price formation in asset markets may often be dominated by speculators.

This viewpoint has been strengthened by developments post the financial crisis. Post the financial crisis capital flows to emerging markets have increased as a result of improved fundamental and growth prospects in these economies and loose monetary policy in advanced economies. The main recipients are Asian and Latin American emerging markets, South Africa and Turkey. These inflows have been characterized by a predominance of volatile portfolio investments.[25] Associated concerns include that massive inflows are temporary, can lead to strong exchange rate appreciations and inflate asset price bubbles.

In an attempt to stabilize short term volatile capital inflows, several countries have deployed capital controls in the run up to and in the wake of the crisis, including Brazil, Colombia, Indonesia, South Korea, Taiwan and Thailand. A 2010 IMF Staff Position which reviewed evidence on capital controls concluded: "capital controls—in addition to both prudential and macroeconomic policy—is justified as part of the

policy toolkit to manage inflows."[26] A 2011 IMF report further sets out a set of guidelines for when nations should (and should not) deploy such measures and what form they should take.[27]

3. GLOBAL MARKET TRENDS

3.1. Financial services trade: what has been happening in financial markets?

To have an accurate picture of global financial markets, consideration must be given to global financial markets in terms of size and trends prior to and subsequent to the 2007 financial crisis. A major cause of the financial crisis was the build-up of excessive risk in the financial system over many years, made possible by new financial instruments that obscured debtor-creditor relations, many of which were praised as enhancing financial efficiency when in fact they were delinked from income generation in the real sector of the economy. Inappropriate risk assessment, based on inadequate models, resulted in lax financial control and encouraged risky financial practices.[28] While sufficient data, post crisis, is difficult to come across at this early stage, it is possible to discern a few directional trends.

Pre crisis (up to 2007)

Accounting for 90 per cent of global FS exports in 2005, developed countries dominated this fast growing market while DCs accounted for only 10 per cent (about $18 billion). In 2006, total global value of all quoted FS companies grew by 26 per cent to $10.7 trillion. Emerging markets were important drivers of growth, representing 29 per cent of increase in total market value over the previous five years.[29] In terms of FS trade, developed countries were net exporters, with their exports nearly doubling (from $97 billion to $182 billion from 2000 to 2005). The United Kingdom is the largest exporter of FS, followed by the United States, Luxembourg and Switzerland.

Although developing country trading volumes are smaller, some countries or territories (such as Hong Kong, China; Singapore; Taiwan Province of China; Brazil; South Africa; India; and Republic of Korea) are active in FS.[30] Developing countries' performance in FS trade varies considerably by region and country. Countries in East Asia and the Pacific, Latin America and the Caribbean account for the major share of developing countries' FS trade.

Banks from developing countries tend to enter smaller developing countries with weak institutions, where high income country banks are reluctant to go to.

As far as the insurance sector is concerned global insurance premiums stood at $3.3 trillion in 2005, life insurance contributing 58 per cent and non-life-insurance 30 per cent. There is a positive correlation between a country's level of development and insurance coverage. Industrialized countries dominate the world insurance market, with an 88 per cent share as opposed to emerging markets (12 per cent). While collective premiums of developed country markets were higher than those of emerging markets, overall real growth rate of these markets were 2 per cent and 8 per cent, respectively, indicating significant demand in emerging markets.[31]

Post crisis

However, subsequent to the financial crisis, some of this picture may have changed, it is difficult to measure the exact impact in terms of trade flows of financial services, but certain initial observations provide some perspective. IMF estimates indicate that large United States and European banks lost more than $1 trillion in toxic assets and from bad loans from January 2007 to September 2009.[32] The IMFs base case scenario is that American and European banks have shed some $10 trillion of assets or an equivalent of 13.5 per cent of their stock of bank credit in 2009.

Stock markets across the world – developed and developing countries – dropped substantially since May 2008. The Russian Federation stock market had to stop trading twice, the Indian stock market dropped by 8 per cent in one day at the same time as stock markets in the United States and Brazil plunged. A study on the impact of the global financial crisis in DCs which covered 10 countries in Africa, Asia and Latin America found that there was evidence of reduction and pull-out of portfolio flows and significant drops in equity markets.[33] Portfolio investment flows experienced a dramatic drop in 2008 in most countries, shifting sometimes to large net outflows[34] as well as significant drops in equity markets in 2008 and into 2009. There is evidence of increased credit tightening conditions for bank lending in Cambodia, Ghana and Zambia, where FDI has been less affected, but this impact varied across countries.[35]

The African financial sector has, for the most part, been left relatively unscathed by the global crisis. This was primarily due to the fact that changes in ownership structure and integration of African banks into the global financial market were slow. Yet African countries have not been immune to the financial havoc. The Nigerian stock exchange – All Share Index – fell 37 per cent in 2009 (the steepest quarterly decline in more than a decade and the sharpest decline in the world). The Johannesburg Stock Exchange – the largest in the region – ended 2008 with a 25.7 per cent loss. In Asian territories and countries, such as Hong Kong and Republic of Korea, foreign portfolio investment represented approximately 30 per cent to 30 per cent of money invested in financial markets. As investors sold shares to cover severe liquidity needs in western markets, capital moved out of many Asian financial markets. In China, where the financial system was largely insulated from the toxic assets crippling other economies, the most dramatic development was the current severe contraction in world trade.

Given the risks to financial stability, policy intervention by governments on an unprecedented scale helped improve financial conditions and real activity, money markets have stabilized, equity markets have rebounded, and the credit cycle looks to be entering an upswing.[37] Together with real and financial activity, cross border financial flows from advanced to emerging economies have picked up, reflecting a recovery from 2008. Equity and bond flows have accelerated since the end of 2008, although syndicated loan issuance remains below pre-crisis levels.[38] In China, as also in other parts of emerging Asia, credit and some asset markets are booming.[39] Data from the Bank for International Settlements (BIS) Consolidated Banking Statistics point to a drop of more than 13 per cent in international banks' claims to developing countries in March 2009 compared with June 2008 (when they reached their highest level). From March 2009 to September 2009 there was modest evidence pointing to a slight recovery.

3.2. Global market trends

The era of financial globalization (up to 2007) was characterized by greater privatization, liberalization and financial sophistication, wider access to information, technology and communication, offshoring, growth of Islamic-finance, and microfinance institutions (MFIs). In the aftermath of the financial crisis, the exact impact on broad trends in the financial markets is still evolving and likely to be strongly driven by the regulatory overhaul being undertaken in the United States and Europe. Two clear trends have emerged: the move toward deeper regulation; and the increasing importance of Asian markets. While some trends could potentially enhance the system's efficiency, they could also make it more vulnerable to failure. The question remains as to how these trends will develop and to what extent will they cater to the needs of developing countries (an area where further research and monitoring is required).[40]

3.2.1. Globalization of financial markets

The global FS market is marked by continuing privatization and liberalization – undertaken either autonomously or as a result of international obligations. Largely, as a result of this liberalization, financial markets have expanded. Moreover, financial depth (the value of financial assets expressed as a percentage of GDP) has risen substantially.

3.2.2. Integration and consolidation

Financial services integration occurs by way of consolidation of FS (within and across FS subsectors as for instance in the case of bancassurance and universal banking) as well as mergers and acquisitions (M&As). As markets become increasingly internationalized, open and admit competition, the FS sector has seen a process of M&As, largely driven by the need for economic efficiency from economies of scale and consolidating capital and human resources. This scenario is particularly marked in the European Union, where a Pan European regulatory environment, excess capital and increased competition has created a small group of pan-European giants dominating the European landscape. It appears that the financial crisis has continued this process of consolidation, albeit in a different manner and rationale. Rescue acquisitions and bargain hunting on the part of relatively stronger banks is likely to be the dominant motivation for bank mergers, spurred on by the likely market exit of several failing banking institutions. In terms of the kind of M&A, the focus is likely to turn towards domestic deals as a result of national governments general preference of domestic consolidation and likely re-nationalisation as a consequence of new ownership structures, regulation, and general market sentiment – making cross-border activities relatively less attractive for banks.[41] The financial landscape has undergone a change, with a number of banks going into or verging on bankruptcy, leading to hectic M&A activity,

government ownership and to the disappearance of independent investment banks. For instance Lehman Brothers is bankrupt, Bear Stearns and Merrill Lynch have been bought by commercial banks, Goldman Sachs and Morgan Stanley have changed their status to commercial banks, and a further five European banks have failed. Within the space of a month, two American mortgage giants Freddie Mac and Fannie Mae were nationalized as was AIG the world's largest insurance company and $700 billion of toxic mortgage related assets were absorbed by the Government of the United States.

3.2.3. Growth of equity markets

Liberalization and globalization of FS turned the equity markets into an essential source of capital for investment, growth and development (replacing traditional sources of finance, such as sovereign borrowing and bank lending). In 2005, equities accounted for nearly half of the growth in global financial assets. While this trend was mainly seen in Europe, the United States and Japan, DCs had also seen growth of equity markets, resulting in new patterns of foreign and domestic finance. In 2005, emerging market equities accounted for more than half of the emerging markets growth in financial assets (an increase of $1.7 trillion). However, the financial crisis halted a nearly three-decade-long expansion of global capital markets, after nearly quadrupling in size relative to GDP since 1980, world financial assets – including equities, private and public debt, and bank deposits – fell by $16 trillion to $178 trillion in 2008, the largest setback on record.[42] Post crisis, Asian and Latin American countries have received an impetus to their financial markets.

3.2.4. Proliferation of financial instruments

Industry dynamism, needs of new consumers (including from emerging markets) and investors, aging populations (pension plan funding changing from government-led to individual-led) and technology-led to the creation of innovative retail financial products (such as derivatives and swaps) and financial entities (hedge funds). While attractive, these financial products also entail higher risks, especially when traded over the counter (OTC) and not subject to stringent regulation. Derivative instruments raise the possibility of potential risk for domestic and international financial systems.

Following five years of 20 per cent average annual growth, in 2003 an estimated 7,000 global hedge funds held assets of $1.3 trillion. The sector remained lightly regulated for a short duration and concerns of DCs (mainly Asian) resulting from the late 1990s crises remain unaddressed. The unregulated operations of hedge funds and new financial products, such as collateral debt obligations (CDOs), have been highlighted as causes for the recent financial collapses. This in turn has raised concern and interest in more stringent regulation for hedge funds.[43]

3.2.5. Continuing opportunities in emerging markets

Emerging markets remain attractive for domestic and foreign players, particularly for consumer finance products, due to strong economic growth, increasing personal disposable income, and large populations, specifically post crisis. Financial services providers are pursuing these opportunities through M&As, joint-ventures or the establishment of new operations. However, even though capital flows to emerging markets are growing, they still account for just 10 per cent of global capital flows; 80 per cent of global capital flows are between the United States, the United Kingdom, and the Euro zone.[44]

3.2.6. Offshoring and outsourcing

For DCs, offshoring and outsourcing in the FS sector offer potential gains, as exports move up the value chain. By 2010, it was estimated that more than 20 per cent of the FS industry's global cost base could have shifted offshore. In 2005, 70 per cent of financial institutions used outsourcing, compared to 26 per cent in 2003. The types of FS offshored has, over a period of time, evolved from basic IT processing and back-office activities to more value added services, including front office functions. Offshore finance centres (OFCs) aim to draw international business through attractive legislative environments, good infrastructural facilities, tax concessions and liberal incorporation requirements.

Post crisis concerns relate to the sustainability of the offshoring trend, particularly in the financial services sector. To begin with, FS institutions were some of the main clients of IT offshoring, for instance, more than 30 per cent of Indian IT and business services exports were delivered to banks and other financial outsourcing activities which have been impacted in the wake of the financial crisis.[45] This situation has been compounded by protectionist tendencies

arising out of growing crisis related unemployment in an industry which was already facing a protectionist backlash, thus, putting pressure on governments to retain jobs domestically.[46] This has, and will impact services exports of countries such as India, Sri Lanka, the Philippines, and even China which plans to build its domestic IT services industry with particular focus on offshoring.[47] At the same time, a possible converse trend of the need to reduce costs and improve profits is likely to push many companies to restructure production globally, with the result of increased foreign outsourcing.

3.2.7. South-South financial services

The share of developing country banks out of total banks operating in DCs (South-South banks) stood at 30 per cent. Banks from developing countries tend to enter smaller DCs with weak institutions, where high income country banks are reluctant to go to.[48] In the Middle East, Bahrain, Dubai and Qatar have emerged as aspiring global financial centres, developing dedicated financial districts governed by international accounting standards. However the Dubai crisis indicated the need for government intervention.[48]9Some issues that have arisen include regulation in DCs to facilitate outward investment and home and host country sharing of regulatory responsibilities in the context of South-South provision of FS.

3.2.8. The role of the new emerging economies[50] – including in the context of sovereign wealth funds (SWF)

As the distribution of economic power around the world changes, financial power also seems to be changing. Oil-rich countries and Asian central banks are now among the world's largest sources of capital. Regulatory concerns relate to how (what kind of financial products or services i.e. derivatives, bonds), with whom, (hedge funds, banks, other financial entities) and where (EU, United States, China) these assets are placed. . This is especially relevant in the context of the current financial crisis. For instance, Sovereign Wealth Funds (SWF) must protect themselves against the risks posed by hedge funds and private-equity funds. In particular, they need tools and incentives to measure and monitor their exposure accurately and to maintain enough capital and collateral to cover these risks. Regulators in developed countries also tend to be wary of SWF – by requiring them to publicly state their investment goals. This is true especially in the context of government owned SWF. Policy makers in developed countries should base any regulatory response to the activities of the new power brokers on an objective appraisal of the facts. Rating agencies and investors alike must raise their risk-assessment game.

3.2.9. Islamic financing

Islamic finance (IF) is one of the fastest growing segments in global financial services, while it currently represents only 1 per cent of global assets, it has been growing by over 20 per cent annually since 2000. Its combined revenue was $53 billion in 2007 and is expected to reach $120 billion by 2012. Key principles include: ban on interest (riba)[51] and uncertainty; risk-sharing and profit-sharing; ethical investments that enhance society;[52] and, asset backing.[53] Several UAE-based Islamic banks such as Emirates Islamic Bank, Dubai Islamic Bank and Abu Dhabi Islamic Bank have branches in each of the Northern Emirates and provide fully Sharia-compliant retail, business and corporate banking services. Dubai aims to become a major centre for product innovation for Islamic investors and borrowers. Earlier this year, Dubai International Financial Centre Investments LLC, the investment arm of the Dubai International Financial Centre Investments announced the issue of a $1.25 billion sukuk ("Sukuk", is a Sharia compliant alternative to interest-bearing investment certificates or fixed income securities commonly referred to as Islamic bonds.), the highest rated and the largest straight sukuk to come out of the region.[54]

Substantial potential does exist particularly subsequent to the financial crisis, where IF has been touted as an alternative to pre-crisis approaches in financial markets as it offers a more realistic reflection of the real economy.[55] The lack of exposure to certain types of assets associated with the crisis – and the asset-based and risk-sharing nature of Islamic finance – shielded Islamic financing from the crisis. Islamic financial institutions, which are subject to Sharia regulations, are forbidden from investing in such derivative instruments. Moreover, the holding of shares or the investments in conventional financial institutions which are involved in usury or *riba'* are not permitted. While conventional intermediation is largely debt-based and allows for risk transfer, Islamic intermediation, in contrast, is asset-based, and centres on risk sharing. The combination of these factors minimized the impact of the financial

crisis.[56] Furthermore, these features make investment activities more closely related to the real economy and tend to reduce their contribution to excesses and bubbles.[57]

However, the market is still underdeveloped and fragmented – considerations such as how the market in Islamic financial services can be monitored and regulated in a uniform manner across countries and sectors are essential. While the objectives of the regulator in IF remains the same – ensuring the viability and integrity of the financial system in a Sharia compatible manner – added objectives include achieving social justice and economic prosperity of the whole community.[58] Islamic finance typically has a Sharia supervisory board,[59] which approves financial practices and investments as being Sharia compliant. The transformation of conventional financial products[60] into corresponding IF analogues has important implications for their regulation and supervision.

Where a dual system of conventional and IF[61] is followed, the regulatory framework of conventional financial services is applied to the extent possible. Regulatory concerns arising from the dual operation include: definitions of Islamic financial products; an applicable regulatory framework;[62] role of the Sharia supervisory board in a secular country; and the competence of a Sharia scholar to act as director.[63]

Various lending structures generate different risk and balance sheet exposures for Islamic banks, requiring monitoring and management.[64] Differences between balance sheet structures of Islamic and conventional banks have implications for accounting and financial reporting. Treatment of profits and losses has consequences for the balance sheet structure requiring adjustments to meet minimal prudential requirements.[65]

Greater standardization reduces Sharia arbitrage, sets minimal standards and increases marketability of Islamic products.[66] Many leading IF centres around the world have adopted international Sharia-compliant financing regulation standards. The Islamic Financial Services Board (IFSB) and the Accounting and Auditing Organisation for Islamic Financial Institutions (AAOIFI) are working toward standardization in IF. The IFSB puts forth standards for supervision and regulation[67] and has adopted globally accepted prudential standards which integrate IF with the conventional financial system.[68] The AAOIFI issues international standards on accounting, auditing, and corporate governance.[69]

3.2.10. Banking the Unbanked: the Growth of alternative and micro financial institutions

One of the key problems in developing countries has been the need to reach out to poorer, rural or "unbanked" segments of the population. MFIs are successful in providing small loans to the poor. While No systematic effort to map the distribution of microfinance has yet been undertaken. A 2003 study on 'alternative financial institutions'[70] counted approximately 665 million client accounts at over 3,000 institutions that are serving people who are poorer than those served by the commercial banks. Of these accounts, 120 million were with institutions normally understood to practice microfinance. Others included postal savings banks (318 million accounts), state agricultural and development banks (172 million accounts), financial cooperatives and credit unions (35 million accounts) and specialized rural banks (19 million accounts).

Due to high operating margins, microfinance is viable from a business perspective, creating increasing interest by commercial banks and private investors (including funds) aiming to exploit the market. Policies are needed to support and regulate the MFI sector. In the United Republic of Tanzania in 2002, for example, MFIs reached approximately 6 per cent of the population and held approximately 60 per cent of total commercial bank deposits and 11 per cent of credits. Similarly MFIs play an important role in the Kenyan financial services sector. A marked occurrence subsequent to financial reform in Kenya was the absence of deposit taking institutions willing to handle small sums arising from low income households and those in the rural areas. The scarcity of financial services to the rural poor has seen the emergence of MFIs and credit co-operatives such as the Savings and Credit Cooperative Organizations (SACCOs). The SACCOs gained importance and increased size when they stepped in during the banking sector crisis to open branches in areas where banks had retreated and today constitute a critical part of the financial system.

Regulation of MFIs has followed a pattern in which institutions relying on other people's money are legally registered, but not regulated or supervised. Institutions leveraging members' money credit unions) are overseen by a non-financial cooperatives authority. Institutions mobilizing the general public's money (banks) are subject to prudential regulation and supervision.[71]

The objective of microfinance regulation varies depending on local conditions, level of development[72] in the sector and the kind of microfinance entity.[73] Regulatory approach varies based on structure of MFI liabilities or their source of funding.[74] Generally, however, governments are moving toward sustainable, market-based microfinance through three specific roles: (1) eliminating unfair competition from public institutions; (2) undertaking regulatory reform; and (3) improving the business environment.[75] Formally established and regulated microfinance providers are still relatively few, and microcredit services tend to be provided by informal and semi-formal entities mostly not regulated and often not registered.[76]

4. FINANCIAL CRISIS: CAUSES, IMPLICATIONS AND POLICY RESPONSES

4.1. Causes

The current financial crisis can be attributed to a combination of factors including the predominance of finance over productive sectors of the economy where real wealth is generated, excessive deregulation and an underestimation of risk and excessive leveraging in the years before the crisis.[77] This is not the first time that the failure of financial markets to perform essential functions has led to severe losses of wealth and an economic recession.[78]

A larger question looms over whether governmental intervention would have prevented or minimized the impact of the current financial crisis. If the answer to this is in the affirmative then the follow-up question would revolve around what kind of governmental intervention would have been appropriate and at what point in time should it have been put into place.

4.2. Costs

Given the risks to financial stability, policy intervention by governments on an unprecedented scale helped improve financial conditions and real activity, money markets have stabilized, equity markets have rebounded, and the credit cycle may be turning up.[79] Over 2009 to 2010 many developed countries and some emerging economies put in place significant economic stimulus and financial rescue packages.[80] The aggregate United States support programmes have been estimated at $12 trillion,[81] and those of the European Union at $8 trillion. Several emerging economies, including Brazil, China, and the Russian Federation, have implemented large economic stimulus packages, of which China's is reputed to be the largest. The major share, by far, of these public sector interventions has been in financial rescue packages. According to IMF estimates up-front government financing and support to the financial sector[82] for developed countries ranged from 0.8 per cent to 18.9 per cent of GDP while on average for emerging economies it was 0.3 per cent.[83] This indicates considerably more government financial support for advanced economies as opposed to DCs.

The manner and kind of specific interventions in the financial sector have varied ranging from recapitalization of banks, to central bank provision of loans, credit lines and purchase of illiquid assets from financial assets, guarantees and deposit insurance.

As far as the insurance sector is concerned the current crisis affected the insurance sector differently from the banking sector. The insurance sector had a comparatively limited involvement in the credit crisis. Those insurance companies that were affected had operations as financial guarantors, operating less as insurance companies than as owners and investors in a different type of business. Insurers were not subject to the same systemic issues as banks, nor had they contributed to global financial instability, showing instead resilience in the face of adverse market conditions (liquidity squeeze) and acting as a stabilizing factor. The resistance of insurance operators to liquidity problems that had impacted the banking sector and the impact of expected credit losses arising from exposure to credit derivative swaps stemmed from a combination of the insurance business model vis-à-vis liquidity constraints, prudence exhibited by most operators following past experiences and tight supervision of the sector.[84]

4.3. Potential impacts on DCs

Depending on the level and kind of integration into global financial markets, DCs have been impacted differently as far as the FS sector is concerned. While for many developing countries, the FS sector has not been hard hit by toxic assets, those with more integrated financial markets have been unable to avoid the economic fallout from the troubles of Europe and the United States, including plummeting stock

markets, weakened currencies and foreign portfolio investment. Other more long-term impacts, depending on the reality and extent of economic recession are likely to be a fall in demand and therefore production, and the possibility of millions slipping back below the poverty line.

Mature financial markets may be headed for slower growth in the years to come. In a few developed economies, rising public deficits and debt have contributed to a sharp increase in sovereign risk premiums, creating spillovers into other economies and markets. At the same time, constraints on bank capital and sluggish non-financial credit growth continue to impair the supply of credit, and issuance of corporate bonds. Bank capital is likely to remain a constraint, particularly in Europe.[85] Nevertheless, the IMF notes that in developed economies, the tightening of bank lending standards is ending and credit appears to be bottoming out.[86] Estimates for actual and prospective bank write-downs and loss provisions over the period 2007 to 2010 must also be lowered.[87] For emerging markets, the current crisis is likely to be no more than a temporary interruption in financial market development, due to the underlying sources of growth remaining strong.[88]

The crisis has led to a drop in bond and equity issuances and to the sell-off of risky assets in developing countries. The average volume of bond issuances by developing countries was only $6 billion between July 2007 and March 2008, down from $15 billion over the same period in 2006. Between January and March 2008, equity issuance by DCs stood at $5 billion – its lowest level in five years. As a result, World Bank research suggests some 91 International public offerings have been withdrawn or postponed in 2008.[89]

Furthermore, without calling into question the necessity of financial rescue packages an issue which is considered in greater depth in Part VI of this chapter, an inevitable question is their effects on international trade in FS[90] and in particular the participation of financial suppliers from DCs in the financial markets of more industrialized countries.

While the crisis originated in financial markets, it reached the real economy in which SMEs operate. Being at the end of the payment chain, SMEs typically experienced extended delays for payments, forcing a growing number of insolvencies and defaults. Further small- and medium- enterprises experienced difficulties in accessing financing, due to credit tightening by banks. In some countries, governments responded by assisting export oriented SMEs through various financial schemes, increasing amounts of public guarantee for loans given to specific companies or sectors, as well as assisting SMEs to cope with payment delays.

Emerging and developing countries are presented with new challenges to strengthen institutions and improve coordination especially in light of regulatory developments internationally and in the G-20 countries. To address wider systemic risk, a comprehensive approach to prudential supervision and market regulation is needed.[91]

4.4. Policy implications more broadly of the financial crisis

During the crisis, in many countries, the financial system failed to perform vital functions of managing risk, allocating capital, and mobilizing savings, becoming instead an ends in themselves rather than a means to a more productive economy.[92] The need and scale of rescue operations has revealed that profits and incomes earned from financial activities over the past few years have been disproportional to the macroeconomic and social usefulness of the financial sector.[93] A logical consequence of this is that the balance between private activity and State involvement in the financial sector beyond the crisis may need to be fundamentally revised.[94] Further the crisis has made it clear that more finance and more financial products are not always better, and a more sophisticated financial system does not necessarily make a greater contribution to social welfare.[95]

The realization that in a globalized world, shocks emanating from a single segment of the financial sector in one country can be transmitted to the economy more broadly and other countries, has raised some fundamental questions about the wisdom of global financial integration of DCs.[96] It has been pointed out that financial market liberalization at multilateral and bilateral level may limit the ability of DCs to regulate financial institutions and instruments, manage capital flows, or protect themselves from the effects of financial market protectionism in ways which support financial stability, economic growth, and the welfare of vulnerable consumers and investors.[97] The fallout from this financial crisis also supports the case for a more fundamental rethinking of global financial governance

with a view to stabilizing trade and finance. Finally financial policy should include incentives for provision of credit to certain underserved groups or create institutions that focus on long-term development impacts rather than on short-term capital gains.[98]

At an international level, the crisis also revealed deficiencies of the international FS governance system. While international bodies formulated numerous international standards and guidelines, they did not help prevent the crisis. Internationally concerted actions, such as the G-20 Heads of States agreeing on measures to address the turmoil and suggestions to improve the international financial architecture, have emerged. These actions include: intensifying international cooperation among regulators and strengthening international standards; defining systemically important institutions and determining their appropriate regulation and oversight functions reforming International Financial Institutions governance, particularly as regards Bretton Woods institutions and the Financial Stability Forum;; advancing the IMF's monitoring agenda and reviewing its lending role.

A clear aspect of financial policy reform is the generally accepted need for strengthening financial regulation and supervision.[99]

5. REGULATION

5.1. Regulatory issues

The global financial system, as seen today, owes its evolution over the past three decades to three mechanisms – deregulation, technological and financial innovation and the growing international mobility of capital. The 1980s saw an accelerating trend toward financial deregulation within domestic financial systems and through the internationalization of FS (eliminating barriers to trade, and reducing capital-account restrictions). Deregulation included: elimination of restrictions on intra-sectoral activities (removing barriers between products and markets) and between countries; withdrawal of government intervention (through privatizing State-owned banks, and leaving interest rates market-determined); and, elimination of competition-restraining regulation.[100] Deregulatory trends in turn, combined with technological advances, created challenges and resulted in a parallel or sub-sequent trend of "re-regulation" (adapting exiting and adopting new regulations) with a number of objectives (prudential, competition-enhancing, social policy, good corporate governance). The trend toward re-regulation has been given further impetus by the on-going financial crisis.

Today regulators face challenges, arising from the heterogenic and increasingly complex nature of the FS sector, technological innovations and newer financial products. This rapid development of FS has made it difficult for regulators to keep up with the changes in the structure of the industry. While earlier, the focus of regulation used to be on banking (specifically deposit-taking) and investment businesses (securities), recently regulation has been introduced to control the conduct of trusts, company services providers, and curb financial crimes. Thus, even though economic liberalization in the twentieth century caused an unprecedented level of cohesion amongst national financial systems – to the extent that it can be said that there now exists a single global financial marketplace – that marketplace is diverse.

Regulatory and institutional frameworks in countries vary depending on the objectives of regulation, circumstances within the financial market and the size of the FS sector. Across countries, the regulation and supervision of the FS sector is far from consistent, this, despite recent efforts of international standard setting bodies. Developing countries are faced with additional difficulties as not only are their financial systems more vulnerable and deeply impacted by external shocks including financial crisis,[101] but their financial infrastructure is often minimal or inadequate leading to a gaps in their financial regulatory frameworks Even among developed countries there are great differences, for instance, with regard to capital adequacy and reinsurance supervision.[102] Further, given the increasingly high mobility of capital and a changing financial market place, regulators and supervisors are ill-equipped to monitor the financial strength and risk profiles of FS providers. This in turn, can have negative implications for financial stability, the recent the sub-prime mortgage crisis being a good example.

Although a unified theory of financial services regulation does not exist, certain common key objectives,[103] such as ensuring the viability, integrity and stability of the financial system; promoting confidence in financial infrastructure and the economy as whole; avoiding the possibility of failures; preventing anti-competitive

practices to protect financial services businesses as investors and from malpractice by some consumers; and maintaining consumer confidence in the financial system underpin financial services regulation globally.[104]

In terms of the approach to be followed, financial services regulation may be principles-based or rules-based. Principles-based regulation --followed for instance in the United Kingdom-- sets broad behavioural standards expected of services suppliers, allowing the market to determine the best manner in which regulatory objectives can be satisfied. While it reduces the cost and burden of regulation it requires pro-active supervision and enforcement flexibility. Benefits of principles-based regulation comprise the flexibility to rapidly respond to changes in the financial marketplace. Moreover, implementation of principles is supported by comprehensive and prescriptive rules.[105] Benefits of a rules-based approach --followed for instance in the United States -- comprise legal predictability, by ensuring that regulatory discretion is circumscribed by specific rules. Rules-based or prescriptive regulation covers specific situations or problems, and may result in regulatory arbitrage and, a compliance culture, of box ticking. According to the UK Financial Services Authority,[106] prescriptive standards are unable to address changing market circumstances and practices at all times, leading to delays, inability to prevent misconduct and becoming a burden for the regulator and industry. An effective regulatory system should therefore combine the two.[107]

5.2. International approaches to regulation of the FS sector

Regulatory initiatives in the FS sector are increasingly taking place at the international level. The international financial order has particular characteristics These include: loosely connected and decentralized structure of international governance (the international FS landscape is composed of numerous institutions, entities and informal networks of national officials and authorities); the legal nature of rules (hardly legally binding, instead policy recommendations and international guidelines); implementation of rules (informally monitored, with attendant variations in level of compliance); content and substance of rules (covering a wide variety of issues sometimes sector-specific and sometimes functional); and specificity of rules (mostly setting broad principles and best practices, granting flexibility for adjusting them to the specificities of individual countries). By establishing clear rules, international standards can help improve the functioning of the market, perform an important guiding function for domestic reform processes and facilitate liberalization and integration of FS markets. Broadly, four elements have been highlighted as key to a global approach to regulation in the financial services sector: rules and standard-setting; surveillance; cooperation and coordination; and enforcement.[108]

International regulatory and standards setting bodies in the financial sector include: Bank for International Settlements (BIS, 1930); Basel Committee on Banking Supervision (BCBS, 1973); International Association of Insurance Supervisors (IAIS, 1993); and International Organization of Securities Commissions (IOSCO, 1983). These bodies aim to enhance cooperation and exchange of experiences, the development of standards, guidelines, best practices and surveillance mechanisms. The Organization for Economic Cooperation and Development (OECD) hosts the Financial Action Task Force (FATF, 1989, established by the G7), and the IMF plays an informal role in monitoring the process of work and national implementation of FS-related international standards (through multilateral and bilateral surveillance and the Financial Sector Appraisal Programs (FSAPs)). Other joint bodies also exist, such as the Financial Stability Forum, convened in 1999. This Financial Stability Forum brings together senior representatives of financial authorities, international financial institutions, international regulatory and supervisory groupings, central bank experts and the European Central Bank.

While the number and contents of international standards and codes of conduct in the FS sector are varied, detailed and especially during this period of the financial crisis changing, they pose a specific set of difficulties for DCs. A first difficulty lies in defining international standards as they relate to FS and ensuring the interest of DCs as well as the status of their FS sectors which are reflected in the development of these international standards. This includes recognition by standard setters that different countries are at different levels of economic development with varying institutional capacities. In this process country ownership, appropriateness and representation is important.[109] A second difficulty is in ensuring acceptance at the national level particularly through the implementation and enforcement of

these standards, which in turn could necessitate creation of further legislation and the need to match international standards with national circumstances. (e.g. commercial law is a necessary prerequisite for the implementation of the IOSCO standards, as is an independent judiciary for ensuring enforcement). When looking for the right mix between global and local, ideally, principles should be international but they should be implemented locally – in a parallel but ethnocentric manner. In the banking sector for instance the Basel core principles for effective banking supervision represent a useful starting point for DCs.[110] A third difficulty relates to the need for transition periods, to match liberalization commitments undertaken by way of international trade commitments at the WTO or in regional or bilateral trade agreements. Liberalization of FS and in particular capital account liberalization require central banks to have effective regulatory, supervisory, enforcement and informational structures in place.[111] Other DC concerns relate to the need for financial, technical and human resources for implementation of regulations and the establishment of institutions.

6. POST CRISIS DEVELOPMENTS IN THE FINANCIAL REGULATORY LANDSCAPE[112]

The global financial crisis has demonstrated critical shortcomings and gaps in national and international financial regulatory framework. Given that the financial services sector is a backbone of all economic activities, the social cost of regulatory failure in the sector can be, and has during the course of the crisis been, economy-wide with cross-border spill-over effects. The crisis challenged assumptions on which previous regulatory approaches were largely built, including the rational and self correcting financial market hypothesis, stressing the role of the State in ensuring sound regulation and oversight in the financial sector.

The financial regulatory architecture is currently under extensive reformation at both the national and international levels. The major thrust of reform strives to transform the regulatory and supervisory structure from a system focussed on micro-prudential supervision of individual banks into a more holistic system with a strong and inclusive emphasis on macro-prudential supervision of the entire system, so as to identify and control systemic risks. In regulatory terms, market entry and technical regulations (including competition and consumer protection) are at the core of these efforts. The reform agenda pertains to market entry regulation in that it redefines financial conditions and requirements for financial institutions to (continue to) operate in the market by redefining bank capital adequacy and liquidity requirements. It also pertains to technical regulations by defining the quality of FS and products, consumer protection, systemic risks to the financial systems and real economies. Proposed regulatory approaches have been largely price-based in that economic incentives are being modified for banks to change their risk-taking behaviour while certain "activity restricting" quantitative approaches have also been proposed and pursued such as outright prohibition of certain activities regarded as detrimental including bans on proprietary trading by deposit-taking banks ("Volcker Rule") and on banks' ownership of hedge funds or private equity.

Substantive changes required of the regulatory framework have necessitated corresponding changes in institutional settings and their functions. The regulatory focus given to macro-prudential regulations and systemic risks have implied significant changes in national institutional frameworks, particularly given that in many cases an institution with regulatory oversight over the financial system as a whole did not exist. Extending regulatory perimeters to sectors thus far excluded from tighter banking regulations have meant a reallocation of regulatory competencies across different regulatory agencies (between banking, insurance and securities), as well as creating dedicated "one on" macro-prudential supervision. Further, the macro-prudential focus of the reform proposals has necessitated consideration of macroeconomic policy implications, including macroeconomic surveillance and analysis (such as business cycles, credit growth and money supply), thereby blurring the lines between fiscal and monetary policies, and financial regulations. This requires central banks and regulators to enhance their regulatory toolkit for assessing systemic risks, and devise institutional mechanisms to link financial and macroeconomic conditions.

United States regulatory landscape

In July 2010, the Congress of the United States passed some of the stiffest restrictions on banks and Wall Street since the Great Depression ("Dodd Frank-Act"). The restrictions ushers progress in three critical areas:

regulatory oversight; derivatives; and dealing with troubled banks that are "too big to fail".[113] The Dodd Frank-Act creates the Consumer Financial Protection Bureau, empowered to write and enforce regulations covering mortgages, credit cards and other financial products. Lenders face new restrictions on the type of mortgages they write, and borrowers must provide evidence they can repay loans.

Oversight will be the responsibility of a 10-member council of regulators led by the Treasury Secretary which will monitor threats to the financial system and decide which companies are "too big" or interconnected to fail, thereby requiring tougher regulation and if need be liquidation. The most important provision is the resolution authority under which federal regulators can seize any financial company whose failure threatens the financial system, and quickly pay off secured creditors while imposing losses on shareholders and unsecured creditors. Such resolution authority already exists for banks, but for large companies such as Lehman Brothers and American International Group, regulators faced a choice of either bailing out the company and its creditors or letting it go bankrupt.[114] The United States Federal Reserve System will lead the oversight of big interconnected companies, and face more scrutiny from the Government Accountability Office – Congress' investigative arm.

In terms of capital requirements big banks will have to reserve as much money as small banks do to protect against future losses. Under current law, derivatives have been traded out of sight of regulators. The new law would require such trade to be carried out on more transparent exchange basis. A proposal to stop banks trading derivatives was scaled back.[115] Banks may continue trading derivatives related to interest rates, foreign exchange, gold and silver. Riskier derivatives shall require running through affiliated companies with segregated finances.[116]

Companies that own commercial banks shall no longer make speculative bets for their own profit. Banks will be allowed to invest up to 3 per cent of their Tier 1 capital in private equity and hedge funds. Credit rating agencies that provide recklessly bad advice shall be legally liable for investor losses. Moreover, they will be required to register with the Securities and Exchange Commission.[117]

EU Regulatory changes

The European Commission adopted on September 23, 2009 an important package of draft legislation to strengthen supervision of the financial sector.[118] The enhanced cooperative arrangements are designed to reinforce financial stability throughout the EU.[119] It provides for a European Systemic Risk Board, whose role is to monitor and assess threats to financial stability in the EU, identify and prioritise such risks and issue warnings, where appropriate, to policymakers and supervisors. ESRB recommendations may be general, or concern individual member states and will be non-binding. The EC proposal endorsed the creation of a European System of Financial Supervisors (ESFS) with the three fold aim of upgrading quality of supervision at the national level, strengthening oversight of cross-border groups; and moving towards a single rulebook for all EU financial institutions by removing key differences in national legislation.[120]

The ESFS consists of a network of national financial supervisors working in tandem with new European Supervisory Authorities (European Banking Authority, European Insurance and Occupational Pensions Authority and a European Securities and Markets Authority) created by the transformation of existing Committees for the banking securities, insurance and occupational pensions sectors. New powers and responsibilities include: to develop binding harmonised technical standards (subject to endorsement by the Commission); make recommendations to a national supervisor to correct a manifest divergence from binding EU requirements; power to settle matters by binding decision; power to adopt emergency decisions in a crisis; responsibility for authorisation and supervision of specific entities with pan-European reach (e.g. credit rating agencies, EU central counterparty clearing houses).

The role of colleges of supervisors within the EU has been formalised and extended as a result of recent changes made to the Capital Requirements Directive.[121]

Basel Committee

Since the onset of the crisis, discussions on international regulatory reform and coordination have evolved around the Financial Stability Board (FSB), G-20 and specific to banking sector the Basel Committee on Banking Supervision (Basel Committee). Traditionally the Basel Committee has issued recommendations

Basel III global bank capital framework

In order to improve the ability of banks to pay off credit losses and write-downs, Basel III improved the quality of the regulatory capital base and increased its amount. In terms of quality of capital requirement, emphasis is placed on common equity (such as common shares and retained earnings) as the highest quality component of bank capital in absorbing losses. Moreover, the definition of common equity has been tightened. Such "quality" changes by themselves already amount to a significant increase in capital requirements.[123] In terms of the amount of capital requirement, the required level of common equity is increased from 2 per cent to 3.5 per cent and the minimum level of Tier 1 capital (which include common equity) from 3 per cent to 6 per cent. In addition, banks are required to hold a capital conservation buffer of 2.5 per cent in the form of common equity to withstand future periods of stress. This brings the total common equity requirements to 7 per cent. As regards pro-cyclicality of capital requirement, existing rules have tended to have pro-cyclical impact on credit provision and thus real economies to aggravate economic downturn, as banks seek to reduce credit provision and increase capital base to absolve an increased level of losses, which have an effect similar to monetary contraction. To mitigate this problem, banks are required to stockpile capital buffers in good times, and to draw-down in periods of stress. This is done through: (i) the requirement to hold capital conservation buffer 2.5 per cent (as noted above); and (ii) creation of countercyclical buffer of 0-2.5 per cent that may be imposed by national regulators either in the form of common equity or other fully-loss absorbing capital. The absence of adequate risk coverage of various on- and off-balance sheet risks were major de-stabilizing factors during the crisis, as risks associated with derivatives-related exposures like securitization, off-balance sheet vehicles and counterparty credit risks were not adequately captured. Basel III strengthens the capital requirement for such exposures. As regards leverage ratio, the build-up of excessive on- and off-balance sheet leverage in the banking system was the underlying factor of the financial boom and bust, as it amplified gains but also losses and simultaneous de-leveraging by banks reduced bank capital and aggravated credit availability. To mitigate such adverse effects, a non-risk based leverage ratio has been introduced, comparable to all jurisdictions and to be determined by the size of a bank's balance sheet.[124] Furthermore, for the first time, Basel III introduces a global minimum liquidity standard for internationally active banks to include a 30-day liquidity coverage ratio requirement and longer-term net stable funding ratio. Strong liquidity standard is as important as strong capital standard. During the crisis, despite adequate capital levels, various banks experienced difficulty as they did not manage liquidity prudentially while liquidity evaporated with the reversal of market conditions.

Source: BCBS, Basel III: A Global Regulatory Framework for More Resilient Banks and Banking System, December 2010.

on banking laws and regulations ("Accords") as they relate to banking supervision. To date the Basel Committee has issued 3 sets of Accords Basel I, II and III, each Accord can in turn be said to be broadly based on three complementary pillars:[122]

- Pillar 1 – minimum regulatory capital requirements for banks' exposure to credit, market and operational risks;
- Pillar 2 – the supervisory review of banks' capital adequacy and of the quality of their related controls and risk management;
- Pillar 3 – rules on disclosure and transparency. The most recent version of these accords is Basel III.

Of the 3 regimes of Basel Accords, the financial crisis occurred under the Basel I regime. When the crisis hit, Basel II was not yet implemented by most countries. Initially, Basel II included a number of measures to improve banking supervision by reducing many of the perverse incentives that contributed to the crisis. In December 2009, the Basel Committee proposed substantial revisions to the Basel II capital regime in order to strengthen global capital and liquidity regulations. The resulting new rules on bank capital and funding ("Basel III"), finalized in December 2010, seek to improve the banking sector's resilience to financial shocks and strengthen macro-prudential regulation and supervision. It improves the quality and levels of capital requirement, mitigates adverse effects of pro-cyclicality in bank capital requirements, ameliorates risk coverage, and sets a new global liquidity ratio and leverage ratio. Basel III will be introduced gradually so as to mitigate sectoral and macroeconomic adjustment, beginning in January 2013 until 2022 with the pace varying across different requirements.

The proposals have generated a range of reactions from various stakeholders. The reform of capital and liquidity requirements is expected to bring substantial long-term economic gains, by essentially reducing the probability and the frequency of future financial crises.[125] Nonetheless, the proposed regulatory changes have prompted an intense debate over their adverse effect on the financial sector, and real economic activity and growth, as the reform was expected to increase the cost of credit and lower its availability, particularly for those sectors heavily reliant

on bank credit. Estimates by the BCBS suggest that the impact on GDP of higher capital standards would be relatively moderate both in short- and long-terms, and distributed through time, though effects could be larger were banks to rush to attain the new standards ahead of the deadline.[126] On the cost of regulatory implementation front, some estimates suggest that the effect of domestic legislation alone could amount to 16 per cent of bank profits in 2013 and European bank profits in 2012 could fall by 37 per cent because of the proposed regulation. Interim estimates by the Financial Industry Group (Institute of International Finance) indicated that regulatory reform would subtract an annual average of as much as 0.6 per cent from the path of real GDP growth over 2011 to 2015 for the United States, EU and Japan, and an average of 0.3 per cent over 2011to 2020 with particularly significant effects in the Euro area where the banking system is relatively important in economy and debt financing.[127] Findings point to the importance of gradual implementation of tight capital requirements, as a longer implementation period would likely lead both, to more adjustment through raising capital by retaining earnings and issuing equity rather than through cutting lending, and increasing interest rates. Furthermore, despite the transitory measures, market pressures and reputation considerations could force banks to front-load capital, racing ahead of required timeframes, in which case the impact would be more noticeable.

Proposed reforms to Basel III still rely heavily on bank economic capital models with limited distributions of data that are not correlated to macroeconomic risk factors. Countercyclical capital requirements should be rules-based and linked to a common definition of the economic cycle across countries.[128]

The implementation of Basel III and the Basel Accords more broadly, while providing an important starting point for effective regulation of DC financial services sectors, pose specific concerns for DCs. The financial sector in most DCs, differ substantially-- smaller banking systems and less developed capital markets-- from those in industrialized countries. Accordingly, interests and needs generally vary, including between and among DC financial systems. The standards and recommendations of the Basel Accords or for that matter any global reform agenda in the financial services sector would need to adequately reflect the specific characteristics and issues of DC financial sectors.

The strains on national supervisory capacity of introducing Basel III are multiple and more severe in DCs due to less adequate supervisory capacity, less developed internal controls within banks, shortage of information and information collection systems and the inadequate regulatory infrastructure.[129] Pressure to implement may lead to failure to meet proper validation standards for external data and models. It would be important in this regard that they are able to adjust the rules to national circumstances so that implementations of the new rules do not risk their financial system stability or broader developmental objectives.[130] Moreover, the shift from a supervisory environment that is traditionally compliance-driven to a more discretionary and judgmental framework will stretch scarce supervisory resources. Related to this is the cost of implementing the new framework, is the significant investment required to upgrade IT infrastructure and financial software and the need for training of both bankers and supervisors.

Another concern for DCs is the potential impact on the composition of domestic lending and, implicitly, on access to credit for various sectors of the economy. Basel III is likely to influence how credit will be allocated to the real economy. For example, while a lower-risk weighting for residential mortgage lending provides an incentive to expand housing finance – provided banks can raise long-term finance – financing for SMEs and for project finance are likely to become more costly given their higher risk weight, and therefore sectors that are key drivers of economic growth and employment might be severely hampered.[131]

Possible national policy responses include a sequential and tailor made approach to Basel III, coupled with the need for implementation linked technical and financial assistance.

Broader post crisis implications of financial services regulatory developments for global co-operation and developing countries.

The debate on the changing financial regulatory landscape linked to the financial crisis has developed primarily in developed economies – hit hardest by the crisis.[132] Many DCs were relatively de-coupled from the financial crisis as they had pursued a prudent regulatory approach domestically and (or) they were not fully integrated in the global financial markets. The ensuing regulatory and policy responses have, however, raised issues relating to the need for global regulatory co-operation and potential implications for developing countries.

New liquidity standards may challenge long-term bank funding for banks in emerging markets. Higher liquidity requirements and capital buffers will increase the cost of banking in developed countries, including the cost of holding minority interest in emerging markets banks, and thus could reduce cross-border investment and lending[133] owing to unfavourable risk-weights assigned to DCs requiring higher capital. Subsidiaries of cross-border banks in developed countries have often large and dominant positions in DCs, and the changes in regulatory regime applying to parent banks in developed countries will thus be affected by a significant fall in trade financing for DCs.[134] New regulatory environments aimed at securing financial transaction, including more stringent information requirements on counter-party in low-rated countries are increasing the cost of doing businesses.[135] Moreover, using credit aggregates in determining the necessary credit buffers for mitigating pro-cyclicality may constrain financial deepening and economic growth in DCs.[136]

The existing variation in regulatory regimes for the financial services sector may induce financial companies to resort to "jurisdiction shopping" in their search for looser financial regulations.[137] Large cross-border banks could move from large branches toward fire-walled subsidiaries in emerging economies.[138] This could result in increased exports of financials services from DCs, but could also increase risks and volatility of the financial sector in some DCs. Therefore, cross-border banking needs to be regulated collectively through enhanced coordination. At the same time, possible contraction of foreign banks' involvement in DCs, due to general downsizing effects of reforms may create room for growth of financial institutions in DCs.

The crisis has made it clear that more finance and more financial products are not always better.[139] Regulating innovations in financial products requires sophisticated technical and market skill sets, the scale of which may be lacking in developing countries. It has been suggested that developing countries could maintain a positive list of permitted financial products, based on whether they have been proven to be non toxic in advanced economies.[140]

A major outstanding issue yet to be fully addressed in international financial regulatory reform is the moral hazard created by systemically important financial institutions ("too big to fail" banks). These banks are as large and interconnected as not to be allowed to go into bankruptcy, and therefore benefit from implicit government guarantee. As a consequence, they have an incentive to take excessive risks and benefit from a competitive edge in terms of subsidized funding costs over other market participants. The crisis has further exacerbated the problem, as massive public funds were injected at the expense of taxpayers, and market concentration increased, thereby distorting production and trade patterns in the sector. Various regulatory approaches are being tested and considered to address the problem. One approach is to require higher capital requirements for such banks so as to reflect the greater risks they pose to the global financial system. Another is to put in place ex ante safe, rapid and effective "resolution" regimes, including on a cross-border scale, in case of insolvency. Such procedures would define how losses may be distributed among creditors and counterparties, so as not to disturb the financial system and expose taxpayers to the risk of loss. Improving intensity and effective regulatory supervision of such banks would also be essential.

Other on-going international regulatory reform processes address, expanding the scope of regulations to shadow the banking sector, improving the OTC derivatives market, strengthening accounting standards, strengthening adherence to international supervisory and regulatory standards, compensatory standards, and developing macro-prudential frameworks. Regulatory harmonization throughout different segments of financial system is needed. Otherwise, strengthened bank regulations will encourage shifting risk to other parts of the financial sector, such as insurance and pension funds, hedge funds, and credit rating agencies. At an institutional level this would necessitate greater and more frequent coordination among regulatory agencies and between the government, central bank and regulatory agencies. It has been suggested that the Central Bank in particular has a key role to play particularly in times of crisis.[141] For developing countries with a small financial sector and limited skills set the Central Bank can perform several regulatory functions.[142]

Trading OTC derivatives contracts on exchanges would improve their transparency and avoid the build-up of unreported risk in the system. It is also necessary to address the issue of non-cooperative jurisdictions so as to ensure a level international playing field. Compensatory practices of firms should be aligned with prudential risk taking.

Another issue that has been to the forefront of regulatory reform debate is the creation of a "solidarity

mechanism" which would require the financial sector to reimburse governments and societies for some of the social costs of financial risk taking (including in the form of financial taxes that can generate revenue to pay for the direct and indirect costs of State and central bank support and to pay for public goods). This form of burden sharing will require the financial sector to pay for more of the costs of its risk-taking and can provide a basis for building solidarity mechanisms between those who have benefited greatly from financial globalization and those who have suffered the costs of excessive financial risk taking.[143]

It is expected that such a "solidarity mechanism" or "financial transaction tax" would in turn tax excessive risk-taking, allocate resources productively and provide sustainable revenue to governments so that they can pay for the direct and indirect costs of financial crisis and to provide for an innovative source of financing for global development aid and global public goods (such as for MDGs and climate change mitigation and adaptation).Various forms of such taxes are being considered, such as tax on foreign exchange transactions, tax on exchange-traded and centrally cleared derivatives and related financial products, and tax on bank balance sheets, amongst others. It has been argued that such taxes levied at a very low level (0.005 per cent on currency transaction is estimated to generate $33 billion annually) would not significantly distort financial markets while providing significant source of revenue.[144]

7. FINANCIAL SERVICES AND TRADE: THE TRADE AGENDA AND ARISING ISSUES IN RESPECT OF THE CRISIS

7.1. Developments in Financial Services Trade Liberalization

On the trade front, liberalization in FS is continuously taking place through different avenues, autonomously, through the WTO General Agreement on Trade in Services (GATS) and regional and bilateral trade agreements (RTAs).

Financial Services Liberalization in GATS

GATS provides for progressive liberalization of services trade. Financial services-related provisions are included in the GATS Agreement, in the annex on FS, Understanding on Commitments (the Understanding) in FS and individual Members' schedules of specific commitments. Financial services have been the subject of extended sectoral negotiations after the Uruguay Round. Among the 11 services sectors covered by W/120 (WTO's sectoral classification list), the FS sector ranks second, with regard to the numbers of commitments. As of July 2007, 121 Member States had commitments in at least one of the FS subsectors (counting European Union Member States individually), representing 80.66 per cent of WTO membership.

Member FS commitments exhibit interesting patterns. After tourism, FS is the sector with the most commitments. In many cases, DC commitments enshrined recent FS reforms and liberalization. Mode 3 is the mode in which Members prefer allowing access to domestic markets for direct insurance services and, apart from Asia, also for banking. The preference for Mode 3[145] over Mode 1 could originate in expectations that:

a) Positive effects of liberalization may be weaker in Mode 1 than in Mode 3;
b) Mode 1 liberalization may create more risks for domestic financial systems (that is, regulatory control is easier for banks established within borders);
c) Implementing Mode 1 commitments may require cross-border capital flows.

Recently acceded countries made FS commitments in nearly all subsectors, the breadth and depth of which raise questions as to their implementation and sustainability, particularly in light of these countries' comparatively weak regulatory frameworks, practices and institutions. Some Members adopted "pre-" or "phased-in" commitments, committing to market-opening in the future. In so doing they create a certain incentive or pressure toward domestic reform, while at the same time gaining time to develop the necessary regulatory and supervisory mechanisms, and prepare industry for enhanced competition. Some Members use a particularly flexible type of phase-in approach, making market access dependent on the existence of a particular regulatory framework, such as by Japan and Mauritius for new financial products.

In making FS commitments, Members use two scheduling approaches:

a) Positive-listing of commitments – choosing any number of subsectors or modes of supply and

scheduling any type of market access or national treatment (MA/NT) limitations;

b) Understanding on FS – offering an alternative mechanism for deeper commitments by giving details about the sectoral/modal scope/nature of commitments and by containing additional obligations (such as standstill, government-procurement, new FS, transfer and processing of information and non-discriminatory measures). Two DCs employ this approach.

Paragraph 7 of the Understanding requires Members to permit any Mode 3 FS supplier to offer any new FS. Given the proliferation and rapid development of new financial products and post the financial crisis the role of new financial products such as CDOs, concerns have arisen as to the need to anticipate the exact scope of commitments. The Understanding also addresses Mode 3, providing for temporary entry of senior managerial personnel and specialists in the operation of the FS supplier, and – associated with commercial presence – specialists regarding computer, telecommunication, accounting, actuarial and legal services.

Other GATS provisions central for Members' financial systems include Articles XI (payments/transfer for current transactions relating to specific commitments) and XII (balance of payments exception). According to Article XI, Members shall not impose restrictions on any capital transaction inconsistent with their specific commitments.

Appropriate regulatory and supervisory frameworks are prerequisites for successfully opening up FS, reflected in the "prudential carve-out", in paragraph 2(a) of the annex on FS. Members have different views regarding the carve-out, some suggesting that it is too broadly defined (and a more precise definition would be required) and others fearing that this would erode Member rights to impose prudential measures. Post the financial crisis the scope of the "prudential carve-out" has once again come up for discussion, in the light of the "bail out" packages and other policy responses initiated by some WTO members. Some schedules contain explicit references to prudential measures. In negotiations on domestic regulation, developing countries (such as the African, Caribbean and Pacific Group of States) have suggested that future disciplines should explicitly affirm the right to prudential measures. In light of post financial crisis developments, it is likely that the "prudential carve-out" will remain unchanged in order to ensure flexibility as required.

In the ongoing Doha round of Negotiations, FS negotiations saw a number of bilateral requests and one plurilateral request (February 2006), coordinated by Canada. The plurilateral request was submitted by 10 countries with strong FS sectors, directed mostly toward DCs (Argentina, Brazil, India, China, Association of South-East Asian Nations (ASEAN), Egypt and South Africa). Bilateral and plurilateral requests exhibit similar features, calling for enhanced commitments on: Modes 1 and 2 (for all subsectors mentioned in the annex, for a specific set of sectors, or for a minimum cluster of commitments as per the Understanding); Mode 3 (eliminating certain sectoral and horizontal limitations); and Mode 3 (seeking greater freedom for intra-corporate transferees and contractual service suppliers). Despite their far-reaching nature, numerous countries have also requested DCs to subscribe to some parts, if not all, of the Understanding or to use the Understanding as a reference point for commitments.

Interestingly, the FS plurilateral request does not refer to the Understanding. Suggestions have also been made on regulatory issues such as transparency requirements. The plurilateral request on FS flags transparency in development and application of laws and regulations – transparent and speedy licensing procedures have been suggested.

In terms of Offers, only a few introduce significant changes, and many including those of developed countries, do not match actual openness. Some add new FS subsectors; reduce foreign-equity limitations (India rose limits in transferable securities from 39 to 73 per cent), or requirements for juridical form (India allows wholly-owned subsidiaries as legal entities); eliminate residency requirements (Canada for dealers, brokers, advisors in trading of securities and commodity futures and to a limited degree also for citizenship and residence requirements for boards of directors); relax exchange-regime limitations (European Union); remove Mode 2 limitations (Japan); and increase numbers of licenses (India, now 15 bank licenses). In addition, the United States offers liberalization of interstate branching and acquisitions. Offers introduce greater precision on Mode 3.

Possible linkages between FS liberalization and capital-account liberalization are important considerations in negotiating FS commitments.. While GATS rules and obligations are designed to decouple the liberali-

zation of trade in FS from the liberalization of capital account transactions, certain practical linkages exist. These include situations where capital-account transactions are crucial for complying with GATS commitments. For example, the effective implementation of certain FS commitments in Mode 1, (deposit services), can require capital-account liberalization the scope and extent of which are hard to anticipate. Liberalizing capital accounts prematurely without adequate institutions and prudential regulations in place can induce economic and social distress as well as financial crises. Unlike trade in goods, capital flows are more subject to information asymmetry, agency problems, adverse selection and moral hazard (Stiglitz, 2000).

Financial Services Liberalization in Regional Trade Agreements

FS commitments in regional or free trade agreements (RTAs or FTAs) tend to be more far-reaching than those in GATS. At times, FS commitments in RTAs may exceed not only offers made in the context of the Doha Round (e.g. certain US FTAs) but they also match and exceed demands made in multilateral requests. For instance, Latin American and Caribbean FTAs tend to have significant additional liberalization FS commitments compared to GATS. Some FTAs tend to reflect liberalization provisions contained in the WTO Understanding. Many exhibit increased commitments for cross-border supply of FS, often beyond the traditional concept of GATS Mode 1, to include Mode 2 and in some cases even Mode 3 (Republic of Korea–Chile and the North American Free Trade Agreement (NAFTA), which defines cross-border trade in services to include three of the four GATS modes – cross-border supply, consumption abroad and the movement of natural persons).

In terms of regulatory disciplines, RTAs echo GATS provisions on domestic regulation and the prudential carve-out. For example, EU–Mexico provides for parties to regulate FS supply on a non-discriminatory basis and contain a GATS-style prudential carve-out. The India–Singapore Comprehensive Economic Cooperation Agreement contains provisions for domestic regulation. The NAFTA contains "good government" disciplines (to ensure reasonable, objective and impartial administration). Other provisions relate to freezing of existing regulatory regimes and ratcheting by automatically locking in any liberalization. In some cases they focus on regional consolidation of mechanisms.[146] Africa exhibits several (not always fully operational) initiatives for regional integration of financial markets. Regional cooperation on regulatory and institutional issues could help address DC capacity constraints. Regional initiatives in the financial services sector, particularly South-South ones, show sensitivity to local conditions and effective ownership and help reconcile different national needs and objectives.[147] Some RTAs establish institutional arrangements to address implement FS related aspects of the RTA. In the 1990s, following the financial crises in the 1980s, The Economic and Monetary Community of Central Africa and the West African Economic and Monetary Union implemented regional approaches to FS regulation (a regional banking commission), not all of which were effectively implemented. NAFTA provides for a FS committee.

With negotiations over the Doha Round stalled, countries have shown a preference for pursuing regional and bilateral trade arrangements, many of which included substantial services provisions. Several of these agreements include some manner of financial services coverage, ranging from considerable to brief references.[148] Regional arrangements can be leveraged particularly during financial crisis to build intra-regional trade and investment including in the South-South context, strengthen local and regional financial markets and given the focus in the current financial crisis on infrastructure needs, leveraged to build regional infrastructure network services. A regional approach to regulation and institution in the financial services sector is likely to be cost effective, promote growth and stability and facilitate regional integration more broadly. Post financial crisis calls were made for the establishment of regional financial institutions and development of regional bond markets.[149]

7.2. Financial Services, financial crisis, trade commitments and crisis related financial sector intervention – The Interlinkages

The current crisis has necessitated governments particularly in developed countries to take action to support their financial sector and more broadly their economies. The focus of these actions has been to guard against systemic risk posed to the economy.

Specific interventions in the financial sector have varied. Many countries have recapitalized their banks, particularly the systemically important ones. For the advanced G-20 countries, the average outlay in 2009

was projected at 3.2 per cent of GDP, with considerable variation across countries.[150] Governments and some central banks have provided substantial direct loans and purchased illiquid assets from financial institutions. Amounts involved range widely, with the United Kingdom, Japan, and Norway accounting for over 10 per cent of GDP. The advanced G-20 average is 3.3 per cent of GDP.[151] Central bank support with or without direct treasury funding has been provided primarily through credit lines to financial institutions, purchase of asset-backed securities and commercial paper, and asset swaps. Guarantees for financial sector liabilities have been provided for bank deposits, interbank loans and, in some cases, bonds. Deposit insurance limits have been raised in almost all countries.[152] In emerging economies financial sector support has been limited. Main measures announced include: bank recapitalization in Hungary, Poland, and Ukraine; liquidity provision in Hungary, India, Mexico, the Russian Federation, Turkey, and Ukraine. These countries have extended (or committed to extend) liquidity facilities to banks or to State-owned or managed enterprises. Some countries have announced the provision of guarantees: blanket coverage provided in Egypt and Saudi Arabia; several other countries (Hungary, Indonesia, Mexico, Poland, and the Russian Federation) have committed to provide more limited guarantees.

A key concern among DCs is that a type of "financial protectionism" may arise, whereby governments may direct banks that have received capital injections to lend more domestically rather than internationally. Further, borrowing by the Treasury of the United States to finance the growing budget deficit also pulls in funds from around the world and could crowd out borrowers from countries also seeking to cover their deficits.[153]

Without calling into question the necessity of financial rescue packages in the exceptional circumstances that have prevailed since the onset of the financial crisis, their sheer size in relation to the share of GDP of the FS sectors of OECD economies inevitably gives reason to questions as to their effects on international trade in FS.[154] Similar kinds of responses are beyond the means of most DCs affected by the crisis.[155] For example, if financial rescue packages had not been provided in Europe and North America, it is not clear whether competing FS suppliers in other countries would have been presented with profitable new investment opportunities in markets suddenly left under-supplied, or whether they would have been submerged in a meltdown of the global financial system.[156]

The measures used and the scale of bailouts vary, as do their effectiveness. Some of the impacts of the bailouts in the financial sector have been that uncompetitive or even insolvent financial institutions have been kept in operation at the expense of foreign competitors, thereby distorting the market, and reducing trade in FS.[157] However, under current circumstances, this may be viewed as secondary to the objective of reducing systemic risk, maintaining stability and restoring credit for the global economy as a whole.

As discussions in the WTO's Committee on Trade in Financial Services indicate, the financial rescue measures have brought to the forefront trade and competition effects, as well as their implications for GATS commitments and rules including the "right to regulate". Current developments in the FS sector primarily raise two questions: are actions WTO compliant; what is the likely coherence of existing WTO GATS disciplines with a global financial regulatory landscape that is likely to change.

The answer to these questions vary depending on financial services commitments made by individual Members, the specific kind of financial services under consideration (insurance, banking, securities amongst others), and specific measures being addressed (financial bailout, recapitalization, equity purchase) , read with GATS disciplines. Broadly, however, some of the issues which could arise are set out below.

Commitments arising from the Understanding on FS

Many of the countries offering bailout packages are signatories to the Understanding on FS which offers an alternative mechanism for deeper commitments.[158] In the current context of the financial crisis, this raises certain issues particularly regarding the evolving FS regulatory landscape. The Understanding allows FS suppliers of any other Member established in its territory to offer within its territory any new financial services. Given that the crux of the financial crisis has been CDOs, derivatives and other such "newer financial products", this may become an issue when greater regulatory attention is given to financial product safety, consumer protection and risk management, in terms restrictions on the kind of legal form that is permitted to provide new financial products, outright bans on certain kinds of financial products amongst others. Furthermore, the Understanding's

"standstill provision" requiring the non-creation of new regulations (or reverse liberalization) for the list of FS appear to be in conflict with various proposals to limit risky investment instruments, such as certain types of derivatives. Some of these obligations may be replicated in regional and bilateral agreements and would warrant closer attention.

Subsidies in financial services

The bailout packages offer a range of measures including soft-loans, capital purchase and credit guarantees among others. This raises a first question as to whether these measures amount to a subsidy and a second question as to whether the subsidy is prohibited. The WTO, in its World Trade Report of 2006 "Exploring the Links Between Subsidies, Trade and the WTO", recognizes the use of subsidy-like measures in both developed and DCs during the process of privatization as well as where there is a threat of systemic risk. The kinds of subsidy-like measures the Report considers in the financial sector include State guarantees, equity participation, soft loans, credit guarantees and tax exemptions.[159] The bailout of banks and insurance companies through the investment of large sums in "unequityworthy" companies appears to fall in the category of a subsidy-like measure.

However, the GATS does not contain any disciplines on subsidies in the services sectors and for that matter any definition as to what constitutes subsidies in the services sector. This is an issue under negotiations and WTO Members have for some time been in the process of exchanging information on subsidy measures undertaken by them in various services sectors. In the absence of clear GATS disciplines on subsides there is unlikely to be a case for WTO dispute settlement.

Financial services commitments

A determination would have to be made as to whether the bailouts have: (a) been made in a sector where a FS commitment has been undertaken to provide market access; or (b) favour domestic banks and discriminate against foreign banks, thereby resulting in a violation of market access and national treatment commitments. It would also raise a larger question as to whether foreign-owned or foreign-controlled FS supplier would be eligible for bailout benefits.

Financial services negotiations

Specifically, for negotiations on the FS sector, DCs are uncertain as to whether and how to proceed if at all, given that the global financial landscape has changed and the uncertainty in global financial markets. The FS sector is the sector with the largest number of commitments – 121 schedules contain commitments particularly in Mode 3, in at least one FS sector with relatively extensive coverage of core commercial bank services (deposit taking and lending) and a fewer commitments in capital market (related services such as trading). The on-going reform and economic rationales underpinning it could affect FS liberalization under the Doha Round with some countries calling for cautious approach.[160] Most DCs were isolated from the full impact of the financial crisis on their financial markets either due to more prudent and cautious regulatory policies or the fact that they were not entirely integrated into global financial markets.

Further the theoretical assumptions on the basis of which conditions are decided for the granting of market access and national treatment to foreign FS providers has changed. During the Uruguay Round of WTO negotiations on FS, which ended in 1997, the ruling assumption was that financial regulation in developed countries was not only adequate but also a model for that of DCs. Post financial crisis, such rationale is being re-evaluated, which may have implications for countries' future negotiating stances in the WTO.[161]

It has been argued that without the disciplining effects of subsidies, further liberalization could expose DC operators to unfair competition, and large financial operations in DCs may act as vectors of contagion, as for instance where there is a large foreign bank presence. There is a greater focus in DCs to allow establishment through the creation of a subsidiary (entailing legal personality) rather than direct branching, and by seeking assurances from subsidiary parent institutions as to the financial soundness of branches and subsidiaries. Further conditions to negotiations in the FS sector may include the distribution of costs between home and host countries in the event of cross-border insolvencies of financial firms. This is an area on which general international guidelines are still lacking, despite clear agreement on their need.[162]

Implications of Capital Account Liberalization

Concern arises from capital account opening implied by GATS commitments. Since certain FS entail capital movement by their very nature (deposit taking, lending or securities through Mode 1), GATS requires free capital movements associated with such commit-

ments, although liberalization in payments and capital transfer are not an obligation. This could potentially constrain DC ability to manage and control capital flows to insulate them from the excessive financial volatility while sensible capital account management has gained increased acceptability. The recent episode of capital controls (tax on foreign purchase of domestic assets) introduced by several countries (such as Brazil) to counter increased capital inflows lends further support to capital account management.

Reference to international standards in the financial services sector

In the current arena of regulatory reform within global financial markets, certain vigilance on the part of DCs is necessary concerning possible incorporation of features of the outcome of work on the reform agenda in IMF conditionality and in rules or standards proposed in international negotiations elsewhere. This is because standards may not be appropriate for countries at earlier stages of development or may place a disproportionate burden on the administrative capacity of their governments and the management of their enterprises.[163]

It has been suggested that international codes and standards might be used as part of determining a country's scope of flexibility under the prudential carve-out of the GATS annex on FS regarding imposition of prudential measures with implications for international trade in financial services.[164] According to the prudential carve-out "a Member shall not be prevented from taking measures for prudential reasons, including for the protection of investors, depositors, policy holders to whom a fiduciary duty is owed by a financial service supplier, or to ensure the integrity and stability of the financial system." Behind the proposal to limit countries flexibility under this provision lies a judgment as to the relative importance of prudential regulation, on the one hand, and a liberal cross-border regime for financial services, on the other hand. The recent crisis has emphasized the importance for many governments in particular those of DCs of the need to maintain this balance in a reasonable manner.[165]

8. CONCLUSIONS

Emerging markets are those in greatest need of economic and social benefits of financial development and stability. However for many Developing countries, this remains a challenge, further compounded by difficulties of properly managing capital-account liberalization, achieving macroeconomic stability and developing institutional and regulatory frameworks in parallel with rapid changes in the financial system. Many of these difficulties have been brought to the fore as a result of the recent financial crisis.

The process of financial development needs to go hand-in-hand with better and broader financial regulation and supervision. Regulatory reforms cannot be implemented overnight. For FS reform and liberalization to generate pro-development outcomes, it needs to be supported by appropriately designed, paced and sequenced policies (e.g. macroeconomic, prudential, regulatory and supervisory), to be determined on a case-by-case basis and adapted to the specificity of each country. There is therefore a case for coherent but not common regulatory structure adapted to national circumstances. FS reform and liberalization must be holistic and take into account micro and macro prudential elements. Further it is important to ensure linkage between real economy, financial sector and development objectives.

Furthermore, since financial markets and circumstances differ from country to country, optimal regulation and regulatory structures differ. However, as financial markets become global, global coordination of regulation is also important. In this context global regulatory bodies, need to be representative of and reflect the concerns of DCs. International regulatory initiatives in the financial services sector can provide a useful tool to address issues of cross-border insolvency; expansion of consolidated firms and the lack of tools for facing new complex financial products, technologies, and management techniques. However developing countries need to effectively participate in such international regulatory initiatives to ensure their priority concerns are reflected.

A developmental approach to FS liberalization in GATS is needed. Developing countries should carefully choose the extent of their bindings in international agreements pertaining to financial services liberalization according to the maturity of their financial and regulatory systems, their development needs, existing gaps in their domestic financial services sectors and most suitable fora for financial liberalization whether autonomous, regional or multilateral.

NOTES

[1] World Bank, "Global Development Finance: Building Coalitions for Effective Development Finance," Page 73, 2001, The World Bank, Washington, DC.

[2] With reference to the post 2007 global financial crisis, the terminology, crisis, current crisis, financial crisis maybe used interchangeably during the course of this paper. The terms financial services or financial services sector, unless otherwise specified, refers broadly to the banking, insurance and securities sectors.

[3] Bloomberg-U.S. European Bank Write downs & Losses-November 5, 2009.

[4] Report of the Commission of Experts of the President of the United Nations General Assembly on Reforms of the International Monetary and Financial System, September 21, 2009 - Stiglitz Report.

[5] Value of financial assets expressed as a percentage of GDP.

[6] Cherry-picking would also arise on the human resources side, with foreign companies hiring the best managers and personnel away from local employers.

[7] UNCTAD background note and report of expert meeting on financial services (2007), UNCTAD note and report of as hoc expert meeting on insurance services (2005).

[8] Lord Turner, Chairman of the UK Financial Services Authority, The Turner Review. Financial Services Authority, A regulatory response to the global banking crisis March 2009.

[9] Report of the Commission of Experts of the President of the United Nations General Assembly on Reforms of the International Monetary and Financial System, September 21, 2009 - Stiglitz Report.

[10] Report of the Commission of Experts of the President of the United Nations General Assembly on Reforms of the International Monetary and Financial System, September 21, 2009 - Stiglitz Report.

[11] IMF Global Monitoring Report 2009, Global Financial Crisis and its Impact on Developing Countries.

[12] IMF Global Monitoring Report 2009, Global Financial Crisis and its Impact on Developing Countries.

[13] See Report and background note of UNCTAD expert meeting on trade and development implications for financial services 2007, Report and background note of UNCTAD multi-year expert meeting on Services, development and trade: the regulatory and institutional dimension, 2009, 2010, UNCTAD Trade and Development Report 2009.

[14] Report of UNCTAD Expert Meeting on Financial Services (2007).

[15] Developed countries, including the United States, the United Kingdom and Scandinavian countries, have also been subject to such crises, but compared with developing countries, the incidence has been relatively low and the social costs correspondingly smaller.

[16] Kaminsky Gracila and Reinhart Carmen, The Twin Crises: The Causes of Banking and Balance-of-Payments Problems, American Economic Review, June 1999.

[17] In a sample study of twenty countries covering the period 1970-1995, fourteen were developing countries.

[18] The study examined banking crises during the period 1980-1984 for a sample of 53 developed and developing countries.

[19] Singh Ajit (2003); Kaminsky/Reinhart (1999); Demirguc-Kunt/Detragiache (1998)

[20] Singh Ajit, Capital account liberalization, free long-term capital flows, financial crises and economic development, ESRC Centre for Business Research, University of Cambridge, Working Paper No. 245, December 2002.

[21] Williamson and Drabek (1999).

[22] In a country such as Chile which was deeply integrated with the world financial markets, private foreign capital suddenly withdrew in the event of a fall in copper prices.

[23] Even Joseph Stiglitz who has been a fierce critic of precipitate capital account liberalization in developing countries appears to favour free FDI flows, Stiglitz (2000).

[24] Singh Ajit, Capital account liberalization, free long-term capital flows, financial crises and economic development, ESRC Centre for Business Research, University of Cambridge, Working Paper No. 245, December 2002.

[25] IMF Paper prepared by Strategy, Policy, and Review Department, Recent Experiences in Managing Capital Inflows—Cross-Cutting Themes and Possible Policy Framework, February 14, 2011.

[26] Jonathan D. Ostry, Atish R. Ghosh, Karl Habermeier, Marcos Chamon, Mahvash S. Qureshi, and Dennis B.S. Reinhardt"Capital Inflows the Role of Capital, IMF Staff Position Paper, February 2010.

[27] IMF Paper prepared by Strategy, Policy, and Review Department, Recent Experiences in Managing Capital Inflows—Cross-Cutting Themes and Possible Policy Framework, February 14, 2011.

[28] UNCTAD Trade and Development Report 2009, Chapter 3.

[29] Mercer Oliver Wyman, "State of the Financial Services Industry, 2007", Source: DataStream financial services index.

[30] UNCTAD Globestat 2007, based on available data, not all countries reporting for all commercial financial services excluding insurance.

[31] See also UNCTAD document on Insurance, UNCTAD/DITC/TNCD/2005/15.

[32] Bloomberg-U.S. European Bank Write downs & Losses-November 5, 2009.

[33] Overseas development institute, The Global Financial Crisis and Developing Countries: Preliminary Synthesis of Ten Draft

Country Reports, April 2009.

[34] In Indonesia, Uganda and Zambia there was a significant decline in foreign portfolio investment especially in Q2 and Q3 of 2008. Bangladesh experienced net outflows worth $48 million over the period July-December 2008, while Kenya experienced net portfolio outflows of about $48 million in June 2008 and $12 million in October 2008.

[35] Overseas development institute, The Global Financial Crisis and Developing Countries: Preliminary Synthesis of Ten Draft Country Reports, April 2009.

[36] Shimelse Ali, Impact of the Financial Crisis on Africa, International Economic Bulletin, Carnegie Endowment, April 2009.

[37] IMF World Economic Outlook, 2010.

[38] IMF World Economic Outlook, 2010.

[39] IMF World Economic Outlook, 2010.

[40] The request for monitoring and analysis has been raised by both developing and developed countries within the WTO and UNCTAD.

[41] Deutsche Bank Research, Financial Market Special, EU Monitor 67, June 15, 2009

[42] Mckinsey Global Institute Report, Global capital markets: entering a new era, September, 2009.

[43] In London, G-20 Leaders agreed that "hedge funds or their managers will be registered and will be required to disclose appropriate information on an ongoing basis to supervisors or regulators, 2 April 2009, In Pittsburgh, G-20 Leaders agreed that "standardized OTC derivative contracts should be traded on exchanges.and cleared through central counterparties" and that all OTC derivative contracts should be reported to trade repositories, September 24 – 25, 2009.

[44] Meyer Thomas, Economic Crisis Complicates Offshoring of Services, YaleGlobal , 9 February 2009.

[45] Meyer Thomas, Economic Crisis Complicates Offshoring of Services, Global recession and other problems challenge China's plans to extend its offshoring reach into services, Yale Global, February 9, 2009.

[46] U.S. administration has signalled an end to tax breaks for companies that outsource abroad and promised tax credits to companies that maintain or increase U.S. workers relative to those abroad.

[47] Initiatives include the current 11th Five-Year Plan (2006-2010), the Information Strategy (2006-2010), as well as the Thousand-Hundred-Ten Program of the Chinese Ministry of Commerce.

[48] Neeltje/Van Horen, Foreign Banking in Developing Countries, Origin Matters, in Emerging Markets Review 8 (2007).

[49] Bahrain is looking to open the Bahrain Financial Harbor development in 2007. Dubai created the Dubai International Financial Centre in 2004. Most recently, in May 2005, Qatar established the Qatar Financial Centre. Beyond these special economic zones, the first independent credit agency, Emcredit, was launched in UAE in 2006, providing further evidence of the region's maturing financial services infrastructure

[50] Diana Farrell and Susan Lund, The world's new financial power brokers, Mckinsey Global Institute Report The new power brokers: How oil, Asia, hedge funds, and private equity are shaping global capital markets, December 2007.

[51] Conventional finance makes a distinction between acceptable interest and usurious interest, under Islamic law, however any level of interest is considered usurious and prohibited.

[52] Investment in industries that are prohibited by the Qur'an, such as alcohol, pornography, gambling, and pork-based products, are discouraged.

[53] Each financial transaction must be tied to a "tangible, identifiable underlying asset.

[54] A Sukuk is the equivalent of an Islamic bond and is issued in accordance with Islamic principles and investment.

[55] IFSB, IDB, IRI (2010). Islamic Finance and Global Financial Stability.

[56] IFSB, IDB, IRI (2010). Islamic Finance and Global Financial Stability.

[57] Hasan and Dridi (2010), The Effects of the Global Crisis on Islamic and Conventional Banks: A Comparative Study.

[58] Michael Ainley, Ali Mashayekhi. Robert Hicks, Arshadur Rahman, Ali Ravalia, Islamic Finance in the UK: Regulation and challenges, November 2007, UK Financial Services Authority.

[59] Juan Solé, "Introducing Islamic Banks into Conventional Banking Systems," IMF working Paper, July 2007.

[60] Sharia compliant current and saving accounts, free loans (Quard-Hassan), Murabaha (Cost-plus sale) – Murabaha essentially is undertaking a trade with a markup, Ijara (Leasing), Musharaka (Equity Participation), Mudaraba (Partnership Financing), Istinaa (Commissioned Manufacture), Sukuk (Islamic Bond), Takaful (Mutual Insurance).

[61] In some countries, such as the Islamic Republic of Iran and Pakistan, Islamic banks are the only mainstream financial institutions. In others, Islamic finance institutions exist alongside conventional banking.

[62] For instance, the accommodation of Islamic products within the UK's Regulated Activities Order.

[63] For instance, in the UK, a person acting as a Director of an authorised firm must be registered under the FSA and follow the Approved Persons Rule, which include competence and capability qualification.

[64] John Taylor Under Secretary, US Treasury for International Affairs, Understanding and Supporting Islamic Finance: Product Differentiation and International Standards, Forum on Islamic Finance, Harvard University, May 2004.

[65] John Taylor Under Secretary, US Treasury for International Affairs, Understanding and Supporting Islamic Finance: Product Differentiation and International Standards, Forum on Islamic Finance, Harvard University, May 2004.

[66] Shayerah Ilias, Islamic Finance: Overview and Policy Concerns, CRS Report for the US Congress, July 29, 2008.

[67] Information about standards issued by the IFSB are available at [http://ifsb.org]

[68] Heiko Hesse Andreas Jobst Juan Solé, Quo vadis Islamic finance?, 24 November 2008, VOX commentary, Website: http://www.voxeu.org/index.php?q=node/2593.

[69] Heiko Hesse Andreas Jobst Juan Solé, Quo vadis Islamic finance?, 24 November 2008, VOX commentary, Website: http://www.voxeu.org/index.php?q=node/2593

[70] Van Greuning, Gallardo and Randhawa, 1998.

[71] Robert Peck Christen, Richard Rosenberg & Veena Jayadeva. Financial institutions with a double-bottom line: implications for the future of microfinance. CGAP Occasional Paper, July 2004.

[72] Worldwide success that MFIs and microfinance programmes have achieved in making financial services accessible to the poor and microenterprises has spawned initiatives to expand them.

[73] NGOs, Credit unions, cooperatives, commercial banks, and small informal groups are important players in microfinance.

[74] See van Greuning, Gallardo and Randhawa, 1998 for a more complete classification.

[75] Ashley Hubka and Rida Zaidi , Pact of Government Regulation on Microfinance, Prepared for the World Development Report 2005: Improving the Investment Climate for Growth and Poverty Reduction.

[76] Joselito Gallardo, Korotoumou Ouattara, Bikki Randhawa and William Steel, Comparative Review of Microfinance Regulatory Framework Issues in Benin, Ghana and Tanzania, Word Bank Working Paper, April 2005.

[77] UNCTAD Trade and Development Report 2009.

[78] Report of the Commission of Experts of the President of the United Nations General Assembly on Reforms of the International Monetary and Financial System, September 21, 2009 - Stiglitz Report.

[79] IMF World Economic Outlook, 2010.

[80] UNCTAD, Report of Multi Year Expert meeting on Services, development and trade: the regulatory and institutional dimension, 2009.

[81] Gary Hufbauer, Luca Rubini and Yee Wong, "Swamped by Subsidies: Averting a US-EU Trade War after the Great Crisis", Policy Note, 24 July 2009.

[82] As of May 19, 2009; in per cent of 2008 GDP.

[83] IMF Staff Position paper, Fiscal Implications of the Global Economic and Financial Crisis, Fiscal Affairs Department, SPN/09/13, June 9, 2009.

[84] See also UNCTAD, Report of Multi Year Expert meeting on Services, development and trade: the regulatory and institutional dimension, 2009.

[85] IMF World Economic Outlook, 2010.

[86] IMF World Economic Outlook, 2010.

[87] IMF Global Financial Stability Report, April 2010.

[88] Mckinsey Global Institute Report, Global capital markets: entering a new era, September, 2009.

[89] Dirk Willem te Velde Effects of the Global Financial Crisis on Developing Countries and Emerging Markets: Policy responses to the crisis, INWENT/DIE/BMZ conference in Berlin, 11 December 2008.

[90] WTO Annual Report of the Director-General, Overview of Developments in the International Trading Environment, WT/TPR/OV/12, 18 November 2009.

[91] IMF Global Monitoring Report 2009, Global Financial Crisis and its Impact on Developing Countries.

[92] Report of the Commission of Experts of the President of the United Nations General Assembly on Reforms of the International Monetary and Financial System, September 21, 2009 - Stiglitz Report.

[93] UNCTAD Trade and Development Report 2009.

[94] UNCTAD Trade and Development Report 2009.

[95] UNCTAD Trade and Development Report 2009, Chapter 3.

[96] Report of the Commission of Experts of the President of the United Nations General Assembly on Reforms of the International Monetary and Financial System, September 21, 2009 - Stiglitz Report

[97] Report of the Commission of Experts of the President of the United Nations General Assembly on Reforms of the International Monetary and Financial System, September 21, 2009 - Stiglitz Report.

[98] Report of the Commission of Experts of the President of the United Nations General Assembly on Reforms of the International Monetary and Financial System, September 21, 2009 - Stiglitz Report.

[99] UNCTAD, Background Note of Multi Year Expert meeting on Services, development and trade: the regulatory and institutional dimension, 2010.

[100] UNCTAD Note on Financial Services, 2007.

[101] Developed countries have also faced failures including the current sub-prime mortgage crisis. Other examples include Australia's experience with HiH, the country's second largest non-life insurer (the company's failure led to the halting of construction projects and bankruptcy of small businesses), or Japan's experience with accelerated financial deregulation in the late 1980s which led to the collapse of eight mid-sized life insurers during 1997 to 2001, the Republic of Korea's experience post the 1997 financial and currency crisis which resulted in massive nonperforming loans, in both banks and insurance companies.

[102] For instance, supervisory practices vary considerably even within the European Union, even while efforts toward

harmonization especially post crisis are being undertaken.

[103] See UNCTAD background note on Financial Services, 2007 and UNCTAD background note on Insurance Services 2005, DT L Llewellyn, Institutional Structure of Financial Regulation and Supervision: the Basic Issues, in Aligning Financial Supervisory Structures with Country Needs, World Bank Institute 2004.

[104] For a more detailed explanation of the different kinds, approaches and trends in financial services regulation, see UNCTAD Note and Report of the Expert Meeting on Financial Services, 2007.

[105] Report of UNCTAD Expert Meeting on Financial Services, 2007.

[106] See also UK Financial Services Authority "Focusing on the Outcomes that matters", April 2007.

[107] UK Financial Services Authority "Focusing on the Outcomes that matters", April 2007.

[108] See Report of UNCTAD Expert Meeting on Financial Services, 2007.

[109] Schneider Benu, Issues in Implementing Standards and Codes, June 2002.

[110] Report of UNCTAD Expert Meeting on Financial Services, 2007.

[111] See Schneider Benu, Issues in Implementing Standards and Codes, June 2002.

[112] Five bodies have issued enough recommendations including the Financial Stability Board, the Basel Committee on Banking Supervision, the International Organization of Securities Commissions, the International Accounting Standards Board and the International Monetary Fund, and G20. Other key reports which present recommendations include the G30 Report – Volcker Report – on Financial Reform: A Framework for Financial Stability, the De Larosière's Report on EU Financial Regulation and the Turner Review.

[113] The Economist, Financial Reform in America: A Decent Start, July 1st 2010.

[114] The Economist, Financial Reform in America: A Decent Start, July 1st 2010.

[115] Volcker Rule, limiting banks' ability to trade on their own account.

[116] Beck Thorsten, The US Financial Reform Bill: Hit or Flop?, 16 June 2010.

[117] Beck Thorsten, The US Financial Reform Bill: Hit or Flop?, 16 June 2010.

[118] As explained in Cornford, Andrew. "Basel 2 At a Time of Financial Peril". Financial Markets Center, TWN Global Economy Series, March 2008.

[119] EU News Report, European Commission Adopts Legislative proposals to strengthen Financial Supervision in Europe, EU/NR 38/09: 23 September 2009

[120] COM(2009)499 final, 2009/0140(COD), http://ec.europa.eu/internal_market/finances/committees/index_en.htm

[121] IP/09/1582, the proposal was under consideration by the European Council and Parliament. Creation of the new authorities is envisaged for the end of 2010.

[122] IP/09/1120, http://ec.europa.eu/internal_market/bank/regcapital/index_en.htm

[123] Westlake (2010), Basel 3 – tough requirements; generous implementation timetable.

[124] Alexander, Eatwell, Persaud and Reoch (2010).

[125] BCBS, An Assessment of the Long-term Economic Impact of Stronger Capital and Liquidity Requirements, August 2010.

[126] BCBS, Assessing the Macroeconomic Impact of the Transition to Stronger Capital and Liquidity Requirements (interim report), August 2010.

[127] IIF, Interim Report on the Cumulative Impact on the Global Economy of Proposed Changes in the Banking Regulatory Framework, June 2010.

[128] Alexander, Eatwell, Persaud, Reoch, 2010.

[129] For a good discussion on likely impacts on developing countries of the Basel Accords, see Cornford, Andrew. "Some Questions and Answers on Basel 2", Presentation for the XXVII Technical Group of the Group of 24, Geneva, 8 September 2008.

[130] Cornford, Estimating the macroeconomic effects of Basel 3, TWN SUNS, November 19, 2010.

[131] Calice Pietro, A Preliminary Assessment of the Implication of the Financial Regulatory Reform for African Countries, Policy Brief on the Financial Crisis, African Development Bank, 2010.

[132] See, for example, discussions and proposals put forward by Brunnermeier et al (2009); de Larosiere Group (2009); Group of Thirty (2009); Turner Review (2009); and Warwick Commission (2009).

[133] IIF (2010), Interim Report on the Cumulative Impact on the Global Economy of Proposed Changes in the Banking Regulatory Framework and Otker-Robe and Pazarbasoglu, (2010). Impact of Regulatory Reforms on Large and Complex Financial Institutions.

[134] For 21 sub-Saharan African countries, foreign banks account for more than 60 per cent of total banking system assets.

[135] WTO, WT/TPR/OV/13.

[136] Deputy Governor of the RBI Usha Thorat's speech, 8 February 2010.

[137] Mirow (President of the EBRD) speech, Berlin, 19/20 May 2010.

[138] Beck (2010), Regulatory reform After the Crisis: Opportunities and Pitfalls.

[139] UNCTAD Trade and Development Report 2009, Chapter 3.

[140] Alexander, Eatwell, Persaud, Reoch, Crisis management, burden sharing and solidarity mechanism in the EU Study

prepared for the European Parliament, June 2010.

[141] Reddy YV, Trends in Financial Regulation : Developing Country Perspectives, Speech made at UNCTAD Multi Year Expert Meeting on Services, Development and Trade: the Regulatory and Institutional Dimension, April 2011.

[142] Reddy YV, Trends in Financial Regulation : Developing Country Perspectives, Speech made at UNCTAD Multi Year Expert Meeting on Services, Development and Trade: the Regulatory and Institutional Dimension, April 2011.

[143] Reddy YV, Trends in Financial Regulation : Developing Country Perspectives, Speech made at UNCTAD Multi Year Expert Meeting on Services, Development and Trade: the Regulatory and Institutional Dimension, April 2011.

[144] GATS terminology refers to 4 modes through which services are traded, Mode 1 or Cross Border trade in services, Mode 2 consumption abroad, Mode 3 commercial presence and Mode 4 movement of natural persons.

[145] Alexander, Eatwell, Persaud, Reoch, Crisis management, burden sharing and solidarity mechanism in the EU Study prepared for the European Parliament, June 2010.

[146] ASEAN discussed the roadmap for financial services integration aimed at strengthening regional self-help and support-mechanisms.

[147] Report of UNCTAD Expert Meeting on Financial Services, 2007.

[148] UNCTAD note on Services and RTAs, 2006.

[149] Thailand urged the creation of an Asian version of the International Monetary Fund, to be capitalized with $350 billion. Leaders from the Philippines and the Republic of Korea offered similar proposals and urged broader currency-swap arrangements.

[150] IMF Staff Position paper, Fiscal Implications of the Global Economic and Financial Crisis, SPN/09/13, June 9, 2009

[151] IMF Staff Position paper, Fiscal Implications of the Global Economic and Financial Crisis, SPN/09/13, June 9, 2009.

[152] Guarantees provided in Ireland, the Netherlands, Sweden, the United Kingdom, and the United States are particularly large, relative to GDP.

[153] Dick K. Nanto, Coordinator Specialist in Industry and Trade, The Global Financial Crisis: Analysis and Policy Implications, Report for Congress, April 2009.

[154] WTO Annual Report of the Director-General, Overview of Developments in the International Trading Environment, WT/TPR/OV/12, 18 November 2009.

[155] UNCTAD, Report of Multi Year Expert meeting on Services, development and trade: the regulatory and institutional dimension, 2009.

[156] WTO Annual Report of the Director-General, Overview of Developments in the International Trading Environment, WT/TPR/OV/12, 18 November 2009.

[157] Speech WTO Deputy Director General, at the WTO workshop to commemorate the 10th anniversary of the financial service protocol, March 2009.

[158] By giving details about the sectoral/modal scope/nature of commitments and by containing additional obligations (standstill, government-procurement, new FS, transfer/processing of information and non-discriminatory measures.

[159] WTO World Trade Report "Exploring the Links Between Subsidies, Trade and the WTO", 2006.

[160] The Financial Express, WTO ministerial meet likely by Jan-Feb '10, May 15, 2009, quoting Commerce secretary G K Pillai said at a FICCI seminar. Pillai said a new dimension on financial services offers has now surfaced following the post-July 2008 global financial crisis. While no liberalization of financial services seems possible after the outbreak of the financial crisis, many countries may withdraw the current offers, forcing a re-look at the financial services offers.

[161] Remarks of Andrew Cornford, Observatoire de la Finance XXIX Technical Group of the Group of Twenty-Four Geneva, Questions and Answers on Basel 2 and the Agenda for Regulatory Reform 7-8 September 2009.

[162] See G20 Pittsburgh Declaration, September 2009.

[163] Remarks of Andrew Cornford, Observatoire de la Finance XXIX Technical Group of the Group of Twenty-Four Geneva, Questions and Answers on Basel 2 and the Agenda for Regulatory Reform 7-8 September 2009.

[164] See, for example, Communication from Switzerland, WTO Document S/CSS/W/71, 4 May 2001.

[165] See UNCTAD Report of Expert Meeting on Financial Services, 2007.

BIBLIOGRAPHY

Alexander, Eatwell, Persaud, Reoch, Crisis management, burden sharing and solidarity mechanism in the EU Study prepared for the European Parliament, June 2010

Cornford Andrew, Observatoire de la Finance XXIX Technical Group of the Group of Twenty-Four Geneva, Questions and Answers on Basel 2 and the agenda for regulatory reform 7-8 September 2009

BCBS, Assessing the Macroeconomic Impact of the Transition to Stronger Capital and Liquidity Requirements (interim report), August 2010

Demirguc-Kunt and Enrica Detragiache, The Determinants of Banking Crises in Developing and Developed Countries, IMF Staff Paper, Volume 45, Number 1, March 1998

Deutsche Bank Research, Financial Market Special, EU Monitor 67, June 15, 2009

EU News Report, European Commission Adopts Legislative proposals to strengthen Financial Supervision in Europe, EU/NR 38/09: 23 September 2009

EU Communications COM(2009) 499 final, 2009/0140 (COD), http://ec.europa.eu/internal_market/finances/committees/index_en.htm, IP/09/1582,

Gallardo Joselito, Korotoumou Ouattara, Bikki Randhawa and William Steel, Comparative Review of Microfinance Regulatory Framework Issues in Benin, Ghana and Tanzania, Word Bank Working Paper, April 2005

Heiko Hesse Andreas Jobst Juan Solé, Quo vadis Islamic finance?, 24 November 2008, VOX commentary, Website: http://www.voxeu.org/index.php?q=node/2593

Hufbauer Gary, Luca Rubini and Yee Wong, "Swamped by Subsidies: Averting a US-EU Trade War after the Great Crisis", Policy Note, 24 July 2009

International Actuarial Association, The Global Financial Crisis – What Next?, July 2009

IMF Global Monitoring Report 2009, Global Financial Crisis and its Impact on Developing Countries

IMF Staff Position paper, Fiscal Implications of the Global Economic and Financial Crisis, SPN/09/13, June 9, 2009

IMF Global Financial Stability Report, April 2010

Institute of International Finance, Interim Report on the Cumulative Impact on the Global Economy of Proposed Changes in the Banking Regulatory Framework, June 2010

Islamic Financial Services Board, Islamic Development Bank, Islamic Research Institue, Islamic Finance and Global Financial Stability, April 2010

Kaminsky Gracila and Reinhart Carmen, The Twin Crises: The Causes of Banking and Balance-of-Payments Problems, American Economic Review, June 1999

Leaman Alan, The new financial services landscape, Financial world Online, October, 2009

Levine Ross, An Autopsy of the U.S. Financial System:Accident, Suicide, or Negligent Homicide? , Journal of Economic Law, April 2010

Liedtke Patrick, Insurance and the Crisis Resolution, Insurance and Finance volume No. 5, Geneva Association, September, 2009

Mckinsey Global Institute Report, Global capital markets: entering a new era, September, 2009

Singh Ajit, Capital account liberalization, free long-term capital flows, financial crises and economic development, ESRC Centre for Business Research, University of Cambridge, Working Paper No. 245, December 2002

Stiglitz Joseph, Lessons from the global financial crisis. In Global Financial Crises: Lessons from Recent Events, J. R. Bisignano, William C. Hunter and George G. Kaufman, eds., pp. 89–107. Boston, Massachusetts, Dordrecht, Netherlands, and London:Kluwer Academic, 2000

Stiglitz Report, Report of the Commission of Experts of the President of the United Nations General Assembly on Reforms of the International Monetary and Financial System, September 21, 2009

Taylor John, Under Secretary, US Treasury for International Affairs, Understanding and Supporting Islamic Finance: Product Differentiation and International Standards, Forum on Islamic Finance, Harvard University, May 2004

Turner Review. Financial Services Authority, A regulatory response to the global banking crisis March 2009

Reddy Y V, India and the Global Financial Crisis: Managing Money and Finance, Orient Blackswan, 2009

UNCTAD Background Note and Report of the Ad hoc Expert Meeting on Insurance Services, UNCTAD/DITC/TNCD/2005/15

UNCTAD, Note "Trade and Development Implications of Financial Services", TD/B/COM.1/EM.33/3, 3 August 2007

UNCTAD, Report of the expert meeting on trade and development implications of financial services and commodity exchanges, TD/B/COM.1/EM.33/4, November 15, 2007

UNCTAD Trade and Development Report 2009

UNCTAD Secretariat Note, Services, development and trade: the regulatory and institutional dimension, on its First session, TD/B/C.I/MEM.3/2 , 6th January 2009

UNCTAD Report of Multi-Year Expert Meeting on Services, Development and Trade: the Regulatory and Institutional Dimension on its First session, TD/B/C.I/MEM.3/3/Corr.1, April 16, 2009

UNCTAD Secretariat Note, Services, development and trade: the regulatory and institutional dimension, on its Second session, TD/B/C.I/MEM.3/5, 6th January 2010

UNCTAD, Report of Multi-Year Expert Meeting on Services, Development and Trade: the Regulatory and Institutional Dimension on its Second session, TD/B/C.I/MEM.3/6 , 8th April, 2010

Williamson, J., and Z. Drabek, (1999), Whether and When to Liberalize Capital Account and Financial Services. Staff Working Paper ERAD-99-03. World Trade Organization, Economic Research and Analysis Division

WTO Deputy Director General, at the WTO workshop to commemorate the 10th anniversary of the financial service protocol, March 2009

WTO Annual Report of the Director-General, Overview of Developments in the International Trading Environment, WT/TPR/OV/12, 18 November 2009

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SERVICES RULES IN ECONOMIC PARTNERSHIP AGREEMENTS: THE MOVEMENT OF PERSONS AND ESTABLISHMENT

IV

1. INTRODUCTION

December 2007 saw the end of the Cotonou trade regime, triggered by the expiration of the WTO waiver for African, Caribbean and Pacific Group (ACP) states permitting the European Union (EU) preferential trade regime for goods originating in the ACP.[1] In an attempt to ensure the continuation of preferential market access while complying with World Trade Organisation (WTO) rules, the EU proposed negotiations on comprehensive, reciprocal, economic partnership agreements (EPA) or respective interim agreements.[2] As of 2011, only one complete EPA has been signed by Caribbean countries[3] (CARIFORUM EPA, signed by one LDC and 14 non-LDCs).[4] Moreover, African and Pacific countries have signed a total of six *Interim Agreements,* while the signatures of nine individual countries that initialled EPAs are pending.[5] Negotiations for a further six comprehensive EPAs are currently ongoing.[6]

EPAs, similar to other regional trade agreements must comply with WTO rules – most importantly, Article XXIV of the General Agreement on Tariffs and Trade (GATT), requiring the elimination of all duties on "substantially all trade" in a "reasonable length of time." While significant controversy[7] remains over the interpretation of these requirements – in particular the necessary scope of coverage – it is generally acknowledged that there is no legal requirement that EPAs should include any rules on trade in services.

However, the Cotonou Partnership Agreement[8] strongly endorsed the inclusion of trade related issues, such as government procurement, investment and services, once ACP countries have gained sufficient experience with these issues at the multilateral level.[9] In that context, the Cotonu Agreement recognises services' "growing importance and their major contribution to economic and social development." Importantly, for parties undertaking negotiations on services trade, the respective EPA must meet the standards of the GATT Article XXIV services equivalent – that is, Article V of the General Agreement on Trade in Services (GATS). Along these lines, several EU EPAs negotiating proposals include ambitious and comprehensive services chapters.

ACP countries face the challenge of negotiating asymmetrical yet reciprocal agreements. This is particularly challenging in the area of services trade, where negotiations involve a highly complex interplay of actors and institutions, against the backdrop of limited data and information on individual countries' services sectors. Moreover, concerns have been voiced over developmental implications of such negotiations, including concerns over the lack of policy preparedness by ACP countries, the nascent status of their regulatory and institutional frameworks, as well as the limited capacities of their services suppliers. Likewise, some negotiators and experts have pointed to a potential lack of balance in future trade gains that could result from eventual agreements, particularly given the relatively small export capacities and interests of ACP services firms when compared to their European counterparts.

Nonetheless, several ACP regions agreed to negotiating a comprehensive EPA including commitments on trade in services. This is the case for the concluded CARIFORUM EPA where services trade was an area of particular interest for both negotiating partners. For Caribbean countries, for example, services trade was considered the sector with the greatest value-added potential – particularly knowledge-based services. Services were considered to represent the most viable option for CARIFORUM global diversification. Accordingly, the Caribbean countries favoured the inclusion of services trade into EPA, with a view to gaining the much desired "beyond GSP benefits". [10]

Moreover, Pacific States, the Economic Community of West African States (ECOWAS), Eastern and Southern Africa (ESA), and the Southern African Development Community (SADC) likewise agreed to the EU proposal and in the cases of ESA and SADC included a mandate for continuous negotiations on trade in services and other trade related issues after the conclusion of a goods focused EPA. On this basis, ESA and SADC are currently engaged in respective negotiations and attempting to structure these around their own comprehensive negotiation drafts on services, in order to ensure that their particular needs and interests are sufficiently addressed

EPA services negotiations are taking place against the backdrop of the already finalized CARIFORUM EPA and its comprehensive services chapters. As the first concluded EPA, the CARIFORUM EPA is frequently referred to as a model agreement establishing a benchmark that will influence and direct future negotiations. Accordingly, such a benchmark function would also apply to the services market access commitments completed by the EU and the

Caribbean countries. While the first gives information on the threshold of commitments the EU is willing to agree on, the second sheds light on the scope of liberalization considered necessary by the EU – both for meeting the requirements of Article V GATS and for meeting own expectations.

However, in such a context, it is important to keep in mind that remaining ACP regions may have offensive and defensive interests that differ considerably from those of the Caribbean countries. The high level of commitments included in the CARIFORUM EPA, both in terms of sectoral coverage and depth of commitment might not be suitable for or desired by other EPA negotiating groups. Accordingly, a real need exists for developing individually designed proposals rather than simply pursuing CARIFORUM's approach without amendment. This would include levels of commitments targeted to a country's individual level of development, as well as operational and effective provisions on technical assistance and capacity building, including supply side capacity building. It has to be noted, that it is frequently pointed out that the EU proposals do, indeed, take into account the possibilities and abilities of each negotiating party and allow a certain degree of asymmetry in the depths of commitments.

This chapter aims to contribute to such endeavours by providing policy analysis of the CARIFORUM EPA provisions on services trade and investment. A brief review of the EPA's services and investment rules is presented, followed by an examination of the movement of natural persons (MNP) and investment disciplines. Both hold potentially important development implications, as evidenced by the identification of core interests within numerous ACP countries. While the temporary movement of persons is an area of main export interest, the attraction of sustainable foreign investment can contribute to developing services sectors and generating related development gains. This chapter concludes by examining the broader context and presenting considerations of possible services and investment chapters of future EPAs and their application.

2. SERVICES AND INVESTMENT RULES IN THE CARIFORUM EPA – AN OVERVIEW

The 2008 CARIFORUM EPA targets the progressive, reciprocal and asymmetric liberalization of services and investment. Title II on "Investment, Trade in Services and E-commerce" contains, amongst others, rules for national treatment (NT), market access (MA) and transparency. Chapters 2 and 3 address commercial presence/investment (Mode 3) and

Box 1. The identification of interests

With a view to achieving meaningful and development enhancing services commitments from the EPA, the Caribbean Regional Negotiating Machinery (CRNM) – with assistance of member countries – carried out a process to identify (i) priority, (ii) sensitive and (iii) flexibility sectors.

For the liberalization commitments of the EPA, CARIFORUM formulated two core objectives:

(i) In its own schedules, Mode 3 commitments that would encourage sustainable investment in selected sectors; and

(ii) In the EU schedule, commitments that extend market access to sectors not scheduled or not fully committed under GATS.[a]

In terms of "offensive" interests, the region as such – in addition to the individual countries – had a strong interest in obtaining market access in Mode 2 and Mode 4 and in professional services, cultural practitioners and tourism services. With tourism and travel related services comprising approximately 60 per cent of all CARIFORUM services exports to the EU, the sector had continuously been in the spotlight of negotiations.

In order to create a strong negotiation position and pursue the identified interests, CRNM requested its Member States to also identify sectors that could be utilized to create flexibility in the negotiation process – so called "throw-aways".

This process required extensive analysis and research as well as extensive consultative work on industry priorities as well as existing regulatory and institutional frameworks. This task was complicated by the lack in resources and disaggregated statistical data.[b]

[a] *Caribbean Regional Negation Machinery (CRNM), The Treatment of Professional Services in the EPA, February 2008, p.2.*
[b] *Allyson Francis, Heidi Ullrich, "CARIFORUM EPA and beyond: Recommendations for negotiations on Services and Trade related issues in EPAs", Deutsche Gesellschaft für Technische Zusammenarbeit, 2008, p. 28.*

cross-border supply of services (Mode 1 and Mode 2) respectively. Chapter 4 contains rules on the MNP, (Mode 4) including rules on key personnel, graduate trainees, business services sellers, contractual services suppliers, independent professionals, and short-term visitors for business purposes. The Protocol on Cultural Cooperation includes provisions on the entry and temporary stay of artists and cultural professionals not covered under Title II. Finally, Chapter 6 and Chapter 7 address regulatory issues on e-commerce and cooperation respectively.

In terms of liberalization, the EU commitments relevant for Title II (investment, trade in services and e-commerce) cover around 94 per cent of all W/120-list services sectors,[11] indicating an increase compared to earlier trade agreements. Liberalization commitments on entertainment services are the broadest ever offered by the EU.

CARIFOUM countries made significant commitments showing strong increase in liberalization compared to GATS commitments.[12] The CRNM database indicates that the less developed[13] and more developed[14] CARIFORUM States made commitments in 65 per cent and 75 per cent of all services sectors respectively.[15] Furthermore, negotiations for further liberalization are scheduled to begin as early as five years after the entry into force of the CARIFORUM Agreement.[16] These commitment levels imply a considerable increase of liberalization compared to GATS. For instance, the sectoral coverage in Guyana increased from 19 per cent to 82 per cent while that of St. Kitts and Nevis increased from 5 per cent to 65 per cent. Moreover, the Dominican Republic committed to open 90 per cent thus following the EU example which liberalized approximately 94 per cent of all sectors.[17]

Although the extensive opening of Caribbean services sectors is expected to spur development in certain areas, such deep commitments may also challenge CARIFORUM services providers, particularly where regulatory and institutional frameworks continue to be weak. It is widely acknowledged, that services trade liberalization needs to be preceded by the development of sound regulatory and institutional frameworks.[18] Moreover, despite the asymmetric character of commitments (65 per cent and 75 per cent by CARIFORUM compared to approximately 90 per cent by the EU) the relatively small size of CARIFORUM services exporters, together with the fact that export competitiveness remains limited to selected sectors, might – in practice – result in certain imbalances with respect to the export opportunities granted by EPA.

In the following, this paper will proceed to discuss the development, policy and negotiating challenges of two concrete examples, namely Modes 4 and 3.

3. MODE 4: EU COMMITMENTS TO FACILITATE THE MOVEMENT OF CARIBBEAN SERVICE SUPPLIERS

Mode 4 has long been considered the area of prime interest for services exports of the developing world. Also CARIFORUM identified Mode 4 as a priority area (box 1). As such, it is important to analyse, to which extent EU commitments under the CARIFORUM EPA grant effective and meaningful market access for the MNP, with a view to informing the implementation and application of existing agreements and the negotiation of further EPAs.[19]

However, any such analysis must be seen against the backdrop of services negotiations in the WTO and uncertainties about the extent of further liberalization that can be expected from this process. Regional trade agreement (RTA) commitments are seen to derive value from going beyond liberalization granted either under the GSP or envisaged under offers made in multilateral negotiations. To the extent that the prospects of far-reaching GATS commitments are diminishing, also RTA commitments that stop short of GATS offers would yield benefits.

The value of MNP commitments is derived particularly from the categories of movement covered under a country's schedule. In this context, attention must be given to: (i) the legal design of commitments; (ii) the definition of the "categories of movement"; (iii) the addition of sub-sectors into the schedule; and (iv) the substance of the commitments, including the conditions for entry and stay for each "category" (see box 2 for scheduling formats).

Categories of movement[20]

In terms of the categories of movement, the EU has made commitments in the following professional categories: key personnel (including business visitors (BVs) responsible for establishing a commercial presence (CP) and intra-corporate transfers (ICTs)

Box 2. Scheduling formats

Any comparison between the EU CARIFORUM EPA and the GATS schedules is rendered complicated by the fact that the EU used different scheduling techniques under the two agreements.

In the CARIFORUM EPA, the EU included short definitions of the categories in the main text of the EPA and further definitions and conditions for entry and stay in the introductory notes to the respective schedules (there are two schedules/lists of reservations – one for key personnel, graduate trainees and business services sellers, and one for contractual services suppliers and independent professionals). The lists of reservations describe the market access reservations for individual EU Member States. There is also the possibility for EU wide reservations (as in the case of the EU Directive on Recognition or entries related to nationality requirements).

GATS schedules, in turn, contain horizontal and sectoral commitments. For Mode 4, the standard practice is to include specific "categories of movement" in the horizontal commitment. In the sectoral part of the schedule, countries then commit market access (MA) and national treatment (NT) for (some of) these categories, on a sub-sector by sub-sector basis.

In its effort to simplify the drafting of own commitments, CARIFORUM insisted on the use of the GATS scheduling technique. This enabled it to make use of the knowledge and experiences gained during prior GATS negotiations.

For countries with limited capacities however, different scheduling formats may render analysis and direct comparisons difficult. Moreover, novel scheduling formats can also raise interpretative questions and challenges.

(including managers, specialists)); graduate trainees (GTs); business services sellers (BSS); contractual service suppliers (CSS); and independent professionals (IPs). These categories – and their definitions – are largely the same as in the EU GATS offer (the categories have mainly been re-ordered).

However, the EU has also included the new category of "short term visitors for business purposes (STVBP)" (Article 84). The CARIFORUM EPA defines this category and outlines a series of activities which STVBP can undertake in receiving countries.[21] This includes activities related to: research and design; marketing research; training seminars; trade fairs and exhibitions; sales;[22] purchasing; and, tourism. The provision includes a best endeavour obligation to facilitate access for STVBPs.

While interesting in approach, this category's actual commercial value for ACP countries' Mode 4 exports remains to be seen. Importantly, the activities mentioned must not to be confused with the specific sub-sectors of services provision and with actual "trade in services" of these sectors. For example, the reference to marketing does not cover the supply of marketing services to a consumer in the receiving country, but instead it covers the conduct of marketing activities in the receiving country on behalf of a supplier established in the sending country.[23] While indeed, these activities could be useful for business people to establish contacts and prepare the ground for future services sales, it is important to acknowledge that in themselves, STVBP do not engage in "sale of services".

The CARIFORUM EPA also stops short of establishing clear market access obligations for natural persons in the STVBP category. Instead, it provides for: (i) a best-endeavour statement that the parties "... shall endeavour to facilitate, in conformity with their respective legislation, the entry and temporary stay in their territories of short-term visitors for business purposes" from the other Party; and (ii) a provision stating that "this entry and temporary stay into their territories, when allowed, shall be for a period of up to 90 days in any twelve month period."

The above could still be useful for natural persons facing difficulties in the context of visa requirements and procedures – recognizing, however, that the facilitation of entry is subject to being in conformity with the receiving country's respective legislation. Hence, this would merely address issues such as the arbitrary implementation of visa requirements and procedures, not the burdensome or discriminatory nature of such requirements or procedures themselves.

Additional sub-sectors

This sector-specific analysis looked at commitments of selected EU Member States in specific services sub-sectors (reviewing both, the additions of sub-sectors and the conditions/limitations attached to any

market access granted). The analysis focuses on five potential receiving countries: Germany, the United Kingdom, France, Spain and Sweden. It looks at all the respective sub-sectors in the categories of CSS and IP. In both schedules, the select countries have comparatively more open schedules than countries which more recently became EU Member States.

For the categories of Contractual Service Suppliers (CSS) and Independent Providers (IP), the EU schedule under the CARIFORUM EPA contains specific sectoral commitments in a higher number of sub-sectors than in the EU GATS context, as evidenced by the following points:

- Looking at the "list of sectors", for CSS, the EU CARIFORUM schedule includes commitments in 29 sub-sectors,[24] of which slightly more than ten are not in the GATS offer. The additions include: medical and dental; veterinary; midwives; nurses; market research; opinion polling; maintenance and repair of equipment; chef de cuisine; fashion model; site investigation; and tourist guide services;
- For IPs, the EU CARIFORUM schedule includes commitments in 11 sub-sectors,[25] of which very few are not in the GATS offer. The additions include: research and development services; market research and opinion polling; and services related to management consulting.

However, it should be noted, that some of the sub-sector-specific entries in the EU CARIFORUM schedule are quite disaggregated, into sub-categories at a higher digit level than those used in W/120. For example, in the CARIFORUM EPA nurses and midwives are two sub-sectors while in the GATS they are one single sector. Moreover, not all the EU modifications in the GATS offer are transcribed to the CARIFORUM EPA – with respect to construction and services related to the sale of construction equipment, the EU schedule in CARIFORUM stops short of including sectors, which are included in the GATS offer.

While there is, indeed, value added in the inclusion of these sub-sectors, particularly sectors such as chefs, fashion models, midwives, nurses, tourist guide services, among others, the following caveats are necessary:

- The commitments are complemented with numerous conditions and limitations, detailed in both the EU's horizontal part of the schedules (that is the list of conditions attached to the two categories in the introductory note to the schedule)[26] and their country and sector specific schedules (see below);
- Most of the movement by individuals in the respective sub-sectors may not actually take place in the CSS or IP mode. Other categories of movement may be more important, for example, Individuals working as chef who hardly move in the manner as it is covered by contractual service suppliers - that is, as part of a juridical person established in an ACP country, exporting services on the basis of a contractual arrangement other than contracts (placement and supply of services of personnel to Europe);
- Questions remain over the actual export competitiveness of ACP countries in sectors such as research and development (R&D) and management consulting.

Substance of specific commitments, conditions for entry and stay

The differences between the EU commitment in the CARIFORUM EPA and the EU offer in the GATS appear rather limited, with only very few comprehensive changes (from "unbound" in EU GATS offer to "none" in EU CARIFORUM schedule[27] or from "unbound" in GATS offer to "economic needs tests" (ENT)" in CARIFORUM schedule).[28]

One issue regarded as a major EU concession to CARIFORUM, is that the EU CARIFORUM text waives requirements for university degrees and professional qualifications for three sub-sectors – namely for chefs de cuisine; fashion models; and entertainment services (other than audiovisual services). However, a realistic assessment, considering the underlying economic realities in these sub-sectors, reveals the very limited nature of this concession.[29] Moreover, respective EU-wide limitations allow countries to require specific technical qualifications and to make use of economic needs tests. For instance, a chef de cuisine may be required to have an advanced technical qualification and at least 6 years of demonstrable work experience at the level of chef de cuisine; there is also a limitation for an economic needs test.

Finally, some of the benefits Caribbean countries might have expected from an easier movement for their artists (musicians, actors, amongst others) may

be limited by the entertainment services carve-out related to audio visual services.

Conclusion

With respect to the categories of movements, EU commitments under the CARIFORUM EPA stop short of offering significant, meaningful market access that extends beyond the EU offer under the GATS. Also with respect to conditions for entry and stay (time-frame for temporary stay for particular categories) the EU schedule in the CARIFORUM EPA provides rather limited value added. However limited in nature, though, the commitments granted may gain greater relevance in light of the progress – or lack thereof – made in the WTO Doha Round (see above).

4. MODE 3: RULES FOR ATTRACTING INVESTMENT AND REAPING ATTENDANT DEVELOPMENT BENEFITS

Countries negotiate investment rules with a view to attracting development-enhancing foreign direct investment (FDI). Amongst others, FDI can help build an economy's productive capacities and improve its infrastructure (e.g. by delivering better energy, transport, and telecommunication networks). By means of facilitating logistics and trade, FDI can support economic growth as well as generate spill-over effects by increasing domestic demand and encouraging domestic entrepreneurship to supply FDI-receiving industries. This can lead to a cycle of additional domestic employment, which generates further domestic demand, triggering sustained economic growth. Moreover, low-carbon investment can assist countries in combating climate change.

International investment agreements (IIAs) are seen as one possible tool to help attract FDI. Typically, IIAs address three different objectives – liberalization, protection, and investment promotion – all of which can have development implications. Along these lines, a second major objective of CARIFORUM countries, when negotiating services disciplines in the EPA, encompassed designing a comprehensive investment chapter to promote and attract development enhancing investment. In order to achieve this, CARIFORUM supports greater legal predictability and security for investors, enhanced market access and pre-establishment rights; and creates an investment regime conducive to the technological development and social transformation in the region.[30] Against this backdrop, CARIFORUM sought a comprehensive investment regime covering market access, pre-establishment and protection.

However, it should be noted that other ACP countries hold different views about the type of investment disciplines to be included in a possible EPA. For example, ESA countries have doubts over economic benefits that could be derived from comprehensive investment liberalization in sectors other than services. Amongst other concerns, they consider that: 1) the region was not yet ready for comprehensive investment liberalization; 2) the countries lacked experiences with such a comprehensive approach in the North-South context; 3) the negotiating texts put forward by the EU would go beyond the technical negotiating capacity of the ESA region, and 4) neither the Cotonou Agreement nor the WTO Agreement required the negotiation of investment liberalization in sectors other than services.[31] Similarly, the SADC region's negotiating proposal for investment stopped short of covering issues related to pre-establishment or protection, and instead, focused only on cooperation.[32]

The following section examines selected aspects related to the development dimension of the CARIFORUM EPA's investment rules. While there are numerous references to investment throughout the EPA (all of which can have significant bearing on the investment commitments and attendant development implications) a comprehensive review is beyond the scope of this chapter. Instead, the following examination focuses on three aspects: the scope and definition of the investments covered; how the agreement addresses pre-establishment issues; and, the extent to which the EPA includes other development-enhancing elements (such as cooperation and technical assistance).[33]

Scope and definition of investments covered

In terms of scope and definition, the EPA follows the tradition of earlier EU EPAs and of the GATS, by using an investment definition focusing on commercial presence, instead of the asset-based or enterprise-based investment definition commonly found in bilateral investment treaties (BITs). More specifically, the CARIFORUM EPA defines investment by specifying it involves "...perform(ing) of an economic activity through setting up a commercial presence."

In terms of sectoral scope, the EPA moves beyond GATS as it covers all economic activities, including also those other than services. Accordingly, specific country commitments on investment include agriculture, hunting and forestry, fishing and aquaculture, mining and quarrying, manufacturing and production, and transmission and distribution on own account of electricity, gas, steam and hot water.

There are however, certain limitations to the EPA's broad scope and definition of covered investments. The agreement specifies that "acquisition or ownership" shall be understood to include "capital participation in a juridical person with a view to establishing or maintaining lasting economic links."[34] This clarification explicitly exempts short-term speculative investment[35] thus limiting the scope of application to FDI-like investment (that is, the type of investment that is considered more development-enhancing).[36]

Other important limitations of the EPAs' scope of coverage include typical GATS-type exclusions of activities in governmental authority and immigration measures related to employment markets. Moreover, the EPA explicitly excludes subsidies and makes clear that it shall not be construed to require the privatization of public undertakings or to impose any obligation with respect to government procurement. Finally, the EPA does not apply to specific, sensitive sectors, such as activities related to nuclear materials, arms, munitions and war materials, audio-visual services, national maritime cabotages, and certain air transport services (Article 66).

Pre-establishment and market access

Important development implications also arise from the extent to which the EPA covers pre-establishment rights.[37] For example, countries may wish to retain certain regulatory flexibilities as to the specific investment projects that will be permitted in their territory. While the Agreement does not explicitly refer to pre-establishment rights, several of its provisions contain language that points to pre-establishment-type of issues. For instance, the provision on national treatment refers to "all measures affecting commercial presence" hence also covering entry and establishment type issues. Similarly, the market access clause addresses issues such as "limitations on the participation of foreign capital" and "measures which restrict or require specific types of establishment ... or joint ventures", all of which are closely linked to establishment-type questions.

It is also important to note that EPA provisions on national treatment and market access are subject to certain limitations. In addition to the carve-out for sensitive sectors of Article 66, market access and national treatment apply only to the extent countries have made commitments. Commitments may include conditions and limitations (conditionalities) and differ across countries, depending on their level of development and other policy priorities. The Dominican Republic, for instance, (the Caribbean nation with the deepest commitments in the services sector) is the only country that has agreed to market access in certain sensitive sectors, such as the transmission and distribution of electricity, gas, steam and hot water. However, even the Dominican Republic's commitments are subject to several limitations.

Belize, on the other hand, has by far the most comprehensive conditions attached to its market access commitments. Amongst others, it retains policy space for joint venture and transfer of technology requirements for accounting, architectural and engineering services. For professional services, Belize as well as other CARIFORUM countries, provide policy space for joint ventures and for transfer of technology requirements. Such rules can prove critical for generating development gains and ensuring that investment commitments support the growth of sustainable services sectors and enhance supply capacities within the countries.

Although comprehensive in terms of sectoral coverage, CARIFORUM's investment commitments appear to stop short of bringing far-reaching investment liberalization, combined with an important caveat that reserves "...the right to set out in the schedule, within two years of the date of entry into force of this Agreement, any existing non-conforming measures existing at the time of the signature of this Agreement not herein under listed."

Cooperation

Investment provisions of the EPA are complemented by numerous provisions on "cooperation".[38] Indeed, effective cooperation can offer an important contribution to ensuring development benefits from investment liberalization and provisions on cooperation are increasingly included into IIAs, particularly IIAs other than BITs and double taxation treaties (DTTs). Cooperation can cover many areas, including:

- a country's financial environment where cooperation can, amongst others, help improve the overall financial environment of the participating countries in terms of the development and expansion of the financial sector, diversification of financial instruments, establishment of risk insurance funds, creation of financial instruments adapted to SMMEs, provision of long-term financial resources, including risk capital and help to mobilize domestic and foreign capital for this purpose;
- investment promotion, which can range from taking measures to create and enhance conducive investment and business environments, establishing and strengthening appropriate administrative structures (establishing national contact points and advisory services), improving the exchange of information on investment opportunities (sponsoring sectoral investment to promote partnerships and foreign investment), or supporting capacity building for investment promotion agencies and institutions involved in promoting;
- private sector development, which may include promoting private sector business dialogue and partnerships, creating business or advisory councils, promoting SMMEs and SMEs or promoting industrial linkages between TNCs and SMEs for the purposes of skills and technology transfer. At an enterprise level, cooperation can also encourage the private sector of one party to invest and to provide specific assistance to its counterparts in the other country or to form partnerships through joint ventures and encourage venture capital financing for Greenfield investment;
- the building of regulatory and institutional frameworks, including through twinning programmes and exchange of experiences and lessons sharing;
- the encouragement of strategic alliances which can address, for example, build-operate-transfer and build-operate-own activities between investors among the parties; or
- the development of programmes to improve investment on research and development on information and industrial technology.

Frequently, cooperation also includes technical assistance and capacity building. International investment agreements can also encourage the signatory parties to foster the deepening of cooperation on inter-regional and intra-regional investment.[39]

In the CARIFORUM context, Article 60, for example, sets out that "...parties agree to cooperate, including by providing support for technical assistance, training and capacity building in [...] establishing mechanisms for promoting investment and joint ventures between services suppliers of the EU Party and of the Signatory CARIFORUM State and enhancing the capacities of investment promotion agencies in CARIFORUM States." While it has to be noted that these provisions are of a mere declaratory character, a periodic review, such as the one undertaken by the CARIFORUM-EU Trade and Development Committee, can possibly help to facilitate and or induce their implementation.[40] However, though limited in scope, coverage and depth, the pro-development clauses in the CARIFORUM EPA can still be viewed rather strong in particular compared to EU Member States' BITs.

In that context, it is worth noting that the negotiating text the SADC group developed for EPA investment negotiations deals almost exclusively with cooperation, in the absence of liberalization and/or protection issues. Cooperation was also identified as a major point of interest by the ESA and ECOWAS countries.

Outlook

This section considers the challenges faced by ACP countries in terms of negotiating investment disciplines in current EPA negotiations. Moreover, to what extent can they build on – or at least refer to – the development provisions Caribbean countries managed to negotiate?

At a first glance, achieving similar pro-development elements or concessions in the outstanding EPAs might prove difficult. Comparing the CARIFORUM text with the EU proposal to the SADC group, for example, suggests that the above and other pro-development clauses are not included there. Moreover, the EU proposal to SADC is more or less identical with the EU's standard negotiating text, raising questions about the extent to which the EU negotiating approach reflects regional specificities and development considerations and sensitivities.[41]

This can be seen as problematic, however, as investment in the services sector is highly sensitive, and requires country- and sector- specific approaches aimed at maximizing development benefits from

investment. Hence, carefully designed "treatments/ roadmaps" that allow for a development-friendly process of liberalization could prove beneficial. The importance of regional differences is apparent in the "preparedness for liberalisation" which differs across sectors and countries. Flexibility regarding the use of a negotiating template would be particularly beneficial in cases where the counterpart has developed its own negotiating text. Indeed, some ACP regions such as the SADC or the ESA regions have already done so.

Important issues also arise regarding the region's negotiating leverage. Though interested in strong cooperation commitments, the remaining EPA regions may be in a considerably weaker negotiation position than the CARIFORUM countries, possibly facing difficulties in achieving similar results. Moreover, CARIFORUM, also acted as a "demandeur" on services market access and investment protection rules, which allowed them to make concessions and trade-offs which the other EPA regions may not be able to replicate.

A further dynamic that may substantially influence current EPA negotiations on investment disciplines is the shift of competence for FDI from EU member States to the EU level. At the time of the CARIFORUM negotiations, the EU did not have competence to enter into fully fledged investment agreements that would cover post-establishment protection. Rather, this competence remained with individual Member States that entered into BITs.

Meanwhile, the ratification of the Lisbon Treaty in late 2009 transferred FDI related competences to the EU as part of its common commercial policy. While questions remain over the extent to which future EU IIAs will cover portfolio investments and protection disciplines, (that is, expropriation, fair and equitable treatment, investor-State dispute settlement) it cannot be ruled out that the EU may include BITs-like provisions in upcoming EPA investment proposals. Such a scenario would not only go beyond what the CARIFORUM EPA contains, but – as the discussion above has shown – would go beyond what is currently envisaged for future EPA investment chapters. ACP countries that are cautious about far-reaching investment disciplines may wish to carefully consider how to respond to a possible novel scenario, should it occur.

More broadly, the shift in competence may raise novel considerations for developing countries negotiating with the EU. As ACP countries would be facing a partner with increased political clout and strength, EPA regions may wish to carefully consider the approach to future negotiations. Issues that would need to be taken into account include the new role of the European Parliament, and issues of clarity and transparency, particularly in the negotiation of mixed agreements. The latter is relevant in so far as the scope of competences remains unclear (and potentially fragmented), leading to a complex interplay of actors, that could create challenges for negotiating partners.

However, the competence shift may also offer opportunities by encouraging a novel approach toward IIA rule-making and the operationalization of the development dimension. Importantly, the principles and objectives that shall constitute the context for future European investment rule-making require that the EU "shall seek to develop relations and build partnerships with third countries" and in so doing, "encourage the integration of all countries into the world economy…and promote an international system based on stronger multilateral cooperation and good global governance."[42] The new competencies of the Parliament could further strengthen this approach. African, Caribbean and Pacific States might want to use this as a point of entry to argue for strong cooperation clauses (e.g. as envisioned by SADC countries). Such rules on cooperation could be potentially critical for strengthening domestic services sectors and supply capacities of individual countries thus activating potential gains from increasing investment flows, the share of services trade in economic growth and sustainable development.

5. CONCLUSIONS

EPAs are negotiated with a view to fostering sustainable development in participating ACP countries. However, the extent to which EPAs will do that, including by offering ACP countries value-added (that is, in terms of meaningful services market access commitments or development enhancing investment cooperation) remains to be seen.

Regarding services commitments the threshold established in the CARIFORUM EPA may possibly create difficulties for those ACP regions, where services sectors are less developed. For example, CARIFROUM's sectoral coverage and depth of

commitments on financial services[43] would appear to be ill-suited for some of the remaining EPA regions. Importantly, the CARIFORUM services market is considerably more developed than that of many other ACP countries, thus benefiting from stronger and better developed regulatory institutions and domestic mechanisms. In some of the remaining EPA regions, policy, regulatory and institutional frameworks are considered continually weak, while limited capacities of service suppliers – and relatively small export capacities – might result in a lack of balance in future trade gains. In that regard, cooperation and assistance for developing the supply capacity of the services industry is of critical importance – one option being the cooperation clauses analysed previously. Finally, trade in services is of much greater importance for the CARIFORUM market than for any other EPA country. Accordingly, any considerations about the extent to which remaining EPA groups should reproduce the CARIFORUM services rules should be viewed with caution.

Also with respect to investment rules, the CARIFORUM group, with its ambitions, differs substantially from the remaining EPA regions. For example, ESA and SADC have both underlined that liberalization of investment disciplines is currently not considered a key priority. Instead, they hold that extensive cooperation is required in order to support the region's development of strong regulatory and institutional frameworks potentially allowing for a gradual opening to foreign investment. Moreover, international investment rule-making is increasingly taking place in a new environment, with novel challenges at the global and domestic levels, including challenges related to the global financial and economic crisis as well as environmental challenges, such as climate change. This is accompanied by increased recognition that investment rules must be designed in a manner allowing for proper interaction and coherence between investment and other public policy objectives and for promoting predictability and stability without opening the door to un-anticipated – and partly contradictory – interpretations by investor-State arbitration tribunals.[44]

In the EPA context, this has even greater importance, particularly in case any EU shift of competence could result in broader, more far-reaching negotiating ambitions. Accordingly, careful attention is paramount in the drafting and design of any future investment rules, aiming to ensure that they contribute to sustainable development for both, home and host countries. A solid and considerate negotiating process, preceded by appropriate assessments, fact finding, including through stakeholder consultations, and technical assistance, play a key role in this context.

NOTES

[1] The special EU-ACP relations date back to the origins of the European Union in 1957, when countries and territories of some of the founding EU Member States were associated with the Community in order to "establish close economic relations between the countries and the Community as a whole" (Treaty of Rome, Article 131). The size and composition of the group of African, Caribbean and Pacific States has changed over the years. At present 78 ACP countries are signatories to the Cotonou Agreement: 48 African, 15 Caribbean and 15 Pacific States.

[2] EPAs and interim EPAs permit provisionally applied quotas and duty free access of ACP goods (but sugar and rice) from January 2008 onward. For the 33 LDC and ten non-LDC ACP countries currently not covered by any EPA or interim EPA, the duty and quota free market access offered under the Everything but Arms (EBA) initiative for LDCs or respective preferential rules under the Generalised System of Preferences (GSP) for non-LDCs apply.

[3] The CARIFORUM group includes: Antigua and Barbuda, the Commonwealth of the Bahamas, Barbados, Belize, the Commonwealth of Dominica, the Dominican Republic, Grenada, the Republic of Guyana, the Republic of Haiti, Jamaica, Saint Christopher and Nevis, Saint Lucia, Saint Vincent and the Grenadines, the Republic of Suriname, and the Republic of Trinidad and Tobago.

[4] EPA between the CARIFORUM Member States and the European Community and its Member States, 15 October 2008, signed by the EU and Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Dominican Republic, Grenada, Guyana, Haiti (signed in 11 December 2009), Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, The Republic of Surinam, and Trinidad and Tobago.

[5] Interim Agreements have been concluded with countries in the following six regions: Southern African Development Community (SADC) (Botswana, Lesotho, Swaziland, Mozambique, signature from Namibia is pending), signed in June 2009; East African Community (EAC) (Burundi, Kenya, Rwanda, Tanzania, Uganda) signed in November 2007; Eastern and Southern Africa (ESA) (Madagascar, Mauritius, Seychelles, Zimbabwe, signature from Comoros and Zambia is still pending) signed in November and December 2007 and in August 2009 (Zimbabwe); Pacific Region (Papua New Guinea, Fiji Islands) signed in October and December 2009; West Africa (Cote d'Ivoire, separate negotiations have been initialled with Ghana) signed in November 2008; Central Africa (Cameroon) signed in January 2009. Not all countries that are formally part of the EPA regions and that negotiate towards full EPAs have negotiated and/or signed Interim Agreements. In particular in Western and Central Africa most countries have refrained from signing Interim Agreements. Also, in the case of SADC, South Africa has decided not to join the Interim Agreement.

[6] Negotiations toward a full EPA continue with West Africa (negotiations conducted by the Economic Commission of Western African States), Central Africa (negotiations conducted by the Communauté Economique et Monétaire de l'Afrique Centrale, CEMAC), EAC, Eastern and Southern Africa, SADC and the Pacific Region.

[7] For an introduction to the controversies see El Hadji Diouf, "The ACP Advantage: Interpreting GATT Article XXIV and Market Access Implications for EPAs", Trade Negotiations Insights, Vol. 8, No 7, September 2009.

[8] Partnership Agreement between the Members of the African, Caribbean and Pacific Group of States and the European Community and its Members, 23 June 2000.

[9] Cotonou Agreement, Art 41 (4). "The Parties further agree on the objective of extending under the economic partnership agreements, and after they have acquired some experience in applying the Most Favoured Nation (MFN) treatment under GATS, their partnership to encompass the liberalization of services in accordance with the provisions of GATS and particularly those relating to the participation of developing countries in liberalization agreements." It has to be noted, however, that some LDCs' services schedules under the WTO are of a rather limited nature, suggesting that these countries have not yet obtained experience in applying the MFN treatment under the GATS.

[10] "Beyond GSP benefits" refer to a situation where the agreements bring about deeper and more sustainable benefits than those offered under the Generalized System of Preferences (GSP) of the EU – a scheme under which numerous developing and least developing countries receive preferential market access to the EU. As many African nations currently engaged in EPA negotiations would be eligible to make use of these schemes, benefits offered under an EPA need to be greater than those under the GSP in order to bring about real gains. Pierre Sauve, Denis Audet, "The services trade component of an economic Partnership Agreement: Implications for the Common Market of eastern and Southern Africa", International Trade Centre, 2009, p. 8.

[11] The W/120-list refers to an official WTO document providing a list of all 120 sectors that can be negotiated under the GATS. The taxonomy is often used for reference or statistical purposes.

[12] For a comprehensive comparison see for instance: Allyson Francis, Heidi Ullrich, "CARIFORUM EPA and Beyond: Recommendations for Negotiations on Services and Trade Related Issues in EPAs", Deutsche Gesellschaft für Technische Zusammenarbeit, 2008; Pierre Sauve, Natasha Ward, "The EC CARIFORUM Partnership Agreement: Assessing the outcome on services and investment", European Centre for International Political Economy, 2008, available at: http://www.ecipe.org/publications/ecipe-working-papers/the-ec-cariform-economic-partnership-agreement-assessing-the-outcome-on-services-and-investment, accessed in March 2010; Mario Marconini, "Revisiting Regional Trade Agreements and Their Impact on Services Trade", ICTSD EPAs and Regionalism Programme, Issue Paper No 4, December 2009.

[13] The revised Treaty of Chaguaramas divides the CARICOM members into less developed and more developed countries based on their economic and development level. Less developed countries are: Antigua and Barbuda, Belize, Dominica,

Grenada, Haiti, St. Kitts and Nevis, St. Lucia, and St. Vincent and the Grenadines.

[14] See above, more developed countries are: Bahamas, Barbados, Guyana, Jamaica, Suriname, and Trinidad and Tobago.

[15] Caribbean Regional Negotiation Machinery, "Highlights: Services and Investment in the CARIFORUM-EU Economic Partnership Agreement", database online, available at:http://www.crnm.org/documents/ACP_EU_EPA/epa_agreement?dec%2018-Web-Services&%20Investment%20EPA.pdf.

[16] CARIFORUM EPA, Title II, Chapter 1, Article 62.

[17] CRNM, *op cit.*

[18] "Services, development and trade: the regulatory and institutional dimension". Note by the UNCTAD Secretariat on the Multi-year Expert Meeting on Services, Development and Trade: the Regulatory and Institutional Dimension. Geneva, 17–19 March 2010. http://www.unctad.org/en/docs/c1mem3d5_en.pdf.

[19] UNCTAD mimeo, on file with the authors, based on a comparison of Mode 4 commitments in a) the EU schedule in the CARIFORUM EPA; b) the EU schedule in the GATS (consolidated schedule for EU, S/C/W/273, 9 October 2006) and c) the EU offer under the GATS (TN/S/O/EEC/Rev.1 from 29 June 2005).

[20] Important questions also arise with respect to the legal design of the commitments, notably the linkages between commitments under different modes.

[21] The text describes the category mainly by explaining what STVBP "do not do". For example, they are not engaged in selling their goods or services to the general public or in supplying their goods or services themselves; they do not on their own behalf receive any remuneration from a source located within the EU Party or the Signatory CARIFORUM State where they are staying temporarily.

[22] Defined as "sales representative and agents taking order for negotiating contracts for goods for a company located in the territory of the other Party, but not delivering goods."

[23] Similarly, the entry on tourism, does not cover the actual delivery of tourism related services, but instead covers the participation in tourism conventions or tourism exhibitions – hence it is related to the consumption of travel services by ACP professionals attending tourism events, rather than supplying tourism services in the EU.

[24] The 29 include: legal advisory services in respect of international public law and foreign law (that is, non-EU law); accounting and book-keeping services; taxation advisory services; architectural services; urban planning and landscape architecture services; engineering services; integrated engineering services; medical and dental services; veterinary services; midwives services; services provided by nurses, physiotherapists and paramedical personnel; computer and related services; research and development services; advertising services; market research and opinion polling; management consulting services; services related to management consulting; technical testing and analysis services; services relating to scientific and technical consulting services; maintenance and repair of equipment, including transportation equipment, notably in the context of an after sales or after lease services contract; chef de cuisine services; fashion model services; translation and interpretation services; site investigation work; higher education services (only privately-funded services); environmental services; travel agencies and tour operators' services; tourist guides services; entertainment services other than audiovisual services.

[25] The 11 include: legal advisory services in respect of international public law and foreign law; architectural services; urban planning and landscape architecture services; engineering services; computer and related services; research and development services; market research and opinion polling; management consulting services; services related to management consulting; translation; and interpretation services.

[26] Amongst the (horizontal) conditions for CSS are: three years of relevant professional experience (after age of majority); a university degree or a qualification demonstrating knowledge of an equivalent level and professional qualifications (where required pursuant to the law/regulations of receiving country). Amongst the (horizontal) conditions for IP are six years relevant professional experience and similar qualification requirements as for CSS.

[27] For the 5 countries analysed, this change in CSS only occurred in travel agencies and tour operators, and market research and opinion polling; for less than 5 countries it occurred, amongst others, in research and development; two sub-sectors of maintenance and repair; for IPs, and all 5 countries, this change only occurred for research and development, and market research and opinion polling.

[28] For the category of IP for example, this change only occurred once. For further information, see UNCTAD mimeo, on file with the authors.

[29] How many chefs de cuisine in the world have a university degree?

[30] A. Cunningham, "The CARIFORUM States and Economic Partnership Negotiations: A Glance at Negotiating Strategies and Negotiating Outcomes", (GTZ, 2008). Generally, see UNCTAD (2009). The Role of International Investment Agreements in Attracting Foreign Direct Investment to Developing Countries. UNCTAD Series on Issues in International Investment Agreements. United Nations publication. New York and Geneva. http://www.unctad.org/en/docs/diaeia20095_en.pdf.

[31] The EU Proposal to the ESA Region; Services, Investment and E-Commerce, on file with the authors.

[32] SADC negotiating text, on file with the authors.

[33] It should be noted that there are numerous other issues impacting the development impact of an IIA. Particularly with respect to bilateral investment agreements (BITs), important issues arise from investor-State dispute settlement and attendant interpretative questions.

[34] See footnote 5 of the legal text.

[35] See also explanation on the type of loans that would be covered (footnote 6 of EPA). The footnote also specifically addresses long-term loans, specifying long-term loans of a participating nature are loans for a period of more than five years which are made for the purpose of establishing or maintaining lasting economic links; the main examples being loans granted by a company to its subsidiaries or to companies in which it has a share and loans linked with a profit-sharing arrangement

[36] UNCTAD (2011), Scope and Definition. UNCTAD Series on Issues in International Investment Agreements. United Nations publication. New York and Geneva. http://www.unctad.org/en/docs//diaeia20102_en.pdf

[37] See UNCTAD (2011) Scope and Definition, *op cit*.

[38] See chapter 7 of the EPA.

[39] For a discussion of IIAs provisions on investment promotion see UNCTAD (2008), Investment Promotion Provisions in International Investment Agreements. UNCTAD Series on International Investment Policies for Development. United Nations publications. New York and Geneva.

[40] According to Part V, Article 4, the CARIFORUM-EU Trade and Development Committee shall, amongst others, undertake certain cooperation and review related functions in the areas of trade and development. Regarding trade, it shall supervise and be responsible for the implementation and proper application of the provisions of the Agreement and discuss and recommend cooperation priorities in this regard. Regarding development it shall assist the Joint CARIFORUM-EU Council in the performance of its functions regarding development cooperation related matters falling under this Agreement: monitor the implementation of the cooperation provisions laid down in the Agreement and to coordinate such action with third party donors; make recommendations on trade-related cooperation between the Parties; keep under periodic review the cooperation priorities set out in this Agreement; and make recommendations on the inclusion of new priorities, as appropriate.

[41] Note that this statement applies to the legal text, as thus far, information about possible commitments is not yet available.

[42] UNCTAD, World Investment Report 2010, Chapter III.

[43] "GATS plus" commitments on financial services, for instance, might pose a great burden for developing countries. Amongst others, the CARIFORUM EPA includes novel provisions on new financial services and data processing – both areas that will require deep structural reforms within the CARIFORUM countries including the implementation of the CARICOM Financial Services Agreement (CFSA). Article 106, for example, states that the parties shall permit suppliers to provide services that have not yet been introduced in that market, in like circumstances, to its own services suppliers. The criticism that this could prevent reforms effectively regulating new products in the interest of the stability of the market and consumer protection has increased immensely in these times of financial and economic crisis.

[44] UNCTAD, World Investment Report 2010, Chapter III.

A TOPOLOGY OF SERVICES EXPENDITURE BY POOR AND RICH HOUSEHOLDS IN DEVELOPING COUNTRIES

V

The objective of this chapter is to provide an assessment of consumer expenditure on four broad services sectors (education, health, transport and infrastructure) by rich and poor households in Latin America, Africa and Asia. Using data from various household surveys of these regions, different indicators have been constructed in order to capture the relative importance of services expenditure in poor and rich households' total expenditure and to explore its variation across countries, regions and services subsectors, as well as their correlation with GDP per capita, foreign direct Investment (FDI) flows, openness to trade and other aggregate variables. Results suggest that poor households tend to spend a smaller share of their total expenditure on services than rich households. They are therefore, in principle, less exposed to changes in the price and quality of services associated with reforms in services trade policy. There is some interesting heterogeneity across countries, regions and sectors. Poor households have a relatively larger share of services expenditure in Latin America (LAC) and Asia than in Sub-Saharan Africa (SSA). They also tend to have a relatively larger expenditure share in social services – such as education and health – than in transport, and in particular telecommunication services when compared to rich households. This suggests that poor households may be relatively more affected by reforms in social services than reforms in telecommunications or infrastructure services.

1. INTRODUCTION

If all individuals are identical (in terms of preferences, endowments and technology),[1] then it would be easy to show that in the presence of perfectly functioning markets there are gains from trade. However, these gains from trade are not ensured if individuals are heterogeneous in the sense that they have different preferences, endowments or technologies. Trade reforms will make some individuals better off and others worse off. How then does one add up individuals change in welfare? Attempts to show gains from trade using a Pareto approach or a Bergson-Samuelson social welfare function are not very convincing.[2] A way out of this problem is to assume that governments have access to transfer mechanisms through which it can tax those individuals who are better off and transfer revenue to those that are worse off. If such a mechanism was put in place it would then be possible to show that all individuals could potentially win from opening up to trade.[3] However, these mechanisms require a lot of information and are very costly to set up, making them less likely to be put in place in poor developing countries with weak institutions. Thus, at the end of the day, trade reforms will have different impacts on different individuals. And poverty may increase or decline depending on the composition of the consumption and production bundle of poor households (see Winters et al., 2004).

The recent empirical literature on trade reforms and poverty has explored this heterogeneity. It generally concludes that trade reforms have mostly benefitted poor households, even though they have led to increases in income inequality in some cases (see for example Hoekman and Olarreaga, 2008, Nicita, 2009 and Porto, 2006 and 2009). However, all of these papers focus exclusively on reforms that affected goods trade.

While the share of services in GDP has been growing rapidly over the last two decades, the literature on trade in services and poverty and other related outcomes is non-existent. One problem with a broad analysis of services trade reforms is that the trade restrictiveness of services trade policies requires measurements, which take many different forms within a same sector and have the propensity to affect different sectors. The measurement and aggregation problems are non-trivial. There exist some attempts (see for example Gootiiz and Mattoo, 2009), but generally the level of aggregation at which these studies are undertaken remains too broad to match the consumption and production data available at the household level.

The objective of this chapter is to partially fill this gap. As such the impact of services reforms on poverty shall not be assessed in this chapter, but rather shall stop one step earlier at describing the pattern of services consumption across different types of households. This can be seen as a first step toward the evaluation of services reform on poverty. It will thus provide an assessment of the exposure of poor households to reforms in the services sector. As the price and quality of services changes, the consumption bundle of different households (rich and poor) will be affected differently, resulting in changes in relative welfare. A second step would require the evaluation of the exposition of different households on the income (or production) side and the matching of these consumption and production bundles with services trade policy. In a series of companion papers, the impact of services reforms on poverty and other related outcomes were explored using specific case studies.[4]

Within this more modest objective, this chapters analysis is undertaken for four broad types of services: education; health; transport; and telecommunication (although in the case of Latin America information at higher levels of disaggregation or for other types of services exists that is also explored.[5] First, using household level data an index of relative services expenditure by the poor (RSEBP) was created that captures the extent to which poor households tend to consume certain types of services relatively more than rich households. The RSEBP can be thought of as a measure of the relative exposure of poor households to changes in services prices and quality that may be affected by services trade reforms. The higher the RSEBP, the greater will be the gains of poor households relative to rich households following a decline in services prices. After describing the indices' sector and regional patterns, they are then correlated with aggregate economic and social variables in an attempt to disentangle some patterns across countries and regions. Finally, a detailed analysis of services expenditure within countries in each region is provided. The analysis first considers patterns of services consumption across income quintiles, which provide the basis for the construction of the RSEBP index. Finally services consumption across households is explored and correlated with household characteristics such as income and education within each country.

Results suggest that poor households tend to spend a smaller share of expenditures on services relative to rich households, and therefore are in practicality less exposed to changes in the price and quality of services associated with services trade policy reforms. This pattern is less pronounced in LAC and Asia than in SSA. More generally the share spent by poor households relative to rich households increases as countries become more affluent. Thus, on average, services liberalization is more likely to affect poverty in middle income countries than in low income countries. This may be due to lower levels of access in poorer countries. Thus, the above could be seen as referring to changes in welfare conditional on access and should obviously not be taken to imply that lack of access is positive for welfare.[6] The relative exposure of poor households in terms of their consumption bundle to services reform is also greater in countries which: are more open to FDI; have a larger share of the economy in the service sector; account for a smaller share in the agricultural sector; and have more households with access to running water.

When correlating the measure of poor household consumption exposure in services with a measure of the restrictiveness of the trade policy regimes, a larger bias in services expenditure by the poor in countries with a more restrictive trade policy regime was observed, suggesting that the poor spend a greater share of their income purchasing services in countries with a restrictive trade policy regime. This may be partly due to higher prices under more restrictive regimes, and relatively inelastic demand for some services such as health and education. Although the opposite pattern was observed in the case of telecommunication, more restrictive trade regimes were associated with a lower share of expenditure by poor households compared to rich households. This again could be explained by higher prices in more restrictive trade regimes, but also a more elastic demand for services such as telecommunications by poor households leading to a smaller overall expenditure when facing higher prices.

Interestingly, the general bias in services expenditure toward rich households was less pronounced in social services, such as education and health compared to transport and telecommunication services. Moreover, there seemed to be no correlation (or a small negative correlation) between indices of relative services expenditure bias by the poor on education and health services and GDP per capita, whereas there was a strong positive correlation for other services (telecommunications and transport). These results suggest that if poverty is a concern, particular attention should be paid to the liberalization of social services such as education and health, particularly in poor countries.

These results are confirmed by the within-country analysis performed, with only a few exceptions. For example in LAC the transport sector showed a very high index of RSEBP in some countries such as Mexico, Colombia and Ecuador. Moreover, in Latin America infrastructure services (such as gas, electricity and water for which data was not available for in other regions) tended to also show a strong bias in services expenditure by the poor even though they represent a relatively smaller share of household's total expenditure.

Regarding determinants of services expenditure, it was found that the income elasticity of services expenditure shares is positive in most countries (with a few exceptions) generally in social services (and infrastructure services in LAC). Thus higher income generally led to a higher expenditure on services. Other household characteristics that were considered potential determinants of services expenditure included: household location (rural versus urban); gender of the household head; and size of the household. There were some interesting differences across regions in the impact of these different household characteristics on services expenditure. For example, rural households, female headed households, and small household tended to have a larger services expenditure share in LAC and Asia, but a smaller expenditure share in SSA.

There are some obvious shortcomings to the approach that require highlighting at this stage. First, the question of access to services was not included. The main reason was the lack of consistent data on access to services across countries and regions. This was less so in the case of LAC (a companion piece Porto et al. (2009) looks at the distributional incidence of access to services in almost all LAC. The omission of access in this chapter is not without consequences. In some instances the expenditure shares by the poor were small not because high prices and elastic demand, but simply because they did not have access to certain services.

Second, services consumption subsidies may sometimes target the poor resulting in lower expenditure shares for households at the bottom of the income

distribution. Information on subsidized consumption was not available and therefore was not included. However, a recent study of 32 programmes for water and electricity in developing countries suggests that 80 per cent of subsidy schemes are strongly regressive (Komive et al., 2005). Poor households captured only half of what they would get if these targeted subsidies were randomly distributed.[7] Thus, subsidies actually tend to reduce the actual expenditure share of rich households by more than of poor households.

Finally, the analysis is inherently static, and assumes that consumption bundles do not adjust. Thus, when explaining the impact of reforms an important part will not be dealt with – individuals will respond to market incentives. Important trade-offs that may exist between price and quality of services will also not be addressed (although partly addressed in Porto et al., 2009). Only services expenditure is observed, but with the unfortunate provision that there is no data on the price and quality of the service purchased.

With all these caveats in mind, the remainder of this chapter is organized as follows. Section 2 describes the construction of indices of poverty bias in services consumption, and their correlation with country economic and social characteristics. Section 3 describes the methodology which is followed to describe the patterns of services expenditure across income quintiles in each country. Section 4 presents the results for eight LAC.[8] Section 5 presents the results for 23 SSA countries.[9] Section 6 presents the results for nine Asian countries.[10] Finally, section 7 provides concluding remarks.

2. MEASURING SERVICES EXPENDITURE BY POOR AND RICH HOUSEHOLDS

It should be noted that the researchers encountered some issues. First, expenditure information was not necessarily homogeneous among countries. For instance, for some countries (Asia and SSA), expenditures on health services did not include health insurance costs but did for LAC. Second, in order to proxy household welfare, household expenditure per capita was used, but was not completely comparable among all countries as national statistical offices use different methodological strategies to build them. Thus, the international comparisons undertaken and the results obtained must be considered with care. It will be important to contrast the results in this section to the within-country results obtained in sections 4 to 6.

The first question which was addressed was whether the expenditure exposure of poor households to changes in services prices or quality is relatively stronger than the exposure of rich households. Therefore, it was necessary to construct an index of relative services expenditure bias by the poor (RSEBP) defined as the difference between the share of expenditure in the bottom two quintiles and the share of expenditure in the top two quintiles of the income distribution:

$$\mathrm{RSEBP} = (q_1 + q_2) - (q_4 + q_5) \qquad (1)$$

Where q_1 and q_2 are the average expenditure shares in a given service of households in the first and second income quintiles (poor households), whereas q_4 and q_5 are the expenditure share in the fourth and fifth quintiles (rich households). A large RSEBP indicates that poor households spend a larger share of their income in services, whereas a low value signals that rich households spend a larger share of their income in services. Thus the larger the RSEBP the more sensitive poor households will be relative to rich households, particularly sensitive to changes in the price and quality of services. Units of RSEBP are percentage points of expenditure share.

A problem with RSEBP is that share of services expenditure may increase (or decrease) with GDP per capita or other country or household characteristics making the absolute difference in expenditure shares a function of the overall expenditure on services. To control for this the following computation was added:

$$\mathrm{RSEBP}^* = \frac{(q_1 + q_2) - (q_4 + q_5)}{(q_1 + q_2 + q_3 + q_4 + q_5)} \qquad (2)$$

An additional helpful property of RSEBP^* is that it is bounded between -1 and 1. Positive values indicate a bias toward poor households (higher exposure of poor households to changes in the price and quality of services), whereas negative values indicate a bias toward rich households.[11]

The expenditure shares by income quintile by country and broad services sector are reported and discussed in sections 4 to 6 for countries in LAC, SSA and Asian samples. The average RSEBP for total services expenditure is -0.11, signalling that rich households have a larger share of expenditure on

services than poor households. The average $RSEBP^*$ is -0.29 indicating that after controlling for total services expenditure in each country, rich households still spent a larger share of their income on services than poor households. When using the expenditure in each of the four services sub-categories (education, health, transport and communication), as the unit of observation and not total services expenditure, the values of $RSEBP$ and $RSEBP^*$ are -0.02 and -0.37 respectively, indicating that richer households tend to spend a larger share of their income on services than did poor households. After controlling for the total share of expenditure on services in the economy, the value of $RSEBP^*$ suggests that the difference in the share of services expenditure between poor households and rich households represents on average 37 per cent of the total services expenditure in each country. This may seem an impressive number but the value of $RSEBP$ signals that on average there is only a 2 percentage point difference between the share of expenditure on services by poor and rich households. Thus the large value of $RSEBP^*$ is driven by differences in items that represent a small share of household expenditures. Nevertheless results suggest that on average poor households spend a smaller fraction of their income on services.

There are however some countries and/or sectors where $RSEBP$ and $RSEBP^*$ took positive values suggesting a relatively higher services expenditure by the poor. At the aggregate level four out of forty countries (China, Ecuador, Gambia (the) and Mexico) had positive $RSEBP$ and $RSEBP^*$. At the disaggregate level 40 out of 143 observations had a positive value. A majority of these observations occurred in social services (education and health), but there was also a large number (14) in telecommunications and transport. Half of these cases were in SSA but SSA represented 60 per cent of the sample, so were actually under-represented among those observations with a positive $RSEBP$ and $RSEBP^*$. A quarter of the observations with a positive $RSEBP$ and $RSEBP^*$ were in LAC, and another quarter in Asia, but taken together represented less than 25 per cent of the countries in the sample, suggesting that they are over-represented among the countries where poor households tend to be more exposed to changes in prices and quality of services.

In order to disentangle regional differences, table 1 provides the results of regressions of $RSEBP$ and $RSEBP^*$ on regional dummies. The first two columns provide results for services as a whole (weighted sum of all services expenditures), and the last two columns provide results where observations corresponded to each of the four broad services categories (education, health, transport and telecommunications). All coefficients were negative and statistically different from zero at the 1 per cent level, suggesting that in all regions rich households tended to spend a larger share of their expenditure on services than did poor households. However, there were some interesting regional differences. The estimated $RSEBP$ and $RSEBP^*$ in SSA was significantly larger than the estimates for LAC and Asia. Estimates for LAC were generally larger than those for Asia, but not statistically so regardless of whether the difference at the aggregate or disaggregated level was measured. An important point is that these results were preserved after controlled for the type of services in the disaggregated regression (that is, after the introduction of sector dummies). This suggests that the composition of services consumption in different regions did not drive the ranking results, or the fact that rich households spent a larger share of their income on services than poor households.

Differences across the four broad sectors are also explored. Table 2 presents results for a regression of $RSEBP$ and $RSEBP^*$ on sectoral dummies. Again all coefficients were negative and statistically different from zero, suggesting that on average rich households tended to spend a larger share of income in each service than poor households – this result holds regardless of whether $PPSEB$ or $PPSEB^*$ was used to measure the bias.

Some interesting differences were seen across sectors. Social services such as education and health tended to have a larger $RSEBP$ and $RSEBP^*$ then telecommunication and transport services, suggesting that poor households on average were more sensitive to changes in the quality and price of education and health services than changes in the quality and price of transport and telecommunication services. In the case of $RSEBP^*$ the estimates for telecommunication and transport were statistically greater than the estimates for health and education, whereas between these two broad groups of services the differences were not statistically different from zero.

In sum, the share of services in total household expenditure was generally larger for rich households, particularly in the case of SSA in the telecommunication and transport sector. Poor households will be

relatively more sensitive to changes in the price and quality of services in LAC and Asia, particularly when it came to social services such as education and health.

2.1. Variation by sector and country

Before moving on to the within-country analysis in following sections, it is important to check whether differences exist in the RSEBP and RSEBP* estimates across sectors and regions that could provide for a more detailed analysis. Table 3 summarizes the results of regressions of RSEBP and RSEBP* on regional dummies at the sector level, confirming broad patterns. Poor households tended to spend relatively less than rich households on services, although this bias was smaller in education and health services. However, new estimates not statistically different from zero were evident (mostly in Asia), suggesting the absence of bias.

More importantly, there were some interesting differences within regions. In LAC for example, the transport sector had the largest RSEBP*, while the education sector had the largest in Asia, and the health sector in SSA. In SSA the RSEBP* for telecommunications was not statistically different from -1 suggesting the hypothesis that only the rich (top two quintiles) tended to consume telecommunication services could not be rejected. These differences are likely to be present within regions at the country level in the analysis in sections 4 to 6. They underscore the important heterogeneity hidden behind some of these averages.

2.2. Relative services expenditure bias by the poor and country characteristics

From the above analysis it seems that a country's (or region's) level of income of will matter in terms of the exposure of poor households to services reforms. Moreover, the relationship between GDP per capita and the exposure of poor households was not necessarily homogeneous across sectors. To further explore this, a regression of RSEBP* on the log of GDP per capita was run for each sector. The largest coefficients were found in the telecommunications and transport services. A smaller and statistically insignificant coefficient was found for education services and a negative coefficient in health services was seen. Thus the exposure of poor households to services reforms increases with GDP per capita in the telecommunications and transport sector. Nevertheless, this did not seem to be the case for education and health services, where poor household exposure may actually decline as countries become richer.[12] Access of course may be an issue which is explored in the within-country regional analysis below. Figure 1 provides the partial plots of RSEBP* on log of GDP per capita for total services expenditure, as well as for the four sub-sectors.

Consideration was also directed to the partial correlation between RSEBP* measured with aggregate services expenditures and several other country characteristics (results are reported in figure 2). The number of observations varied in each quadrant because of data constraints.[13] As before, there was a positive and statistically significant relationship between RSEBP* and the log of GDP per capita (shown in the first quadrant). The relationship between RSEBP* and economic size (measured by the log of GDP) was positive but not statistically significant. The share of FDI in GDP, the share of the population with access to running water, and the share of services in GDP were also all positively correlated with RSEBP*. On the other hand the share of agriculture in GDP was negatively correlated with RSEBP*.

Thus, as countries become richer, open up to FDI, provide more households with access to water, increase the overall share of services in GDP and decrease the importance of the agricultural sector, the more likely it is that poor households rather than rich households will be affected by changes in the price and quality of services.

Finally, the partial correlation between RSEBP* and a measure of services trade restrictiveness by Gootiiz and Mattoo (2009) is explored. Their measure of trade restrictiveness of applied trade policies was based on surveys of local law firms familiar with the services sector in each country. To capture the broad restrictiveness of services trade policies a summary of key restrictions was prepared for each sector and the four modes of delivery.[14] Unfortunately the study only included 32 developing countries in the database, and only 14 of those countries were included in this database, resulting in correlations with very few degrees of freedom and therefore not very precisely measured.

Figure 3 reports the correlation between the aggregate services trade restrictiveness index of Gootiiz and Mattoo (2009) making this chapter's index of poverty

bias in services expenditure ($RSEBP^*$) conditional on the level of GDP per capita in each country. The first panel for total services expenditure showed a positive relationship between the two suggesting that in countries with a more restrictive trade policy regime in services, poor household spent a larger share of their budget on services than rich households did. This result can partly be explained partly explained by the fact that in more restrictive regimes higher prices were expected (for a given quality).[15] If demand for services is relatively inelastic (in particular for health and education services) then higher prices are likely to lead to a larger share spent by poor households on services.

The remaining four panels of figure 3 correlate the four sector specific $RSEBP^*$ with the aggregate measure of services trade restrictiveness by Gootiiz and Mattoo (2009). For social services (education and health) and transport a similar pattern as for total services was observed, partly reflecting the importance of social services and transport in total services expenditure. However, in the case of telecommunications a different pattern emerged. A more restrictive trade policy regime in telecommunication services is associated with a lower share of expenditure by poor households when compared to rich households.[16] This can be partly explained by the fact that the demand for telecommunication services was more elastic for poor than for rich households. In the case of poor households telecommunication services such as a mobile phones are considered a luxury good, whereas in the case of rich households mobile phones are considered a basic need. In this case higher prices led to an important reduction in quantities consumed in poor households and a smaller reduction in rich households. Therefore total expenditure on telecommunications by poor households declined more sharply than expenditure by rich households.

It should be noted that all the correlations presented in this section were instrumental in describing the evolution of the index of relative services expenditure bias by the poor. These correlations obviously do not imply any causality. For example, it can simply be stated that in rich countries poor households tend to have relatively higher services expenditure compared to rich households. This does not imply that having a relatively higher share of services expenditure by the poor will cause an increase in income per capita.

3. A METHODOLOGY TO ANALYSE THE DISTRIBUTION OF SERVICES EXPENDITURE

The methodological approach is similar to the one used to study the distributional incidence of public expenditure. When studying government expenditure one objective was to identify the beneficiaries of spending and classify them according to their standard of living. This helps evaluate and quantify the impact of public spending on the distribution of well-being within a country.[17]

This chapter applies the traditional incidence analysis methodology to study households' expenditures on services. It is thus important to gauge and understand the way services are used by the population, especially the poorest segments. As such, the distribution of expenditures on services using per capita household expenditure as the variable that determines levels of individual well-being was studied.[18]

The analysis of the distribution of expenditures was performed by means of descriptive statistics disaggregated by total expenditure (or income) quintiles, concentration curves and concentration indices. Concentration curves measure the cumulative percentage of aggregate household expenditures on a service corresponding to each poorest p% of the population. For a particular service, if expenditures did not vary across households, the distribution of expenditures would be represented by a straight 45 per cent degree concentration curve, henceforth the perfect equality line. A distribution that exhibited services expenditures biased in favour of rich households was characterized by a concentration curve located to the right (or below) the perfect equality line.

Concentration indices summarize the information given by concentration curves. They are similar to the Gini Coefficient for the distribution of total expenditure, but they measure the degree of inequality on the distribution of services expenditures. The higher the value of the index in absolute terms the greater the degree of concentration of services expenditures.

In order to complete the analysis of distributional incidence of expenditures, focus was directed to how expenditures on services as a percentage of total household expenditure, or simply expenditure shares, evolved as a household's level of total expenditure increased. Expenditure shares increased

with a household's total expenditure per capita if – and only if – its concentration curve was always to the right of the total expenditure (or income) concentration curve, commonly known as the Lorenz curve.[19]

A well known indicator to measure this concept is the Kakwani Index.[20] For a particular service, the Kakwani Index was computed as the difference between the concentration index for the distribution of household expenditures per capita and the Gini Coefficient for the distribution of total household expenditure per capita. Thus, positive values for the Kakwani Index indicate that services expenditures were more concentrated among rich households than total expenditures.[21] The Kakwani index is computed from the following regression:

$$2\sigma^2\left[\frac{s_i}{\eta}-\frac{y_i}{\mu}\right]=\alpha+\beta R_i+\varepsilon_i$$

Where s_i is the expenditure on a given service by household i, and η its mean; y_i is household i total expenditure and μ its mean; R_i is the household fractional rank in the income distribution and σ the variance of the fractional rank. The OLS estimate of β is the Kakwani Index (or rather weighted least squares using survey weights which are also used to compute means and variances). The following sections report the value of the Kakwani Indices multiplied by 100.

Throughout, this study computes concentration curves and indices, Lorenz Curves, and Kakwani Indices to describe the distribution of household expenditures on services and to assess the distributional impact of potential reforms. For instance, suppose the price of a particular service was expected to decrease as a consequence of trade liberalization. If expenditure on that service showed a bias toward rich households, and keeping total expenditure fixed, aggregate savings would come mostly from rich households. Nevertheless, such change may decrease or increase inequality depending on the way shares varied as household well-being increased. If shares decreased on average with family consumption, that is, expenditure on a service was less pro-rich than household consumption, inequality would fall, and vice versa. Of course, the opposite would hold if the price of the service was to increase. Therefore, positive values for the Kakwani Index mean that if the price of the service decreases, inequality would increase.[22]

The relationship between shares and per capita household total expenditure after controlling for other socioeconomic variables, such as education, gender, age, and civil status (all corresponding to the head of household), household size, and area of residence (rural or urban region) was also examined. To this end, estimated shares equations were made for each service and country, taking into account that shares could be interpreted as corner solution outcomes, that is, for some households the optimal expenditure level, and thus the share level, would be zero, which is the corner solution. Therefore, the shares models correspond to the type I Tobit specification following Amemiya´s Taxonomy (1985). The regression analysis was also instrumental in assessing whether, after controlling for other potentially relevant factors, the relationship between shares and household's total expenditure was significant, and presenting the same sign as in the unconditional analysis.

4. LATIN AMERICA

A distributional incidence analysis as the one described in section 3, requires micro-data at the household level containing information on household expenditure on (and access to) services, any measure of household well-being (total expenditure or income), and household size. Other household characteristics such as education, age, gender, civil status, and area of residence, are also required to perform the above conditioned regression analysis.

For LAC the services which were considered include: (a) social services; education and health; (b) infrastructure services – water, electricity, gas, and public transport; and (c) telecommunication services – fixed and mobile telephone, internet connection, and other telecommunication services. Therefore, information on expenditures on and access to each one of these services was required.

Datasets processed at Centro de Estudios Distributivos Laborales y Sociales (CEDLAS 2007) were used as part of the Socio-Economic Database for LAC and the Caribbean project (SEDLAC project) carried out by CEDLAS and the World Bank's LAC Poverty Group (LCSPP), with the help of the Program for the Improvement of Surveys and the Measurement of Living Conditions in Latin America and the Caribbean (MECOVI).[23] Based on this data set, the information needed to perform the distributional incidence analysis was available for only eight LAC countries: Bolivia, Colombia, Ecuador, El Salvador, Mexico, Nicaragua, Panama, and Peru. All these countries had updated information on expenditure on and access to services,

and total household consumption or expenditure. The remaining countries of the region lacked expenditure data, either because it did not exist, it did exist but was incomplete, or it was not updated.

Table 4 presents cross-household average service expenditure shares for each service and country (henceforth expenditure shares, services shares or simply shares are taken as synonymous). The highest shares of total expenditures were found in Colombia and Ecuador, with the lowest shares in Peru and Panama. The table also provides the sector decomposition of household's services shares, but are better illustrated in figure 4. In most LAC, the three services with the highest participation on household total consumption were education, health, and transport, representing more than 50 per cent and up to 74 per cent of total expenditures on services. If electricity is added, figures range from 72 per cent to 83 per cent. The highest expenditure share in education was found in El Salvador (8.2 per cent of total expenditure); for health was found in Ecuador (8 per cent); for transport was found in Colombia (10 per cent), and for telecommunications was found in Colombia (5 per cent).

In order to get to distributional issues of services expenditure, tables 5 to 13 present information on the distribution of household expenditures on services (panel a), and average shares (panel b) across income quintiles for each services. Panel a depicts how pro-rich or pro-poor the distribution of services expenditures are, that is, whether services expenditure tend to be concentrated among rich or poor households. Concentration index for services expenditures are reported in panel a. The numbers in panel b are the same as those used in section 2 to construct RSEBP* leading to the question of whether the importance of services expenditures in total expenditure is stronger among poor or rich households. Kakwani Indices are also reported in panel b and allow for the measurement the degree of bias in the relative service expenditure along the entire distribution of services consumption.

Figures 5 to 13 illustrate the concentration curves for services expenditure (labelled concentration curve) and total expenditure (labelled Lorenz curve). Based on these tables and figures, it will be possible to discern how observed expenditures and shares vary along the consumption distribution for each service, as well as how biased services consumption is toward poor or rich households.

Expenditure on education (table and figure 5)

The distribution of household expenditures on education is pro-rich (that is, a larger share of education expenditure was undertaken by rich households), as indicated by positive and moderate concentration coefficients (ranging from 32.3 to 52.4), and concentration curves located to the right of the perfect equality line. This means that the participation on aggregate expenditure on education increased with household per capita consumption: from between 3.5 per cent and 6.9 per cent for the poorest quintile and from between 39.5 per cent and 57.8 per cent for the richest quintile.

Depending on the country, the national (total) education share on total household consumption ranges from 4 per cent to 6.6 per cent, but shares vary considerably across consumption quintiles. In fact, for all countries with the exception of Colombia, the Kakwani Index took a positive value indicating that expenditures on education was more concentrated than total expenditure or income, that is, there was a pro-rich bias. In figure 5, this causes the Lorenz Curves, which illustrate the concentration in household's total expenditure or income, to be closer to the perfect equality line than the concentration curves, capturing the concentration in household's services expenditure.[24]

Expenditure on health (table and figure 6)

The distributions of shares and expenditures on health were similar to those of education, both in qualitative and quantitative terms. Depending on the country, the distribution of expenditures was characterized by a pro-rich concentration, with concentration coefficients ranging from 33.5 to 51.6. The poorest quintile participation on national expenditure on education was between 2.4 per cent and 8.7 per cent, while the richest quintile participation ranged from 43.4 per cent to 55.9 per cent.

Shares increased markedly along the consumption distribution, ranging from between 0.9 per cent and 8.5 per cent for the first quintile, and to between 2.8 per cent and 10.9 per cent for the last one, with an average at the national level ranging from 1.8 per cent to 8 per cent, depending on the country. The Kakwani Index was positive and moderate in all countries, except Ecuador where it was negative, but not statistically different from zero.[25]

Expenditure on Fixed and Mobile Telephone (tables and figures 7 and 8)

Household expenditures on fixed telephone had a pro-rich distribution, which is very concentrated in some countries. For instance, the concentration index reached 71.4 in Bolivia, 60.5 in Peru, and 55.5 in Panama. Depending upon the Country, the poorest quintile participation on national expenditure ranged from 0.1 per cent to 3.9 per cent, while the richest quintile participation ranged from 40 per cent to 75.7 per cent. In figure 7 this fact is reflected through concentration curves far to the right of the perfect equality line.

Moreover, shares increased markedly as consumption increased, and consequently the Kakwani Indices were positive and high for most countries.[26] As figure 7 shows, concentration curves are located to the right of the Lorenz Curves for household consumption. Depending on the country, the national share of fixed phone expenditures ranged from 0.5 per cent to 3.8 per cent, indicating that the participation of expenditures on this service on household total consumption was low on average, at least when compared to the social services discussed earlier.

The distributions of shares and expenditures on the mobile telephone service presented similar characteristics to those of the fixed phone. Concentration coefficients ranged from 41.2 to 64.3 indicating a high pro-rich concentration, corresponding to concentration curves located far to the right of the perfect equality line as figure 8 shows. Depending on the country, participation of the first quintile on national expenditure on mobile phones ranged from 0.8 per cent to 5.5 per cent. Participation of the last quintile was much higher, ranging from 47.2 per cent to 68.4 per cent.

National average shares varied between 0.4 per cent and 1.9 per cent across countries, and Kakwani Indices were positive and usually high, indicating that shares increase considerably as per capita household consumption increases.

Expenditure on Total Telecommunication Services (table and figure 9)

Household expenditures on telecommunication were composed mainly by fixed and cell phone expenditures, but also included expenditures on other items such as postal services and internet connection. Depending on the country, fixed and mobile phones represented, on average, from 67 per cent to 96 per cent of total household telecommunication expenditures.[27] Therefore, it is likely that the distributions of shares and expenditures on total telecommunication would be similar to those of telephone services.

In fact, the distribution of total telecommunication expenditures had a very concentrated pro-rich distribution, with concentration coefficients ranging from 40.4 to 65.0 corresponding to concentration curves located far to the right of the perfect equality line. The poorest quintile participation on national expenditure on total telecommunication services was between 0.3 per cent and 4.1 per cent, while the richest quintile participation ranged from 44.2 per cent to 66.3 per cent.

Depending on the country, the national telecommunication share on total household consumption ranged from 1.4 per cent to 5 per cent, but shares increased significantly with consumption. Kakwani Indices were positive and high; indicating that expenditure on telecommunication was more concentrated than total household expenditure in the upper quintiles.

Expenditure on Public Transport (table and figure 10)

Household expenditures on public transport were characterized by a pro-rich distribution but much less concentrated than expenditures on the social and telecommunication services described above. Concentration coefficients ranged from 12.6 to 40.8, and the corresponding concentration curves were located closer to the perfect equality line.

This can be explained based on the fact that public transport services include a wide range of very heterogeneous services, from urban busses and trains to international flights. It is likely that poorer households are the main users of the cheaper means of public transport, and that they use them on a daily basis, while more expensive means of transport are almost exclusively used by some households from the richest quintiles.

Consequently, in some countries like Mexico, Ecuador, and Colombia, Kakwani Indices were negative and rather high in absolute values, and concentration curves were located between the perfect equality line and the Lorenz curve. This suggests a pro-poor bias in services expenditure on transport in these countries. For the other three countries for which there is data was available, the Kakwani coefficients were positive but small (even though statistically significant), with concentration curves to the right but close to the Lorenz curve.

Expenditure on Water (table and figure 11)

The distribution of household expenditures on water was pro-rich, as indicated by positive and moderate concentration coefficients (ranging from 20.3 to 41.4), and concentration curves located to the right of the perfect equality line. The participation on aggregate expenditure on water increased with household per capita consumption: from between 3.1 per cent and 10.6 per cent for the poorest quintile to between 30.6 per cent and 43.5 per cent for the richest quintile.

Water represents a small percentage of total household consumption. Depending on the country, the national water share on total household consumption ranged from 0.7 per cent to 2.4 per cent. Water shares did not exhibit clear patterns across the consumption distribution: shares slightly increased or decreased as per capita household consumption increased. As a result, Kakwani Indices were positive or negative, but usually small (although statistically significant) in absolute value, indicating that the concentration of expenditures on water was similar to that of household total consumption. Kakwani Indices were slightly negative in Colombia, Ecuador, El Salvador, Mexico and Panama indicating a pro-poor bias and slightly positive in Bolivia, Nicaragua and Peru indicating a pro-rich bias.

Expenditure on Electricity (table and figure 12)

Similar to the case of water, the distribution of household expenditures on electricity had a relatively moderate pro-rich concentration, where concentration indices increased from 26 to 46.7. The poorest quintile participation on national expenditure ranged from 3.4 per cent to 9.2 per cent, while that corresponding to the richest quintile increased from 34.2 per cent to 49.7 per cent.

Depending on the country, the national electricity share on total household consumption ranged from 1.7 per cent to 5 per cent. For some countries shares increased with consumption while other shares exhibited the opposite pattern. Consequently, Kakwani Indices were positive (Bolivia, Nicaragua, Panama and Peru) or negative (Colombia, Ecuador, El Salvador and Mexico), but mild to moderate in absolute value.

Expenditure on Gas (table and figure 13)

Compared to the other services, the distribution of household expenditures on gas was the most equally distributed. Though it was still pro-rich, concentration coefficients were rather small (a cross country median of 24.4), going from 5.4 to 42.8. This fact caused Kakwani Indices to be negative and high in absolute values (only telecommunication services presented higher values). The fact that Kakwani Indices were all negative, except in Nicaragua, suggests a significant pro-poor bias in gas expenditures relative to total household expenditure. However, the participation of gas on total household consumptions was relatively modest. Depending on the country, national average shares varied between 0.7 per cent and 2.7 per cent.

Summing up the distributional analysis

Expenditures on all the services considered present pro-rich distributions, that is, the rich tend to represent a larger share of total expenditure on services. But this was not unexpected as rich households have higher income and therefore tend to consume more.

Perhaps more interestingly a check was also made on whether there was a pro-poor or pro-rich bias in services expenditure shares, or whether the concentration of services expenditures was lower or higher than the concentration of total expenditure. The highest concentration in services expenditure and Kakwani Indices were found for the distribution of expenditures on telecommunication services, where cross-country median Kakwani Indices were 19.1 for fixed phone, 22.6 for mobile phone, and 20.5 for total telecommunication. Education and Health services presented a moderate concentration, with median Kakwani Indices close to 11. Median Kakwani Indices for most infrastructure services were small in absolute values: 1.9 for electricity, -3.5 for water, and –3.1 for public transport. The exception was gas, with a rather high and negative median Kakwani coefficient of -14.

Table 14 describes the distribution of total expenditure on services along the distribution of total expenditure, and figure 14 illustrates the corresponding concentration curves for total services expenditure and total expenditure. Results suggest a mild pro-poor bias in consumption in Colombia, Ecuador and Mexico mainly driven by expenditure on transport and infrastructure services, and a mild pro-rich bias in Bolivia, El Salvador, Nicaragua, Panama and Peru mainly driven by expenditure on telecommunications but also health, education and other infrastructure services (with the exception of El Salvador which generally showed a pro-poor bias in infrastructure services).

Explaining expenditure shares with household characteristics

As explained earlier it is important to examine whether the conditional relationship between expenditure shares and per capita household consumption was significant and continued to present the same sign as the unconditional relationship described by the Kakwani Indices reported in tables 5 to 13. Moreover, by so doing, an assessment can be made on how other household characteristics affect services expenditure shares.

The regression analysis also allows for an estimate of the partial per capita consumption elasticity of expenditure shares and for an assessment of the significance of other variables in explaining the participation of services in total family budget.

The results of the estimation of shares equations using the Tobit Method to control for the fact that shares are necessarily within a 0-1 range are shown in tables 15 to 23. Reported figures corresponded to the estimated marginal effects on expenditure shares. The first goal was to compare the partial per capita consumption elasticity of expenditure shares (first line in the tables) to the Kakwani Indices, in terms of their signs and statistical significance.

The regression analysis revealed that, in general, estimated marginal effects of household consumption on expenditure shares were statistically significant even after controlling for other variables.[28] Besides, marginal effects were of the same sign as the corresponding Kakwani Indices. There were only a few cases where signs differ, but at least one of the coefficients (regression estimated effect or Kakwani Index) is not significant.[29] The only exception was for water. Unlike other services, expenditures on water were much more related to household characteristics and geographical location as defined in rural and urban terms,[30] particularly because of the existence of limited access to water networks. Therefore, other factors besides per capita consumption were controlled; it was found that conditioned shares behaved significantly different than unconditioned ones across consumption quintiles. This was the case for Bolivia, Ecuador, Nicaragua, and Peru, where the sign of the Kakwani Index was different from that of the regression coefficient of log per capita household consumption, and both estimates were statistically significant.

In order to garner an idea of the range of variation of the elasticity of services shares with respect to total expenditure, the estimated partial per capita consumption elasticity of expenditure shares is briefly described. The effect of a one- rural and urban increase in per capita household consumption is to increase education shares by one percentage point in Bolivia, and to decrease it in a similar amount in Colombia. Estimated effects for the other countries were all positive, significant, and close to one.

Similar but rather stronger effects were found in the case of health and telecommunication services. The larger effects of a one-per cent rise in per capita household consumption had a 3.44 percentage-point increase in the health share of Nicaragua, and a 1.91 percentage-point increase in the telecommunication share of El Salvador. In the case of public transport, strong effects were found – either positive or negative depending on the country. For instance, the estimated elasticity in Nicaragua was 3.2, while it was close to -2 in Ecuador and Colombia.

For the other infrastructure services (water, electricity, and gas), effects were weaker and usually negative. However, there were negative and strong elasticities on gas and electricity in Colombia, and on water in El Salvador and Colombia, and a positive and strong elasticity on electricity in Panama.

Concerning the other variables, in general, they were individually statistically significant to explain inter-household variations in shares. In most cases (across services and countries) expenditure shares were higher (ceteris paribus) in rural households (except for infrastructure services); in female headed households (especially in education and health where the elasticities are very large); if civil status of the household head was married; and in families with more educated household heads. Conversely, expenditure shares were lower as the family size was greater. The effect of the age of the household on shares was positive or negative depending on the service. For instance, and as expected, education shares increased and health shares decreased as household heads (and very likely, all other household members) became older.

5. SUB-SAHARAN AFRICA

The analysis of the distribution of services expenditure in SSA was undertaken for twenty three countries. The countries were selected based on existence of reliable household surveys with complete information

on expenditures. Most of the utilised datasets were obtained from the Development Data Platform (the DDP) – a large dataset of household surveys maintained by the World Bank. Although the DDP was a very valuable source of survey data, some information was not fully up to date. Therefore in some cases with existing household surveys exist; they were not available in the development data platform. In these cases, data collection efforts targeted the official statistical offices of those countries.

The product of this exhaustive search effort is based on a set of 23 household surveys for the SSA countries listed in table 24. The table also presents a few basic characteristics of those surveys. Sample sizes range from over 25 thousand households in Ethiopia and South Africa to below 5 thousand households in Guinea-Bissau and Zambia. The share of the population residing in rural areas was often high. The highest shares, over 82 per cent, were observed in countries including Rwanda and Kenya, while the lowest shares at around 35 per cent were in United Republic of Tanzania and Cameroon. For most countries, the rural share exceeded 50 per cent. The last two columns show the estimated total number of households in a country and the share of those interviewed in the survey.

All of the twenty-three available household surveys had expenditure information for some of the four broad services categories that were considered – education, health, telecommunications and transport – as well as total expenditure including auto-consumption evaluated at market prices. They all have the usual household data information such as age, gender and education of household head, number of household members, urban or rural location of the household, amongst others. Table 25 lists demographic characteristics, such as a country's total population, age structure, and gender structure, at the national level as well as at the rural and urban areas. The share of the rural population was above 50 per cent except in South Africa. Nevertheless, there were not any striking differences in terms of average age or gender across countries and regions.

Table 26 presents cross-household average shares for each service and country. The average SSA households spent around 11 per cent of their income on services, although there were some important country differences. The highest shares of total expenditures were found in Togo, and the lowest in Madagascar. The table also provides the sector decomposition of household services shares (also clearly illustrated in figure 15). In most SSA countries, the two services with the highest participation on household total consumption were education and health, together representing more than 50 per cent of total services expenditure, except in Ethiopia, Rwanda and South Africa. Transport services were also relatively important in SSA countries and generally had much greater importance than LAC. Transport expenditures on average accounted for more than 20 per cent of total services expenditure in SSA, but reached 40 per cent in Gambia, South Africa and Zambia. As in other countries, telecommunications expenditure remained relatively small accounting for an average of 5 per cent of total services expenditure.

Tables 27 to 31 present information on the distribution of services expenditure shares across quintiles. Concentration index for services expenditures and the corresponding Kakwani Indices are also reported.

Expenditure on Education (table 27)

Education shares tend to increase with total expenditure, but only moderately suggesting a moderate pro-rich bias in education expenditure. As shown in table 27 some countries had education shares almost constant across quintiles (Cameroon, Malawi and Senegal for example) and even tended to decline with total expenditure (Burundi). The average value for RSEBP* in education in SSA was -0.11 confirming a small pro-rich bias.

However, once the within-quintile heterogeneity was controlled using the Kakwani Indices it was found that on average there was a small pro-poor bias (although it was mostly statistically insignificant across countries). Of the 19 countries having education expenditure data in SSA, 12 had a Kakwani Index not statistically different from zero. Of the remaining six two had a negative and relatively large Kakwani Index and the other four had a positive and moderate Kakwani Index. Again it is important to highlight the negative and relatively large Kakwani Index in Burundi suggesting a strong pro-poor bias in education expenditure with poor households spending disproportionately larger shares of their income than rich did households on education. However, for SSA as a whole a clear trend in terms of expenditure bias in education was not discerned.

Expenditure on Health (table 28)

Health shares show a similar pattern with a decline in total expenditure in Burundi, relatively constant values

in Cameroon, Togo and South Africa and a very mild pro-rich bias in the rest of SSA.

The Kakwani Index describes a similar pattern with the exception of Burundi and Malawi where the bias in services expenditure by the poor is large and statistically different from zero (note that of the 22 countries for which health expenditure data was available only 4 had a Kakwani Index statistically different from zero).

Expenditure on Telecommunications (table 29)

Telecommunication shares were very modest in SSA as illustrated by the small numbers in table 29. Thus a strong pro-rich or pro-poor bias in telecommunications did not significantly affect the overall relative welfare of poor households. Nevertheless telecommunication expenditures tended to exhibit a strong pro-rich bias in SSA with an average RSEBP* around -0.55. With the exception of Burundi and Uganda all Kakwani Indices were positive, large and generally statistically different from zero, confirming a relatively strong pro-rich bias in telecommunications expenditure in SSA.

Expenditure on Transport (table 30)

Transport expenditure shares were relatively large compared with what was observed in LAC. They also showed a much stronger pro-rich bias than in LAC. Transport shares tended to increase with total expenditure in all SSA countries. The average RSEBP* was around -0.34 with a few countries with values around -0.70 (Madagascar and Mozambique). The countries with the lowest RSEBP* were South Africa and Cameroon. Thus again not as pronounced a pro-rich bias as observed in telecommunications but much larger than that observed in health and education in SSA countries.

This finding was confirmed by the estimation of Kakwani Indices which showed a mild pro-rich bias on average with a mean value across SSA of 16.2. It was negative in only 3 countries (Burundi, Uganda and South Africa), and when positive it was generally not very large, but statistically different from zero.

Summing up Sub-Saharan Africa's distributional analysis

Services expenditure tended to have a pro-rich bias in SSA as well. The pro-rich bias was relatively moderate in social services such as education and health, but very strong in telecommunications. However, the share of telecommunications in total household expenditure was small and therefore the strong pro-rich bias did not influence overall distribution.

Table 31 provides the share of total services expenditure in total household expenditure by income quintile. It includes the expenditure on the four services described above, but also other services expenditure which may not be homogenous across countries. However in all cases it was found that the share of total services expenditure tends to increase with total expenditure (that is, it increased as progression is made up income quintiles). The RSEBP* estimates suggest a moderate pro-rich bias in all countries. This was confirmed by the Kakwani Index estimates which were negative in only a few countries (Burundi, Benin, Guinea Bissau and Uganda), and when positive it was generally not very large, but statistically different from zero.

Explaining expenditure shares with household characteristics

It is important to examine the relationship between shares and per capita household consumption after controlling for other demographic and social factors such as education, gender, age, and civil status of the head of household, household size, and geographic region (rural or urban). The aim was to assess whether the conditional relationship between shares and per capita household consumption was significant and continue to present the same sign as the unconditioned relationship described previously.

Tables 32 to 36 present the results of the estimation of services shares equation on the log of per capita expenditure of the household, household size, the number of years of education of the household head, whether the household head is married, the gender and age of the household head, as well as a dummy variable that takes the value 1 if the household is based in a rural area.

By and large the estimation results confirm that services expenditure shares tend to increase with household expenditure: richer households spent a greater share of income on services. There were a few exceptions. In the transport sector only Mali had a negative elasticity. In the education and health sector there were other exceptions: Benin, Burkina Faso, Cameroon, Senegal and Uganda had a negative elasticity for education expenditure and Burundi, Gambia, Mozambique, Niger and Uganda had a negative

elasticity for health expenditure. In terms of total services expenditure only Cameroon, Niger and Uganda had a negative and statistically significant elasticity of total expenditure. Thus, the broad pattern described above has been confirmed. Services expenditure tended to have a pro-rich bias in SSA, particularly in telecommunications and transport expenditures.

In terms of the other determinants of household services expenditures, (tables 32 to 36) household size generally led to a larger share of services expenditure (with a slightly stronger impact in education expenditure as may be expected). Rural households had smaller shares except perhaps in terms of health expenditure, perhaps signalling more difficult living conditions in rural areas. Female headed households tended to also have a smaller share of services expenditure. Higher levels of education for the household head, as well as an older household head tended to be positively correlated with higher shares of services expenditure. Married households tended to spend relatively more in health, although there was no clear pattern for other services. From these conditional correlations it could be concluded that those most likely to be exposed to services reforms (changes in price and quality of services) are rich households in urban areas headed by a male with high levels of education and relatively old. Nevertheless, this conclusion hides some important heterogeneity across countries that should be considered when undertaking case studies of services reforms.

6. ASIA

The analysis of the distribution of services expenditure was performed for nine Asian countries. As was the case before, the countries were chosen on the basis that available datasets contain information on household expenditure on services as well as some measure of household welfare such as total expenditure or income. The choice of the services sub-sectors remained the same as in SSA – health, education, transport and telecommunication. In order to perform the same analysis for Asia as was done for LAC and SSA, reliable data was retrieved from World Bank's DDP platform and the International Household Survey Network (http://www.internationalsurveynetwork.org/home/). For China, data came from China Income Project, Rural and Urban samples of 1995. For India, data came from the Indian Human Development Survey of 2005. For Indonesia, data from the Indonesia Family Survey of 2000 was used. For the Russian Federation, data came from the Russia Longitudinal Monitoring Survey, Round 12 of 2003. For Taiwan Province of China data came from the Taiwan Family Income and Expenditure Survey of 2003. For Tajikistan data came from the Tajikistan Living Standard Survey of 2003. For Timor-Leste, data came from Timor-Leste Living Standards Measurement Survey of 2001. Finally, for Viet Nam, data came from the Household Living Standard Survey of 2002.

As for other regions, the share of services expenditure by sector in total household expenditure was constructed. As shown in table 37 the highest shares of services expenditures were found in Taiwan Province of China. Conversely the lowest shares of services expenditures were found in Timor-Leste. The table also provides the sector decomposition of household's services shares (also better detailed in figure 16). In most Asian countries, the two services with the highest participation on household total consumption were education and health, representing more than 60 per cent of total expenditure consumption. In Viet Nam and Timor-Leste they accounted for more than 90 per cent of services expenditure. The country with the largest transport share was the Russian Federation, accounting for more than one third of total services expenditure. Thailand had the largest telecommunications participation accounting for more than one third of total services expenditure.

As in section 4, tables 38 to 42 present information on the distribution of household expenditures on services (panel a), and average shares (panel b) across income quintiles for each of the services. Concentration indices for services expenditures are reported in panel a, and Kakwani Indices are reported in panel b. Figures 17 to 21 illustrate the concentration curves for services expenditure (labelled concentration curve) and total expenditure (labelled Lorenz curve).

Expenditure on Education (table 38 and figure 17)

The concentration indices on education expenditure were moderately high in most countries with India and Indonesia showing the largest concentration of education expenditures: almost 60 per cent of total education services were undertaken by the top expenditure quintile. The countries with the lowest concentration indices were Taiwan Province of China and Tajikistan (see table 38 panel a).

Education expenditure shares tended to increase with household income except in China and Timor-Leste, but the trends were overall relatively modest. This was captured by Kakwani Indices that tended to be positive (except in China and Timor-Leste) but relatively modest as well, suggesting education expenditure was not either more or less concentrated than overall expenditure. However, even if the Kakwani Indices were not very large they were statistically different from zero, indicating a slight pro-poor bias in education expenditure (where the education expenditure curve was slightly above the total expenditure Lorenz Curve in figure 17), and a slight pro-rich bias in the other seven Asian countries (where the education expenditure curve was slightly below the total expenditure Lorenz curve).

Expenditure on Health (table 39 and figure 18)

In terms of health expenditure, a similar trend was observed for education expenditure with moderately high levels of expenditure concentration particularly in Indonesia, India and Thailand. Taiwan Province of China and Viet Nam had the lowest levels of concentration of health expenditure in the region (see table 39 panel a).

However, this large degree of concentration in health expenditure does not necessarily translate into a strong pro-rich bias as captured by low and even negative Kakwani Indices in panel b of table 39. Indeed, Indonesia with the highest degree of health expenditure concentration had a negative Kakwani Index even though it was not statistically different from zero. This was due to the very high level of concentration in total expenditure in Indonesia, implying that relative unequal health expenditure is not necessarily pro-rich. The highest pro-rich biases were found in India, Thailand and Tajikistan where health expenditures tended to be more concentrated than total expenditure, and where the curve of the cumulative share of health expenditures laid significantly below the Lorenz curve of total expenditure (figure 18). Nevertheless, the Kakwani Indices were overall low – and in fact lower than for education.

Expenditure on Telecommunications (table 40 and figure 19)

The concentration of telecommunication expenditure was very high in all countries with the exception perhaps of China and Taiwan Province of China. In Timor-Leste and Viet Nam the concentration index was above 0.8 with more than 80 per cent of total telecommunication expenditure in these two countries undertaken by individuals in the top expenditure quintile (see table 40 panel a).

This resulted in very high levels of Kakwani Indices in all countries. Interestingly China had the strongest Kakwani Index suggesting that it had a strong pro-rich bias in total telecommunication expenditures, but as shown in table 5.2.1 telecommunications represented less than 10 per cent of total Chinese services expenditure. Taiwan Province of China displayed the lowest pro-rich bias, with a Kakwani Index not statistically different from zero. As can be seen from figure 19 the Lorenz Curve of total expenditure and the concentration curve for telecommunication expenditure cannot be distinguished from each other, whereas the latter always laid significantly below the former in all other countries.

Expenditure on Transport (table 41 and figure 20)

In the case of transport the concentration of expenditure was similar to that observed for health and education services. That is the levels of concentration were moderately high, but significantly lower than what was observed for telecommunications. The highest index of concentration was found in Timor-Leste and Tajikistan. The lowest level of concentration was in transport expenditure for Viet Nam and Indonesia.

In terms of pro-poor or pro-rich bias, the Kakwani Indices were relatively small, similar to the ones observed for health. The countries with the strongest pro-rich bias were Tajikistan and Timor-Leste. The countries with the strongest pro-poor bias were Timor-Leste and Viet Nam.

Summing up Asia's distributional analysis

Expenditures on all the considered services reflected a pro-rich distribution, that is, the rich households tended to represent a larger share of total expenditure on services. This was not unexpected as rich households have higher income and therefore tend to consume more.

Perhaps of more interest was the examination of whether the concentration of services expenditures is lower or higher than the concentration of total expenditure using Kakwani Indices. The highest concentration in services expenditure and Kakwani Indices were found for the distribution of expenditures on telecommunication services, with a cross-country

median for Kakwani Indices at 0.28. Education, health and transport services had a moderate concentration, with median Kakwani Indices between 0 for transport and 0.10 for education.

Finally, the services sector as a whole was considered. Table 42 describes the distribution of total expenditure on services along the distribution of total expenditure, and figure 21 illustrates the corresponding concentration curves for total services expenditure and total expenditure. The share of total household expenditure spent on services generally tended to increase each progressive step up the income quintile, with the exception of China which had a larger share of services consumption in the bottom quintile than in any other quintile (although from the second to the fifth quintile there was a steady progression). Results suggest a mild pro-poor bias in consumption in Timor-Leste mainly driven by expenditure on education, and a mild pro-rich bias in total services expenditure in the other countries, with the exception of China where the very large Kakwani Index for telecommunications led to a large Kakwani Index for total services expenditure even if the Kakwani Indices were relatively modest in the three other sectors.

Explaining expenditure shares with household characteristics

Regression analysis was used to the estimate of the expenditure elasticity of services expenditure shares, as well as to assess the importance of other household characteristics in determining services expenditure shares. The results of the estimation of shares equations by the Tobit Method are shown in tables 43 to 47. Reported figures correspond to the estimated marginal effects on expenditure shares.

The first objective involved comparing the sign and size of expenditure elasticity of services shares to the Kakwani Indices. Estimates suggest that in general, marginal effects of household consumption on expenditure shares were statistically significant even after controlling for other variables, except in a few cases for health and transport (Viet Nam and Taiwan Province of China). Marginal effects tended to be of the same sign as the corresponding Kakwani Indices, suggesting that after controlling for other household characteristics the same type of relationship between income and services expenditure was observed. There were however a few cases where signs differed. These include China, Timor-Leste and Tajikistan for education services, but only Timor-Leste's estimates were statistically significant at the 1 per cent level in both cases. This implies that in the case of Timor-Leste, expenditure tended to be pro-poor prior to controlling for other household characteristics. After the control there tended to be a pro-rich bias in Timor-Leste's education expenditure. In the case of health there were also a few differences but none of them statistically significant. In telecommunication expenditures the partial elasticities and the Kakwani Index perfectly match, and thus highly significant, suggesting again a strong pro-rich bias. In the case of transport the relatively strong pro-poor bias in Indonesia was confirmed by the regression analysis, although China and Timor-Leste's pro-poor bias was reversed to a pro-rich bias after a controlling for some household characteristics, also Viet Nam's pro-poor bias became statistically insignificant. Thus, after controlling for other household characteristics it seemed that the pro-rich bias in services consumption tended to accentuate.

Concerning the other variables, they were, in general, individually statistically significant explaining inter-household variations in shares. In most cases (across services and countries) expenditure shares were higher (ceteris paribus) in urban households (except for infrastructure services), in male headed households, married, more educated and with a large number of household members.

However, there were some interesting sector differences. The share of health expenditure was larger in urban areas even after controlling for total expenditure per capita (income), which could signal more difficult living conditions in rural areas in Asia. In China, India and Thailand rural households also tended to have a larger share of total expenditures for transport services, perhaps signalling more common off-the farm employment. Another surprising difference was that households headed by more educated individuals tended to spend a smaller share of their total expenditures on health services, perhaps suggesting some complementarities between education and health, implying that education reforms may have had positive health outcomes in Asia (it should be noted that this was also observed in some LAC, such as Ecuador and Bolivia and in some SSA countries such as Burkina Faso).

7. CONCLUSIONS

The share of the service sector in GDP has been steadily increasing over the last decades in the developing world. In this sample of 40 developing countries (8 in LAC, 23 in SSA, and 9 in Asia) the share of the services sector in GDP stood around 48 per cent. However, very little of how the performance of the services sector in terms of price and quality affects households. Even less was discovered about the potential impact of reforms on household welfare and its distribution across income quintiles.

This chapter provides a first step toward answering the questions: what are the services that are consumed heavily by the poor; and which sectors are most likely to affect the relative welfare of rich and poor households. This is attempted by exploring the distribution of services expenditure across sectors and type of households in developing countries.

Results suggest that services expenditure tended to exhibit a pro-rich bias, in the sense that rich households expended a larger share of their total expenditures on services than did poor households. This suggests that services reforms leading to declines in prices were more likely to benefit rich households than poor households. This was less pronounced for social sectors such as education and health, where reforms may have had a large impact on poor households. Moreover, these sectors represent a very large share of total services expenditures in all regions. Reforms in the transport sector also tended to show a lower pro-rich bias and even a pro-poor bias in some countries, suggesting that this sector would likely benefit poor households more than reforms in other sectors such as telecommunications.

When an indicator of services trade restrictiveness was correlated with the measure of the pro-poor bias expenditure, it was observed that as countries open up their services sector the poor tended to spend a relatively smaller share of their budget than rich households on services. This can be partly explained by the fact that as countries open up to trade in services, prices tend to decline (for a given quality of services) which, combined with relatively inelastic demand for social services constituting the bulk of services expenditure would lead to a smaller share in total expenditure for poor households.

It should be noted that in some sectors such as telecommunications the opposite was observed suggesting that the share of telecommunications expenditure of total household expenditures became relatively more important for poor households after a liberalization of the services sector. This may be due to a relatively greater elastic demand for these types of services, particularly by those at the bottom of the income distribution who consider telecommunications a luxury good, at least in some countries.

In concluding, it must be made clear that the methodology followed in this chapter had several important limitations. First, the problem of access was not addressed (see Porto et al., 2009 for a study of the distributional incidence of access to services in Latin America). Second, the expenditure data did not contain information on subsidies which may have targeted poor (or rich) households and therefore may have biased the estimates. Finally the analysis was static and simply described the existing pattern of services expenditure. If reforms were to occur, poor and rich household would probably have heterogeneous responses leading to unexpected outcomes.

These caveats prompt some obvious important unresolved questions regarding the distributional implications of access to services and how reforms affect access. The questions of the trade-offs between quality and price in the case of services reform is also important, and is related to the question of access. Another aspect that was left for future research encompasses the determinants and impacts of different services delivery models in developing countries, as well as the role of the state in service provision and delivery. All these are important questions would be better addressed through systematic case studies rather than cross country analysis.

Table 1. Indices of pro-poor-services-expenditure-biases across regions

	RSEBP (aggregate services expenditure)	RSEBP* (aggregate services expenditure)	RSEBP (disaggregated services expenditure)	RSEBP* (disaggregated services expenditure)
Latin America	-.117[a] (.042)	-.150[a] (.006)	-.030[a] (.007)	-.272[a] (.056)
Sub-Saharan Africa	-.121[a] (.014)	-.383[a] (.048)	-.019[a] (.003)	-.472[a] (.042)
Asia	-.008[a] (.024)	-.163[a] (.036)	-.014[a] (.005)	-.220[a] (.044)
R^2	0.670	0.730	0.331	0.542
Number of observations	40.000	40.000	143.000	143.000

Note: All regressions are ordinary least squares and robust standard errors are provided in parenthesis. Superscript "a" stands for statistical significance at the 1 per cent level and "b" stands for statistical significance at the 5 per cent level.

Table 2. Indices of pro-poor-services-expenditure-biases across services

	RSEBP (disaggregated services expenditure)	RSEBP* (disaggregated services expenditure)
Telecommunications	-.025[a] (.003)	-.771[a] (.055)
Transport	-.023[a] (.005)	-.381[a] (.058)
Education	-.017[a] (.004)	-.199[a] (.046)
Health	-.015[a] (.006)	-.163[a] (.037)
R^2	0.331	0.698
Number of observations	143.000	143.000

Note: All regressions are ordinary least squares and robust standard errors are provided in parenthesis. Superscript "a" stands for statistical significance at the 1 per cent level and "b" stands for statistical significance at the 5 per cent level.

Table 3. Indices of pro-poor-services-expenditure-biases across services and sectors

	RSEBP			RSEBP*		
	LAC	SSA	Asia	LAC	SSA	Asia
Telecommunication	-052[a] (.003)	-013[a] (.002)	-023[b] (.010)	-594[a] (.094)	-932[a] (.061)	-.583[a] (.115)
Transport	.001 (.021)	-037[a] (.004)	-.008 (.007)	-.059 (.099)	-561[a] (.060)	-.174[a] (.099)
Education	-034[a] (.011)	-011[b] (.005)	-.015 (.009)	-.166[a] (.057)	-270[a] (.074)	-.076 (.068)
Health	-029[b] (.013)	-.012 (.008)	-.012 (.012)	-.193[a] (.065)	-185[a] (.056)	-.086 (.054)

Note: All regressions are ordinary least squares and robust standard errors are provided in parenthesis. A regression is run for each sector and index. Superscript "a" stands for statistical significance at the 1 per cent level and "b" stands for statistical significance at the 5 per cent level.

Figure 1. Pro-poor-services-expenditure bias by sector and GDP per capita

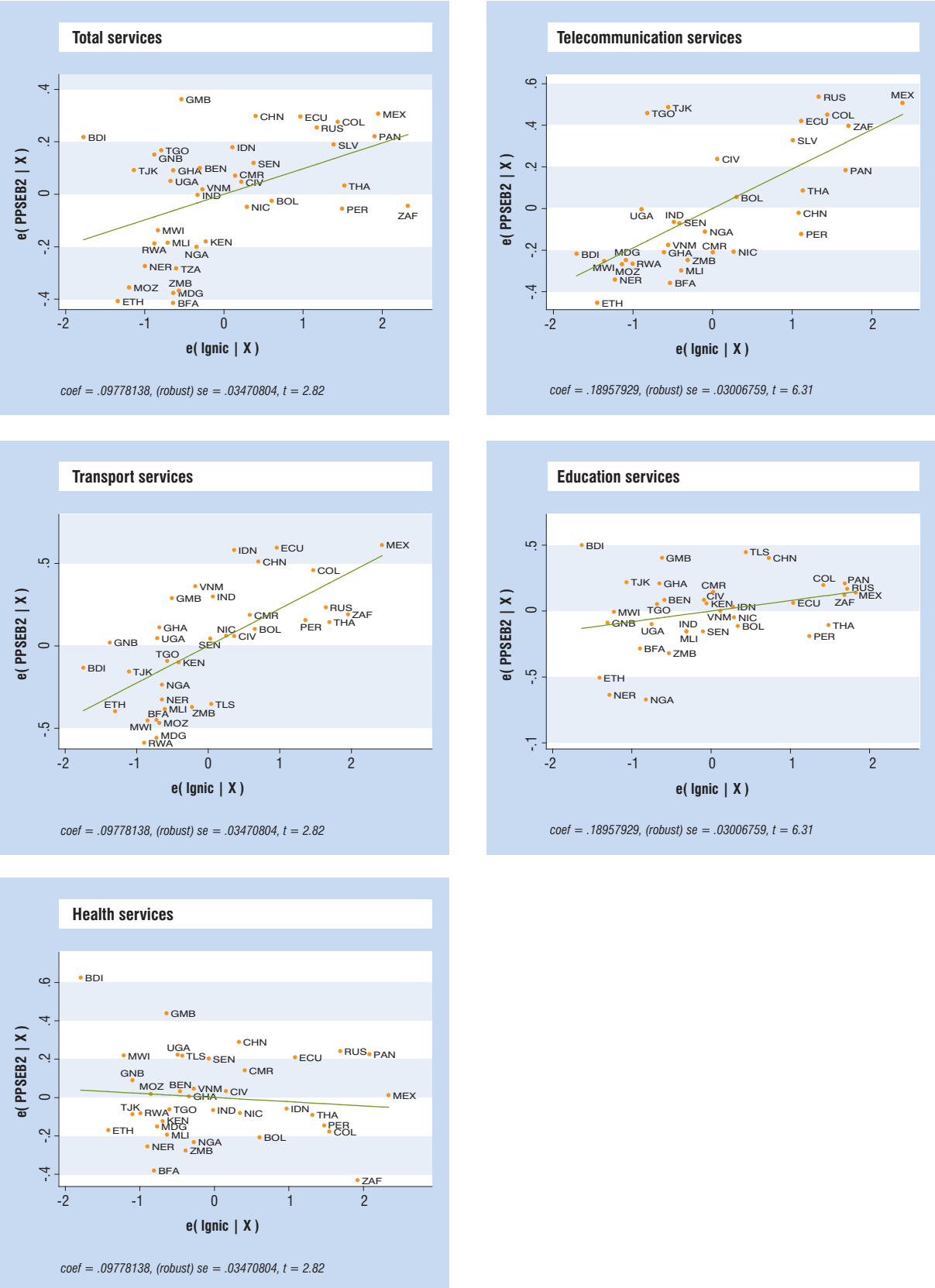
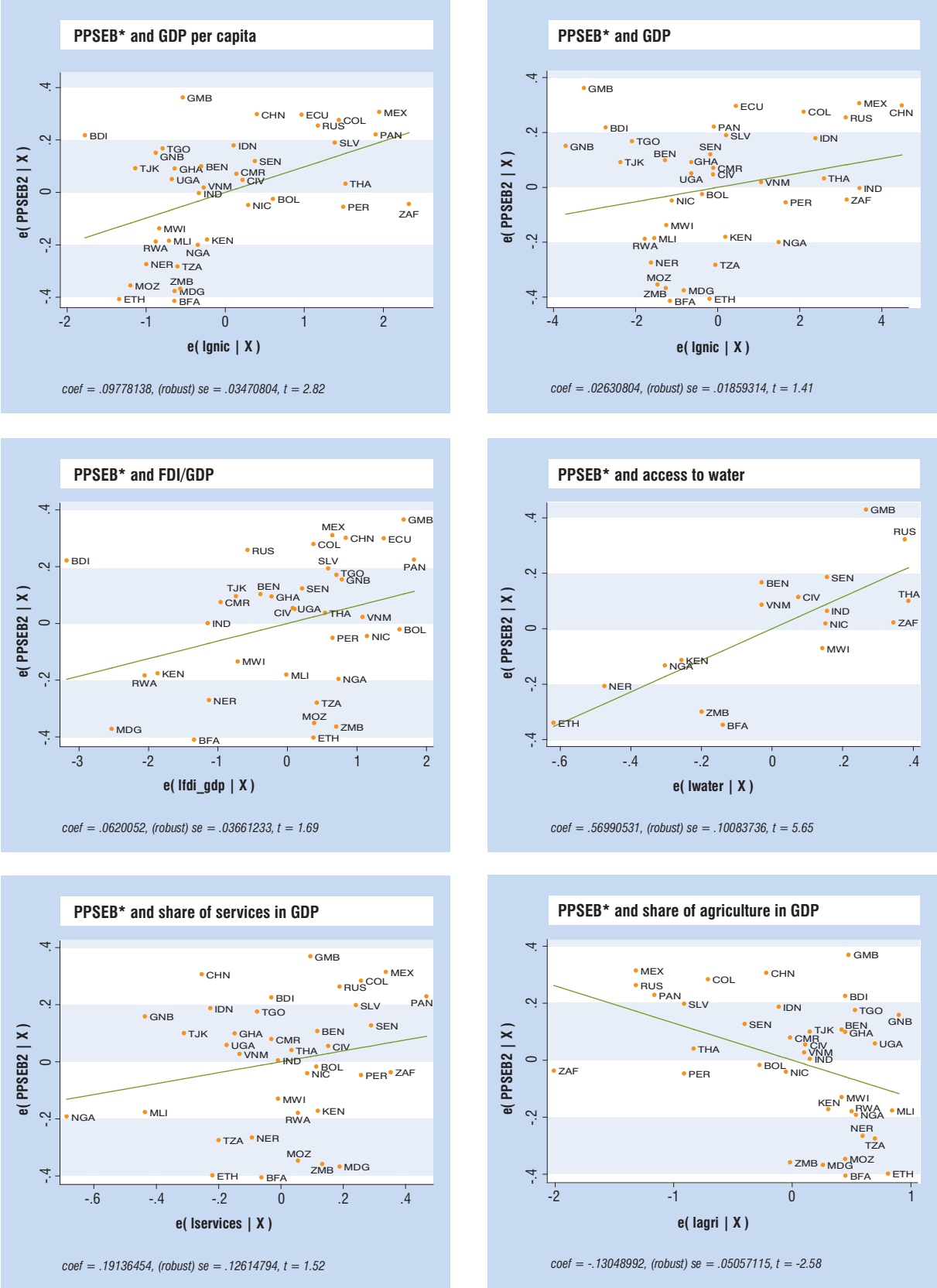
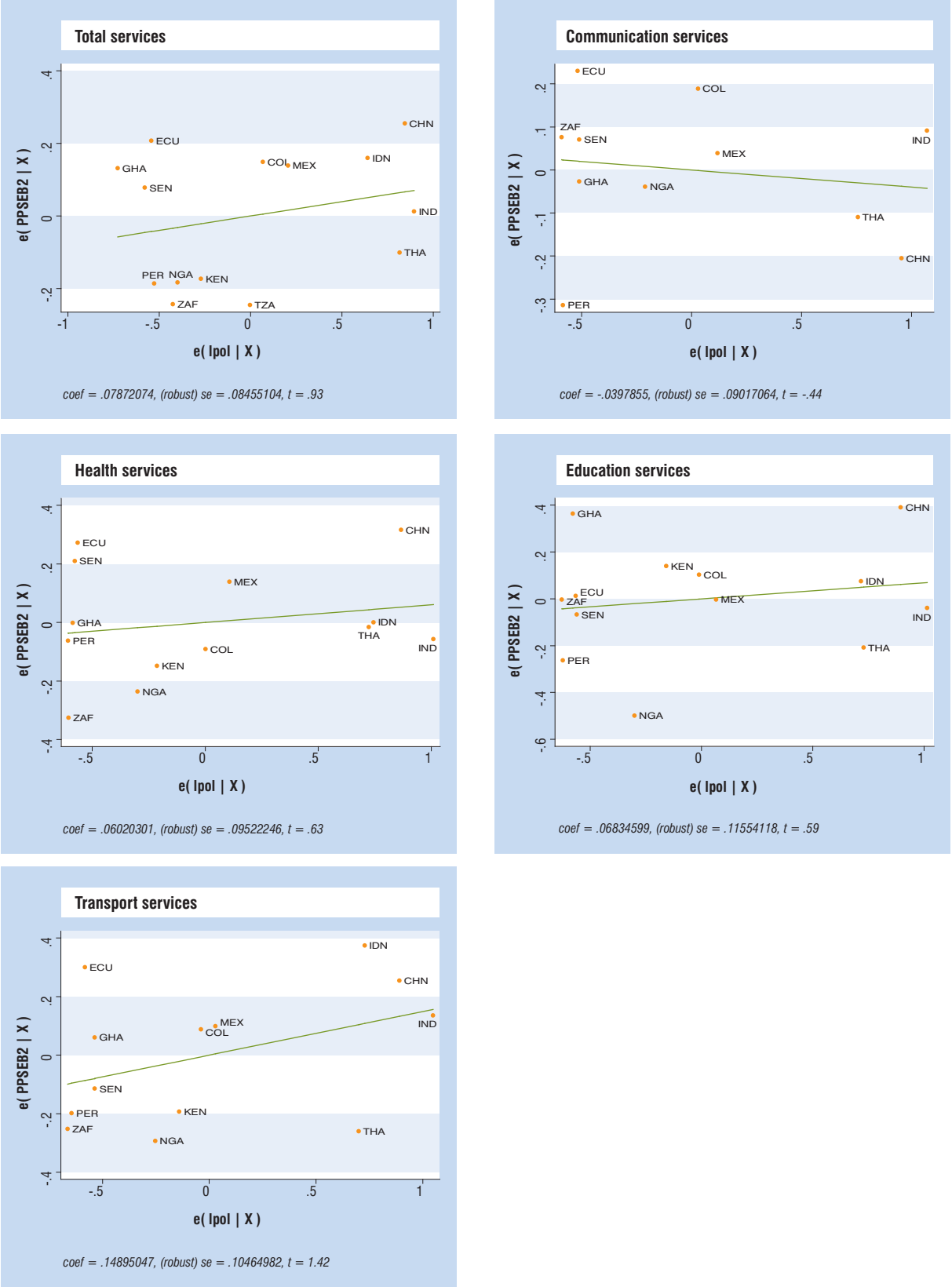


Figure 2. Pro-poor-services-expenditure bias and country characteristics



Figures 3 Pro-poor-services-expenditure bias and services trade restrictiveness



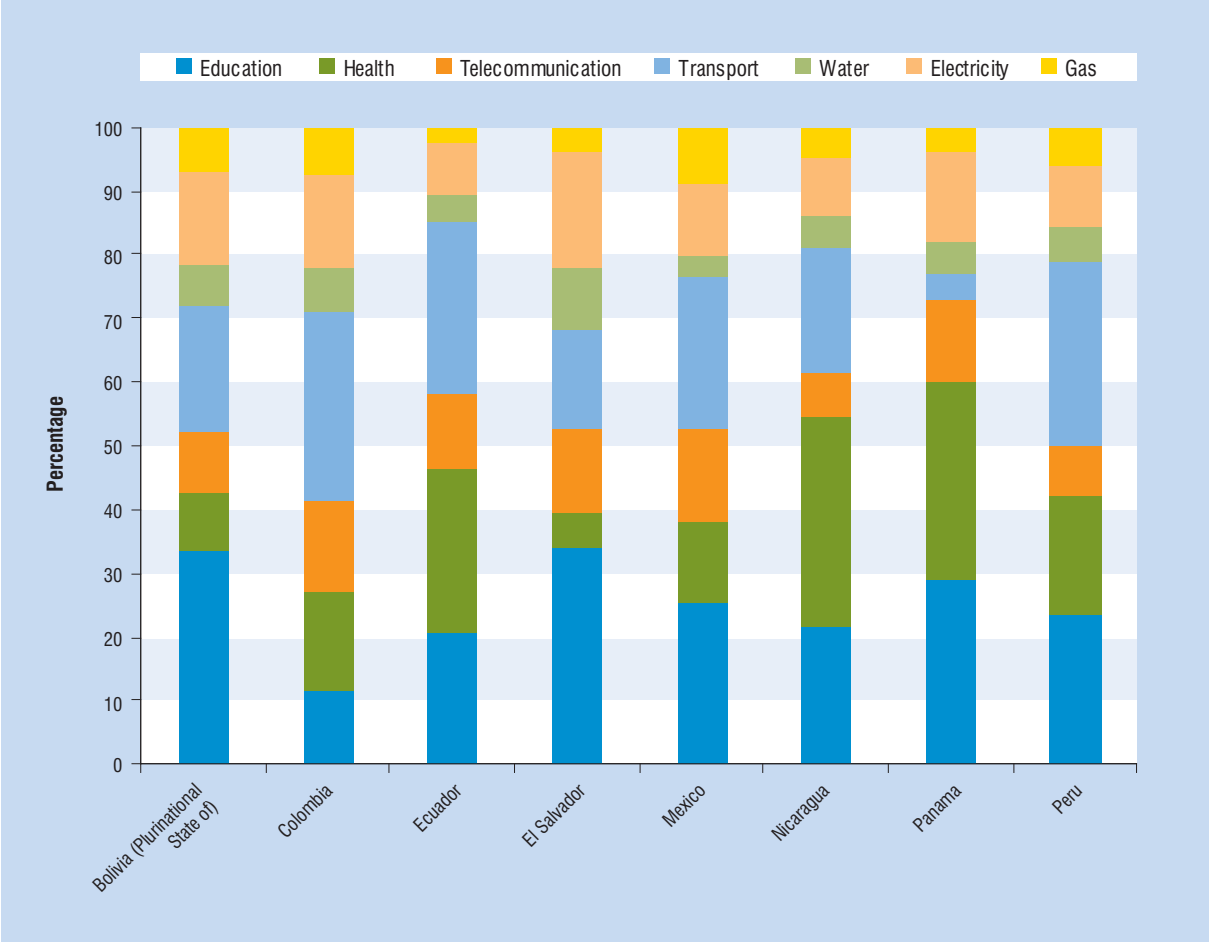
Source : Authors' calculations using Gootiz and Mattoo (2009) measures of services trade restrictiveness.

Table 4. Expenditure on *services* as a percentage of total expenditure in Latin America

Country	Telecommunication (%)					Infrastructure services (%)				
	Education	Health	Fixed phone	Cell phone	Total	Public transport	Water	Electricity	Gas	Total
Bolivia (Plurinational State of)	6.5	1.8	0.5	1.0	1.8	3.9	1.2	2.8	1.4	19.4
Colombia	4.0	5.5	3.8	1.0	5.0	10.4	2.4	5.0	2.7	34.8
Ecuador	6.6	8.0	1.0	1.9	3.8	8.6	1.3	2.6	0.7	31.5
El Salvador	8.2	1.2	2.2	1.1	3.3	3.7	2.3	4.4	0.9	24.0
Mexico	5.3	2.6	1.6	1.1	3.1	5.0	0.7	2.3	1.9	20.9
Nicaragua	4.8	7.3	NA	NA	1.5	4.3	1.2	2.0	1.1	22.1
Panama	5.3	5.6	1.3	0.9	2.3	0,8	1.0	2.6	0.7	18.2
Peru	4.2	3.4	0.8	0.4	1.4	5,3	1.0	1.7	1.1	18.1

Source: Authors' calculations based on SEDLAC (CEDLAS and The Wodd Bank).

Figure 4. Expenditures on each service as a percentage of total expenditures on services



Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Table 5. Expenditures on education by expenditure quintiles

a. Distribution of expenditures on education (%)

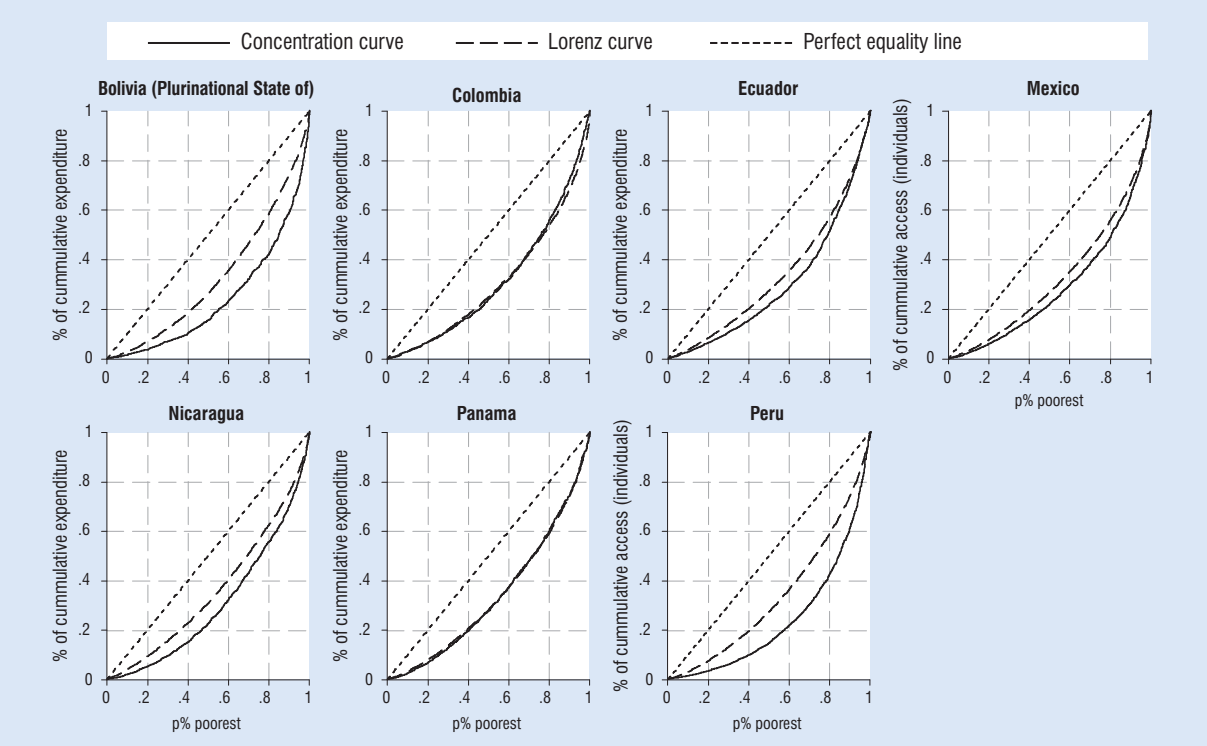
Country	quintiles of per capita household expenditure					Total	Concentration index
	1	2	3	4	5		
Bolivia (Plurinational State of)	3.5	6.6	13.0	19.1	57.8	100	52.2
Colombia	6.6	9.9	15.6	24.0	43.9	100	37.6
Ecuador	6.2	9.1	13.6	22.9	48.2	100	41.4
El Salvador	NA	NA	NA	NA	NA	NA	NA
Mexico	5.8	9.8	14.2	19.1	51.1	100	43.2
Nicaragua	5.2	10.0	17.2	23.3	44.4	100	39.6
Panama	6.9	12.9	17.4	23.2	39.5	100	32.3
Peru	3.5	6.3	12.0	21.0	57.2	100	52.4

b. Expenditures on education as a share of household total expenditure (%)

Country	quintiles of per capita household expenditure					Total	Kakwani index
	1	2	3	4	5		
Bolivia (Plurinational State of)	4.5	4.6	6.1	6.5	10.8	6.5	17.8
Colombia	4.5	3.5	4.1	4.3	3.7	4.0	-1.2[x]
Ecuador	5.7	5.7	6.5	7.4	7.7	6.6	7.7
El Salvador	NA	NA	NA	NA	NA	NA	NA
Mexico	4.8	5.1	5.4	5.2	6.1	5.3	7.5
Nicaragua	3.0	3.9	5.3	5.6	6.0	4.8	11.4
Panama	4.6	5.9	5.8	5.4	4.9	5.3	0.2[x]
Peru	2.6	2.8	3.8	4.9	6.9	4.2	19.3

Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank). All concentration and Kakwani indices are significant at a 10 per cent level (by bootstrap), except when indicated by "x".

Figure 5. Concentration curves for expenditures on education



Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Table 6. Expenditures on health by expenditure quintiles

a. Distribution of expenditures on health (%)

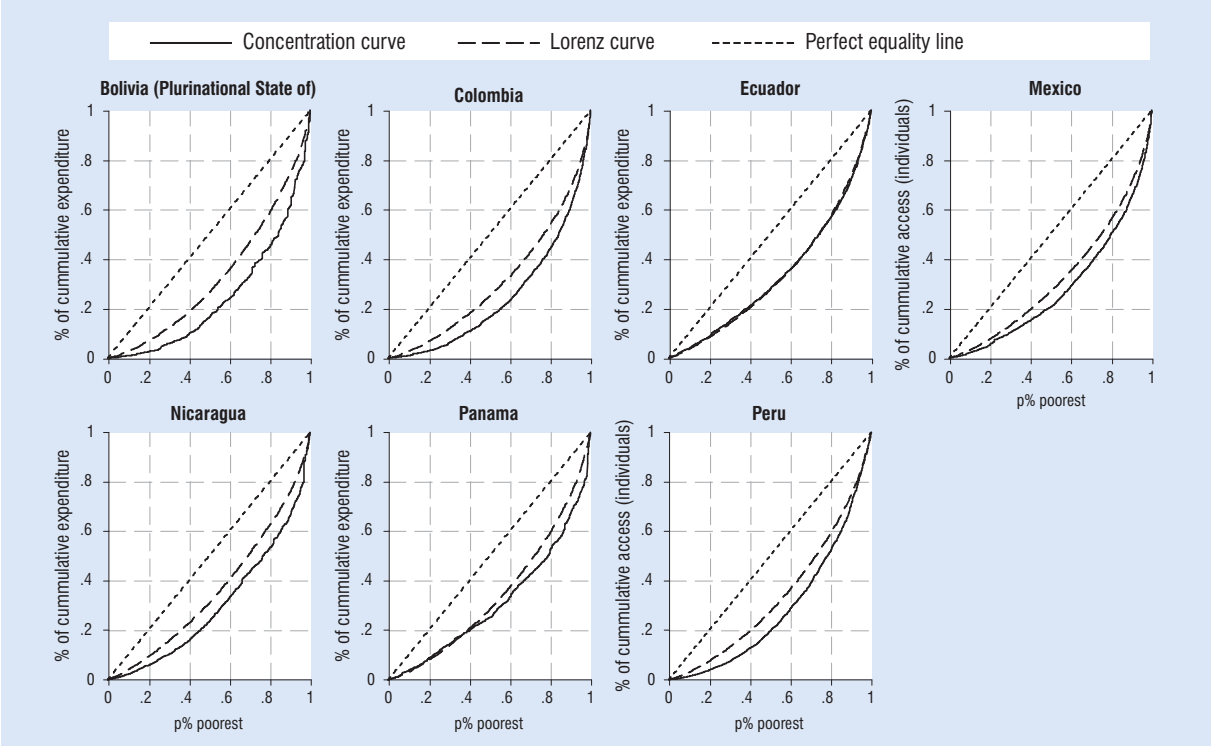
Country	quintiles of per capita household expenditure					Total	Concentration index
	1	2	3	4	5		
Bolivia (Plurinational State of)	2.4	7.1	14.1	21.2	55.1	100	51.4
Colombia	2.8	7.9	12.5	20.9	55.9	100	51.6
Ecuador	8.7	12.4	14.6	21.0	43.4	100	33.5
El Salvador	NA	NA	NA	NA	NA	NA	NA
Mexico	5.4	9.6	13.9	21.4	49.8	100	44.3
Nicaragua	5.8	10.1	17.3	20.1	46.8	100	40.2
Panama	8.5	11.3	13.6	17.9	48.7	100	38.2
Peru	4.0	8.7	15.8	23.6	48.0	100	43.7

b. Expenditures on health as a share of household total expenditure (%)

Country	quintiles of per capita household expenditure					Total	Kakwani index
	1	2	3	4	5		
Bolivia (Plurinational State of)	0.9	1.3	1.9	2.0	2.8	1.8	17.0
Colombia	2.9	4.5	5.5	6.6	8.0	5.5	12.8
Ecuador	8.5	8.5	7.2	7.7	8.0	8.0	-0.2[x]
El Salvador	NA	NA	NA	NA	NA	NA	NA
Mexico	2.0	2.4	2.6	2.9	3.0	2.6	8.6
Nicaragua	4.8	5.9	7.8	7.1	10.9	7.3	12.0
Panama	7.1	5.2	5.0	4.7	6.3	5.6	6.1
Peru	1.9	2.8	3.6	4.1	4.7	3.4	10.6

Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank). All concentration and Kakwani indices are significant at a 10 per cent level (by bootstrap), except when indicated by "x".

Figure 6. Concentration curves for expenditures on health



Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Table 7. Expenditures on fixed telepho*ne* by expenditure quintiles

a. Distribution of expenditures on fixed telephone (%)

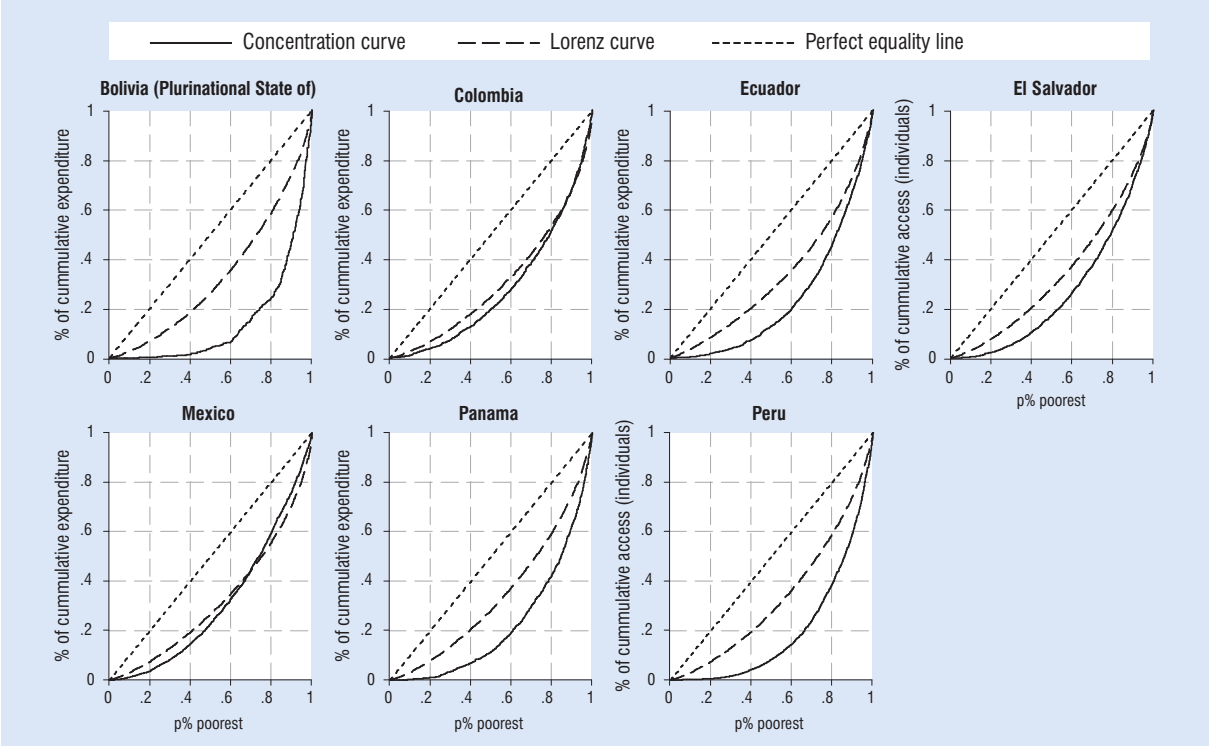
Country	quintiles of per capita household expenditure					Total	Concentration index
	1	2	3	4	5		
Bolivia (Plurinational State of)	0.1	1.3	5.0	17.9	75.7	100	71.4
Colombia	3.9	9.0	15.0	23.8	48.2	100	44.4
Ecuador	1.6	5.5	12.9	26.0	53.9	100	52.8
El Salvador	2.0	8.3	16.0	25.5	48.1	100	46.3
Mexico	3.8	10.9	18.3	27.0	40.0	100	37.6
Nicaragua	NA	NA	NA	NA	NA	NA	NA
Panama	1.0	6.1	12.5	23.5	57.0	100	55.5
Peru	0.5	3.6	10.3	24.7	60.8	100	60.5

b. Expenditures on fixed telephone as a share of household total expenditure (%)

Country	quintiles of per capita household expenditure					Total	Kakwani index
	1	2	3	4	5		
Bolivia (Plurinational State of)	0.0	0.1	0.3	0.7	1.4	0.5	37.0
Colombia	2.5	3.0	4.0	4.5	4.7	3.8	5.5
Ecuador	0.2	0.6	1.1	1.6	1.8	1.0	19.1
El Salvador	0.6	1.7	2.5	2.9	3.2	2.2	14.2
Mexico	0.7	1.5	2.0	2.2	1.8	1.6	1.8
Nicaragua	NA	NA	NA	NA	NA	NA	NA
Panama	0.2	0.7	1.2	1.7	2.4	1.3	23.6
Peru	0.1	0.3	0.6	1.2	1.8	0.8	27.4

Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank). All concentration and Kakwani indices are significant at a 10 per cent level (by bootstrap), except when indicated by "x".

Figure 7. Concentration curves for expenditures on fixed telephone



Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Table 8. Expenditures on mobile telephone by expenditure quintiles

a. Distribution of expenditures on mobile telephone (%)

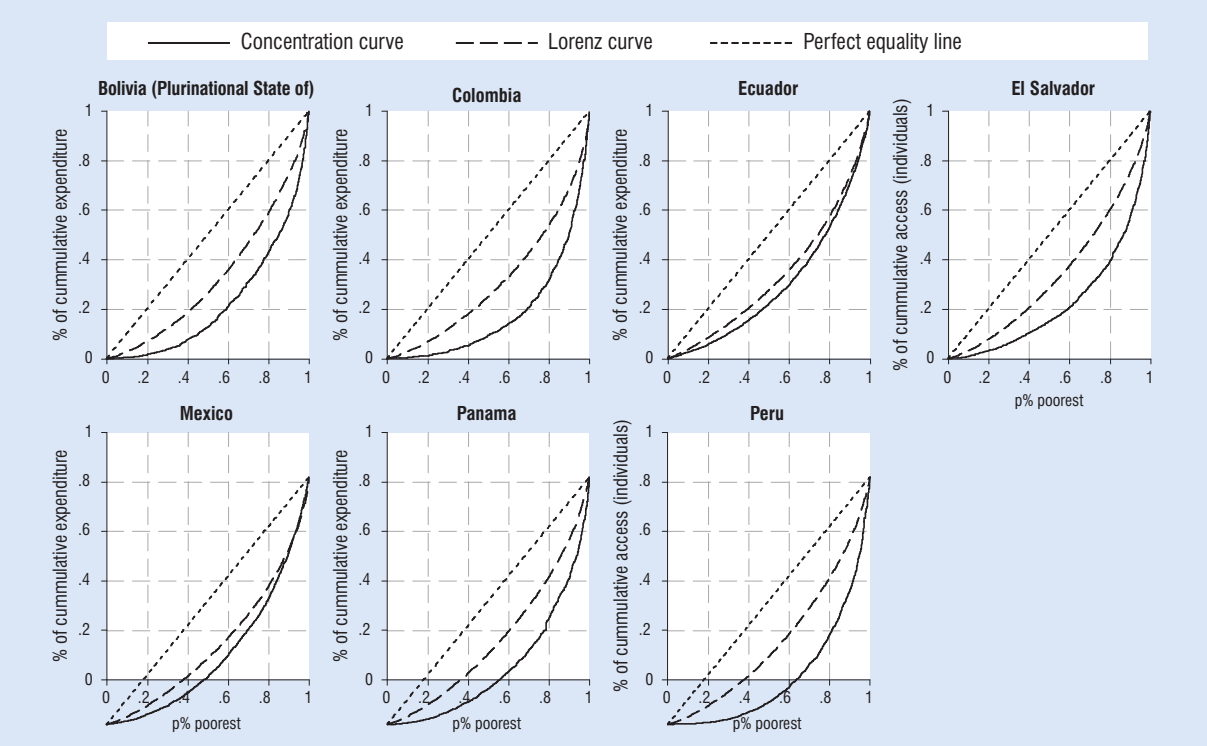
Country	quintiles of per capita household expenditure					Total	Concentration index
	1	2	3	4	5		
Bolivia (Plurinational State of)	1.4	6.1	13.3	21.8	57.4	100	55.7
Colombia	1.1	4.1	8.7	17.7	68.4	100	64.3
Ecuador	5.5	9.8	14.2	23.3	47.2	100	41.2
El Salvador	3.0	7.1	10.5	18.3	61.2	100	55.2
Mexico	4.1	8.6	15.3	22.8	49.2	100	44.3
Nicaragua	NA	NA	NA	NA	NA	NA	NA
Panama	2.3	6.9	12.6	21.7	56.5	100	54.4
Peru	0.8	4.2	10.1	21.2	63.8	100	62.2

b. Expenditures on mobile telephone as a share of household total expenditure (%)

Country	quintiles of per capita household expenditure					Total	Kakwani index
	1	2	3	4	5		
Bolivia (Plurinational State of)	0.2	0.6	1.0	1.3	1.7	1.0	21.3
Colombia	0.4	0.5	0.8	1.2	2.2	1.0	25.5
Ecuador	1.3	1.7	1.9	2.2	2.2	1.9	7.5
El Salvador	0.5	0.8	0.9	1.1	2.0	1.1	23.1
Mexico	0.6	0.9	1.1	1.3	1.5	1.1	8.6
Nicaragua	NA	NA	NA	NA	NA	NA	NA
Panama	0.3	0.7	0.9	1.1	1.6	0.9	22.6
Peru	0.1	0.2	0.3	0.5	0.9	0.4	29.2

Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank). All concentration and Kakwani indices are significant at a 10 per cent level (by bootstrap), except when indicated by "x".

Figure 8. Concentration curves for expenditures on mobile telephone



Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Table 9. Expenditures on total telecommunication by expenditure quintiles

a. Distribution of expenditures on telecommunication (%)

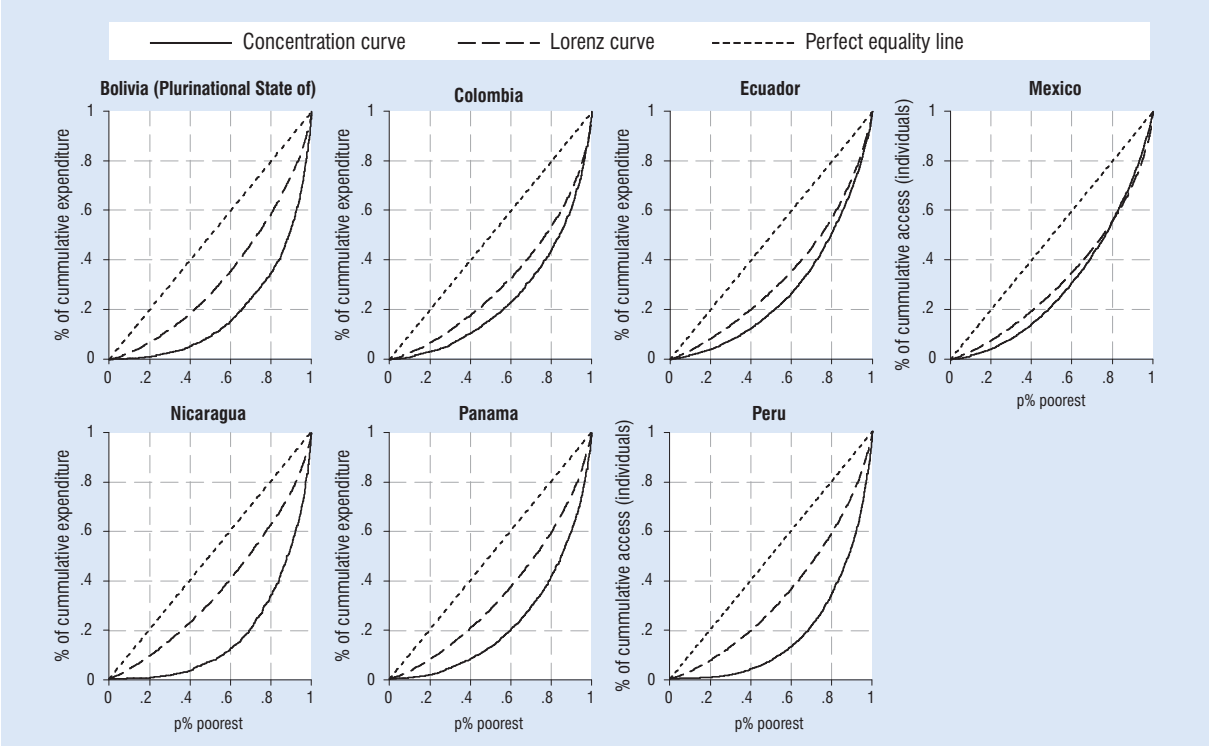
Country	quintiles of per capita household expenditure					Total	Concentration index
	1	2	3	4	5		
Bolivia (Plurinational State of)	1.1	4.2	9.9	19.5	65.2	100	62.2
Colombia	3.0	7.4	12.6	21.2	55.7	100	51.4
Ecuador	4.0	8.5	14.0	24.5	48.9	100	44.9
El Salvador	2.4	7.9	13.9	22.8	53.0	100	49.7
Mexico	4.1	10.0	16.8	24.9	44.2	100	40.4
Nicaragua	0.3	3.0	8.8	21.5	66.3	100	65.0
Panama	1.6	6.5	12.0	21.8	58.2	100	55.6
Peru	0.6	3.4	9.1	21.7	65.3	100	63.9

b. Expenditures on telecommunication as a share of household total expenditure (%)

Country	quintiles of per capita household expenditure					Total	Kakwani index
	1	2	3	4	5		
Bolivia (Plurinational State of)	0.4	0.9	1.5	2.3	4.0	1.8	27.8
Colombia	3.0	3.7	4.9	5.8	7.5	5.0	12.7
Ecuador	1.9	3.0	3.9	4.9	5.1	3.8	11.2
El Salvador	1.1	2.5	3.4	4.1	5.3	3.3	17.6
Mexico	1.6	2.7	3.5	3.9	3.7	3.1	4.6
Nicaragua	0.1	0.5	1.0	2.1	4.0	1.5	36.8
Panama	0.5	1.5	2.3	3.0	4.4	2.3	23.5
Peru	0.1	0.5	1.0	1.9	3.3	1.4	30.8

Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank). All concentration and Kakwani indices are significant at a 10 per cent% level (by bootstrap), except when indicated by "x".

Figure 9. Concentration curves for expenditures on total telecommunication



Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Table 10. Expenditures on *public transport* by expenditure quintiles

a. Distribution of expenditures on public transport (%)

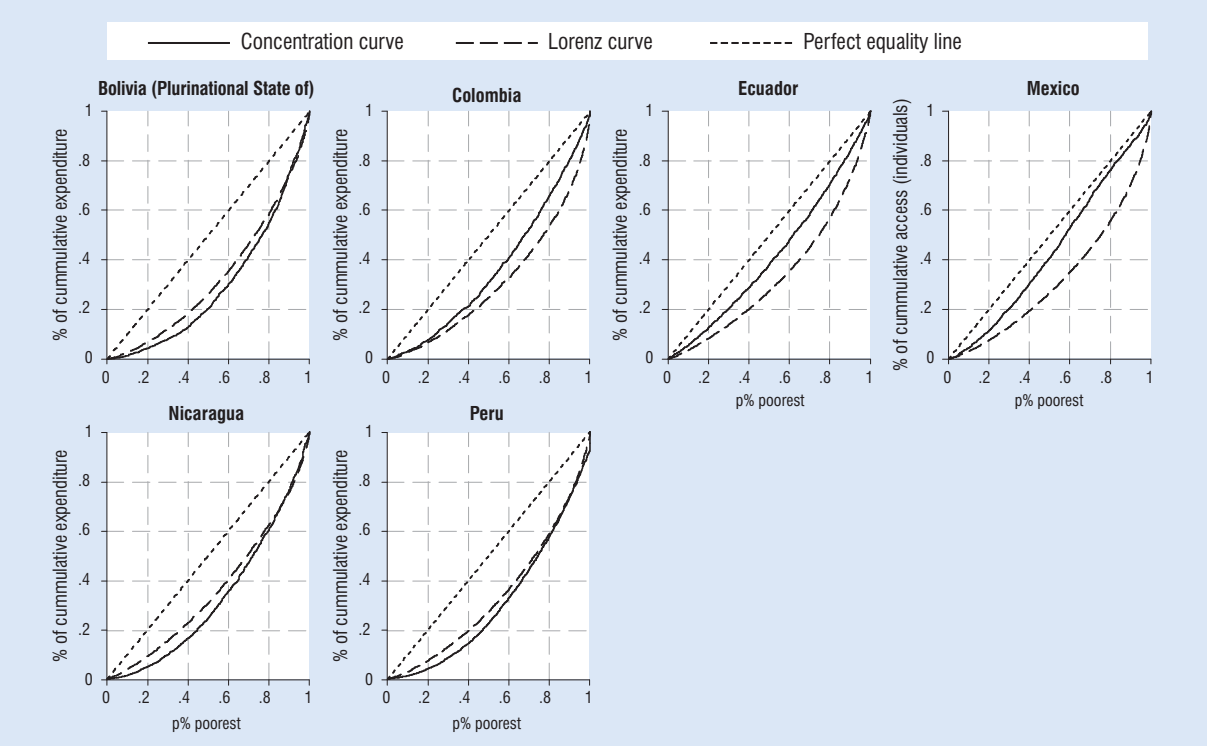
Country	quintiles of per capita household expenditure					Total	Concentration index
	1	2	3	4	5		
Bolivia (Plurinational State of)	4.3	8.6	17.2	25.0	45.0	100	40.8
Colombia	7.7	13.6	19.7	25.2	33.7	100	26.7
Ecuador	12.7	16.3	19.2	22.8	29.1	100	16.8
El Salvador	NA	NA	NA	NA	NA	NA	NA
Mexico	11.5	19.0	22.6	23.2	23.7	100	12.6
Nicaragua	5.1	11.4	19.2	24.9	39.3	100	34.8
Panama	NA	NA	NA	NA	NA	NA	NA
Peru	4.3	10.4	18.3	25.0	42.1	100	38.9

b. Expenditures on public transport as a share of household total expenditure (%)

Country	quintiles of per capita household expenditure					Total	Kakwani index
	1	2	3	4	5		
Bolivia (Plurinational State of)	2.5	3.1	4.1	4.8	4.9	3.9	6.3
Colombia	11.0	10.6	11.6	10.9	7.9	10.4	-12.1
Ecuador	10.9	9.7	8.9	7.8	5.6	8.6	-16.9
El Salvador	NA	NA	NA	NA	NA	NA	NA
Mexico	5.7	6.2	5.8	4.6	2.7	5.0	-23.1
Nicaragua	2.2	3.6	4.8	5.4	5.7	4.3	6.6
Panama	NA	NA	NA	NA	NA	NA	NA
Peru	3.0	4.7	6.2	6.5	5.9	5.3	5.9

Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank). All concentration and Kakwani indices are significant at a 10 per cent level (by bootstrap), except when indicated by "x".

Figure 10. Concentration curves for expenditures on public transport



Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Table 11. Expenditures on *water* by expenditure quintiles

a. Distribution of expenditures on water (%)

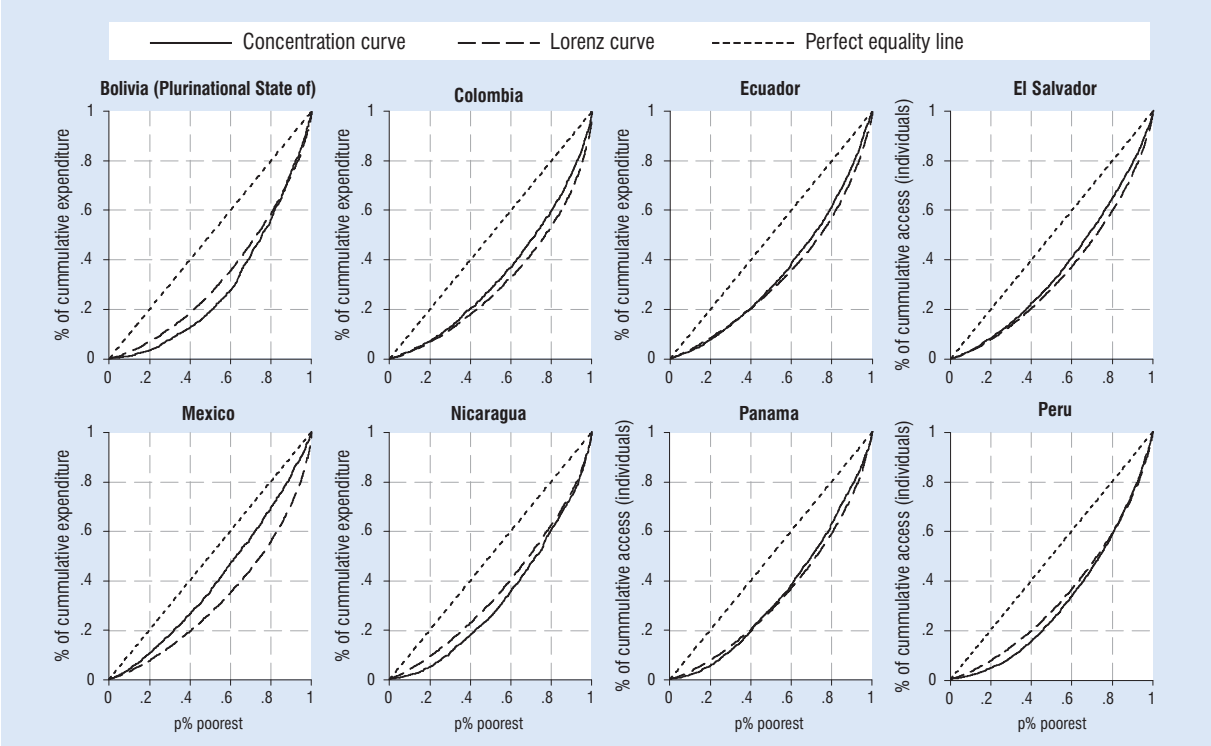
Country	quintiles of per capita household expenditure					Total	Concentration index
	1	2	3	4	5		
Bolivia (Plurinational State of)	3.1	9.5	15.1	28.9	43.5	100	41.4
Colombia	7.5	13.6	17.2	22.4	39.3	100	32.4
Ecuador	7.6	12.9	18.4	23.2	37.9	100	30.1
El Salvador	8.3	14.1	18.6	24.1	34.9	100	27.2
Mexico	10.6	15.9	20.5	22.4	30.6	100	20.3
Nicaragua	4.9	13.0	17.9	24.6	39.5	100	35.1
Panama	6.1	15.3	18.7	24.1	35.9	100	31.1
Peru	4.5	10.9	18.3	25.0	41.3	100	37.1

b. Expenditures on water as a share of household total expenditure (%)

Country	quintiles of per capita household expenditure					Total	Kakwani index
	1	2	3	4	5		
Bolivia (Plurinational State of)	0.7	1.1	1.2	1.7	1.5	1.2	7.0
Colombia	2.7	2.5	2.4	2.3	2.1	2.4	-6.5
Ecuador	1.1	1.3	1.4	1.3	1.2	1.3	-3.5
El Salvador	2.7	2.4	2.3	2.2	1.9	2.3	-4.9
Mexico	0.8	0.8	0.8	0.7	0.5	0.7	-15.5
Nicaragua	0.6	1.2	1.3	1.4	1.3	1.2	6.9
Panama	0.7	1.1	1.0	1.1	0.9	1.0	-1.5[x]
Peru	0.6	0.9	1.1	1.1	1.1	1.0	4.1

Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank). All concentration and Kakwani indices are significant at a 10 per cent level (by bootstrap), except when indicated by "x".

Figure 11. Concentration curves for expenditures on water



Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Table 12. Expenditures on electricity by expenditure quintiles

a. Distribution of expenditures on electricity (%)

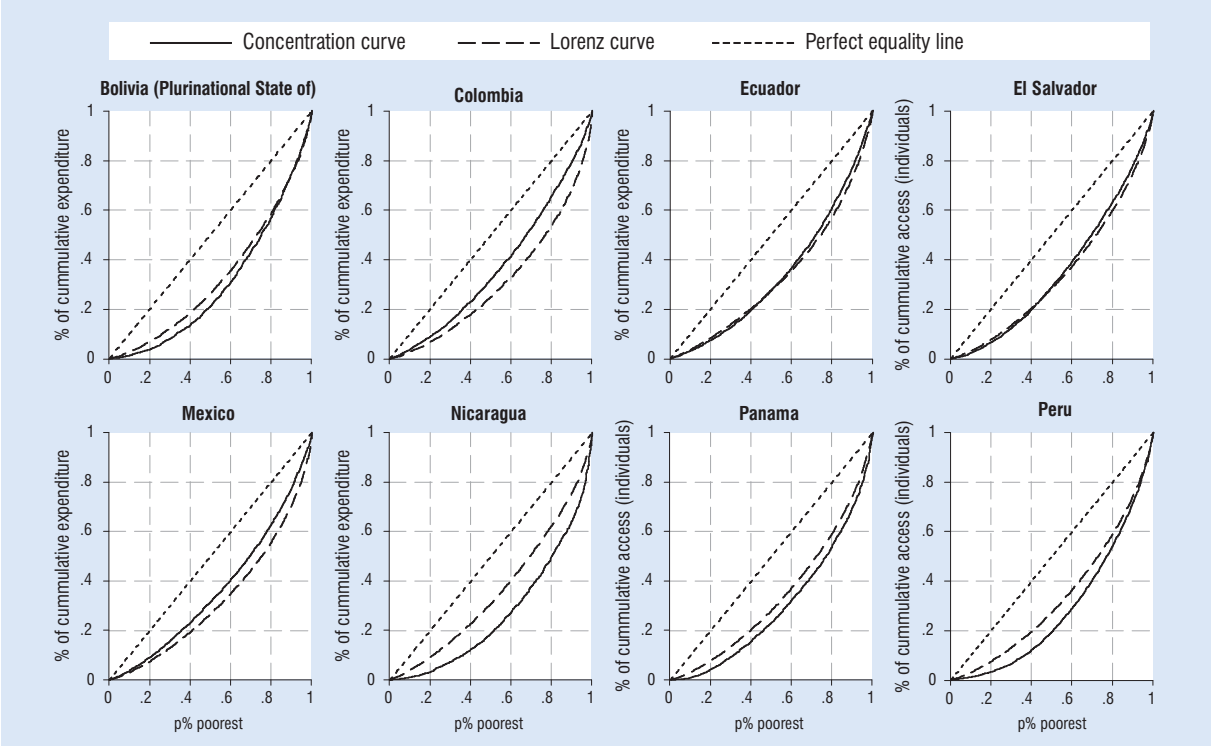
Country	quintiles of per capita household expenditure					Total	Concentration index
	1	2	3	4	5		
Bolivia (Plurinational State of)	3.6	9.9	17.2	26.3	43.0	100	39.9
Colombia	9.0	13.9	18.6	24.3	34.2	100	26.0
Ecuador	7.3	12.3	17.0	24.4	38.8	100	31.8
El Salvador	6.4	13.5	19.2	24.3	36.6	100	30.4
Mexico	9.2	14.1	17.5	22.4	36.9	100	27.4
Nicaragua	3.4	8.9	15.3	22.6	49.7	100	46.7
Panama	4.2	11.6	16.6	22.2	45.4	100	40.6
Peru	3.4	8.8	16.9	25.5	45.5	100	43.0

b. Expenditures on electricity as a share of household total expenditure (%)

Country	quintiles of per capita household expenditure					Total	Kakwani index
	1	2	3	4	5		
Bolivia (Plurinational State of)	1.7	2.6	3.0	3.6	3.2	2.8	5.5
Colombia	6.3	5.0	5.2	4.9	3.5	5.0	-12.7
Ecuador	2.3	2.6	2.7	2.9	2.5	2.6	-1.9
El Salvador	3.8	4.6	4.9	4.5	4.1	4.4	-1.7
Mexico	2.6	2.5	2.4	2.3	1.9	2.3	-8.4
Nicaragua	0.8	1.6	2.1	2.5	3.0	2.0	18.5
Panama	1.3	2.6	2.9	2.9	3.1	2.6	8.4
Peru	0.9	1.4	1.9	2.2	2.2	1.7	9.9

Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank). All concentration and Kakwani indices are significant at a 10 per cent level (by bootstrap), except when indicated by "x".

Figure 12. Concentration curves for expenditures on electricity



Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Table 13. Expenditures on gas by expenditure quintiles

a. Distribution of expenditures on gas (%)

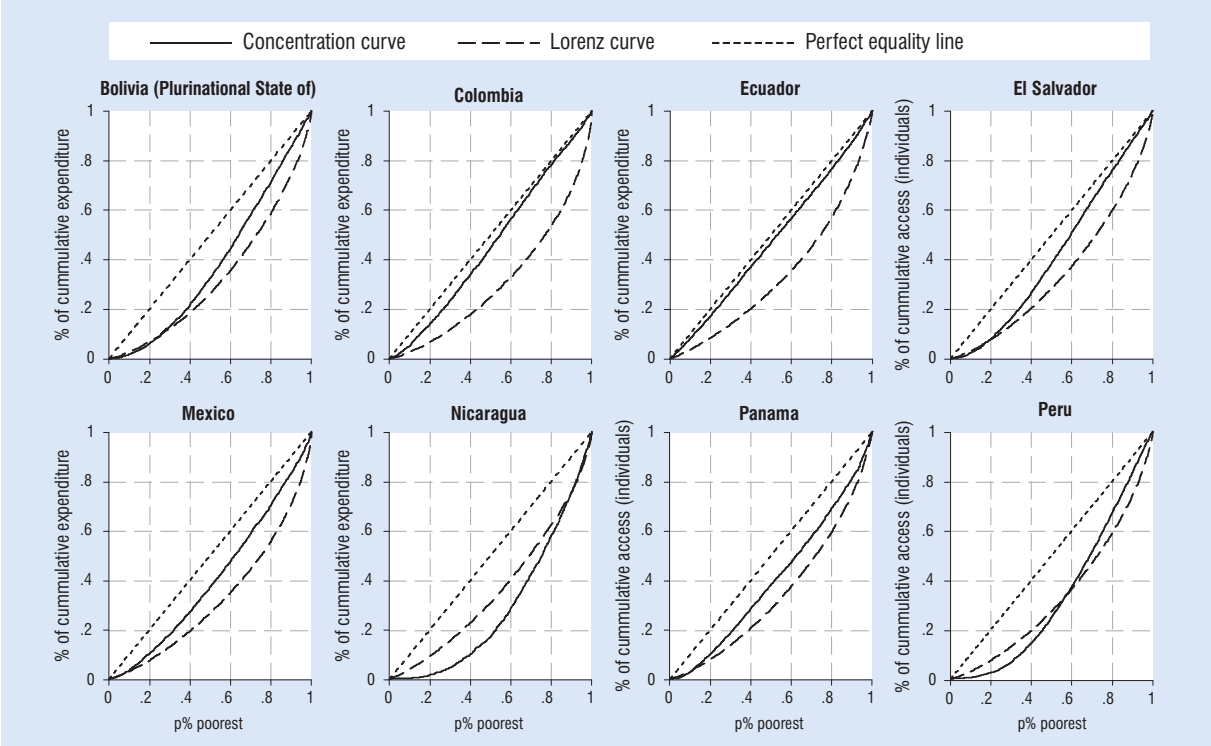
Country	quintiles of per capita household expenditure					Total	Concentration index
	1	2	3	4	5		
Bolivia (Plurinational State of)	5.9	15.8	22.7	26.9	28.6	100	23.3
Colombia	14.1	20.2	22.2	21.9	21.6	100	7.7
Ecuador	17.2	20.0	19.4	20.1	23.3	100	5.4
El Salvador	7.9	18.7	24.3	25.2	23.9	100	16.1
Mexico	10.4	16.8	20.5	22.7	29.6	100	19.1
Nicaragua	1.7	8.4	18.7	29.4	41.9	100	42.8
Panama	10.1	18.7	18.7	21.7	30.8	100	19.7
Peru	2.6	12.0	22.7	30.1	32.5	100	32.3

b. Expenditures on gas as a share of household total expenditure (%)

Country	quintiles of per capita household expenditure					Total	Kakwani index
	1	2	3	4	5		
Bolivia (Plurinational State of)	1.0	1.6	1.7	1.5	1.0	1.4	-11.1
Colombia	4.2	3.3	2.7	2.0	1.1	2.7	-31.1
Ecuador	1.1	0.9	0.7	0.5	0.3	0.7	-28.3
El Salvador	0.8	1.2	1.1	0.9	0.5	0.9	-15.9
Mexico	2.1	2.2	2.1	1.8	1.2	1.9	-16.7
Nicaragua	0.2	0.7	1.3	1.6	1.5	1.1	14.6
Panama	0.7	0.9	0.7	0.6	0.5	0.7	-12.1
Peru	0.3	1.1	1.5	1.6	1.1	1.1	-0.8[x]

Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank). All concentration and Kakwani indices are significant at a 10 per cent level (by bootstrap), except when indicated by "x".

Figure 13. Concentration curves for expenditures on gas



Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Table 14. Total expenditures on services by expenditure quintiles

a. Distribution of expenditures on services (%)

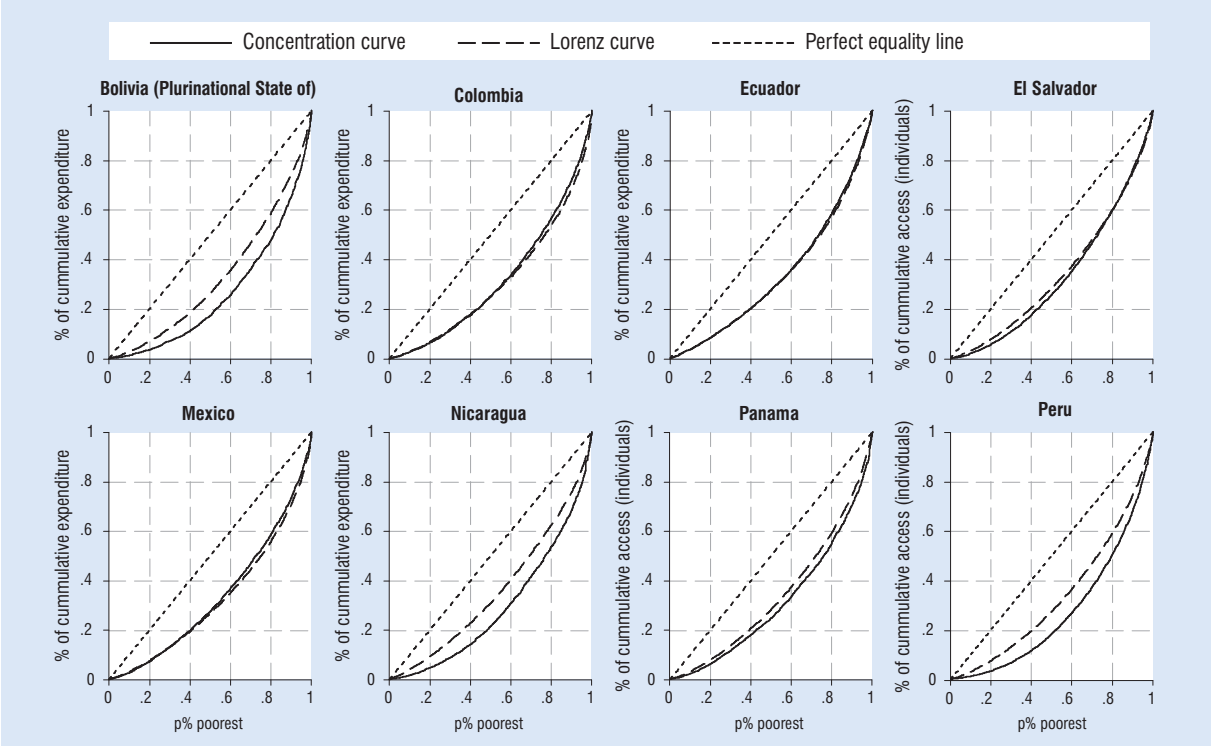
Country	quintiles of per capita household expenditure					Total	Concentration index
	1	2	3	4	5		
Bolivia (Plurinational State of)	3.4	7.7	14.5	22.1	52.3	100	48.0
Colombia	6.2	11.2	16.3	23.0	43.3	100	36.8
Ecuador	8.3	12.0	15.7	22.7	41.4	100	32.8
El Salvador	5.5	12.1	17.6	24.6	40.3	100	34.8
Mexico	7.3	12.6	17.0	21.7	41.4	100	33.5
Nicaragua	4.6	9.6	16.7	22.7	46.4	100	41.9
Panama	6.2	11.7	15.6	21.8	44.7	100	37.7
Peru	3.5	8.2	15.3	23.6	49.5	100	46.0

b. Expenditures on services as a share of household total expenditure (%)

Country	quintiles of per capita household expenditure					Total	Kakwani index
	1	2	3	4	5		
Bolivia (Plurinational State of)	11.7	15.1	19.6	22.4	28.2	19.4	13.6
Colombia	34.6	33.0	36.1	36.6	33.5	34.8	-2.0
Ecuador	31.6	31.7	31.3	32.6	30.4	31.5	-1.0
El Salvador	17.8	24.2	26.0	26.6	25.2	24.0	2.7
Mexico	19.7	21.9	22.6	21.4	19.2	20.9	-2.2
Nicaragua	11.7	17.3	23.5	25.7	32.4	22.1	13.7
Panama	15.4	18.1	18.4	18.6	20.3	18.2	5.6
Peru	9.5	14.2	19.2	22.3	25.2	18.1	12.9

Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank). All concentration and Kakwani indices are significant at a 10 per cent level (by bootstrap), except when indicated by "x".

Figure 14. Concentration curves for total expenditure on services



Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Table 15. Marginal effects on education shares: Tobit estimates

	Bolivia (Plurinational State of)+	Colombia+	Ecuador	Mexico	Nicaragua	Panama	Peru
Log per capita household consumption	1.0163[a] (0.1905)	-1.1178[a] (0.0784)	1.0123." (0.1168)	0.9063[a] (0.0766)	1.0014[a] (0.1111)	0.8597." (0.1411)	0.8645[a] (0.0586)
Household size	-1.3010[a] (0.2587)	-2.1908[a] (0.1468)	-0.9605[a] (0.1535)	-0.5720[a] (0.1142)	-0.9687[a] (0.1343)	-0.6374[a] (0.1819)	-1.0916[a] (0.0750)
Female head of household	1.8834[a] (0.3454)	1.1130[a] (0.1464)	3.0278[a] (0.2352)	1.9212[a] (0.1474)	1.2113[a] (0.1904)	2.0341[a] (0.2388)	1.3174[a] (0.1060)
Married head of household	-1.2847[a] (0.3459)	-0.0802 (0.1507)	1.2627[a] (0.2283)	1.0938[a] (0.1534)	0.2597 (0.1941)	0.9516[a] (0.2384)	0.8498[a] (0.1020)
Age of head of household	-0.0274[a] (0.0079)	-0.0410[a] (0.0037)	-0.0680[a] (0.0048)	-0.0689[a] (0.0036)	-0.0104[b] (0.0042)	-0.0574". (0.0059)	-0.0300[a] (0.0023)
Education of head of household	0.2810[a] (0.0276)	0.3789[a] (0.0132)	0.2757[a] (0.0171)	0.2114[a] (0.0122)	0.2456[a] (0.0165)	0.2138[a] (0.0224)	0.2311[a] (0.0083)
Rural household	1.5342[a] (0.0629)	1.3810[a] j0.0337)	1.6785[a] (0.0390)	1.4139[a] (0.0286)	0.6856[a] (0.0260)	1.1992[a] (0.0404)	0.8716[a] (0.0166)
Log likelihood	**-11 223.0000**	**-59 636.0000**	**-28 856.0000**	**-47 002.0000**	**-17 880.0000**	**-15 454.0000**	**-51 836.0000**
Sigma	**11.0115 (0.1560)**	**13.9626 (0.0895)**	**9.2570 (0.0798)**	**12.3708 (0.0920)**	**6.8375 (0.0718)**	**10.1867 (0.1240)**	**6.4797 (0.0390)**
Observations with share=0	**1 351.0000**	**9 431.0000**	**3 390.0000**	**10 001.0000**	**1 959.0000**	**2 510.0000**	**5 874.0000**
Observations with share>0	**2 722.0000**	**13 400.0000**	**7 326.0000**	**10 525.0000**	**4 925.0000**	**3 745.0000**	**14 699.0000**

Source: Authors' estimates based on SEDLAC (CEDLAS and The World Bank).

Note: Dependent variable is service share on household total consumption. In "+" service as a share of household total expenditure. Standard errors in parentheses: "a" p<0.01, "b" p<0.05, "c" p<0.1.

Table 16. Marginal effects on health shares: Tobit estimates

	Bolivia (Plurinational State of)+	Colombia+	Ecuador	Mexico	Nicaragua	Panama	Peru
Log per capita household consumption	1.5065[a] (0.1343)	0.8628[a] (0.0990)	-0.1448 (0,2425)	1.0462[a] (0.0483)	3.4428[a] (0.2623)	0.0130 (0.3557)	1.4865[a] (0.0563)
Household size	0.0221 (0.1785)	-3.4009[a] (0.2006)	0.6473[b] (0.3228)	0.4197[a] (0.0721)	1.7461[a] (0.3180)	0.2963 (0.4631)	-0.5098[a] (0.0717)
Female head of household	0.1112 (0.2387)	0.0448 (0.1802)	2.4767[a] (0.4692)	0.5458[a] (0.0906)	0.3271 (0.4420)	3.6984[a] (0.5933)	0.4707[a] (0.0985)
Married head of household	0.5163[b] (0.2377)	0.8955[a] (0.1850)	2.8342[a] (0.4532)	0.8433[a] (0.0933)	0.2611 (0.4479)	3.6174[a] (0.5891)	0.8941[a] (0.0944)
Age of head of household	0.0236[a] (0.0053)	0.1315[a] (0.0045)	0.0664[a] (0.0095)	0.0065[a] (0.0021)	0.0662[a] (0.0096)	0.0837[a] (0.0142)	0.0177[a] (0.0022)
Education of head of household	-0.0466[b] (0.0191)	0.4467[a] (0.0165)	0.1007[a] (0.0363)	-0.0442[a] (0:0078)	-0.1449[a] (0.0395)	0.1275[b] (0.0572)	0.0002 (0.0080)
Rural household	0.1905[a] (0.0420)	0.2354[a] (0.0428)	-0.1773[b] (0.0794)	0.2226[a] (0.0175)	0.5318[a] (0.0600)	0.2770[a] (0.1001)	0.3060[a] (0.0154)
Log likelihood	**-9 887.0000**	**-65 246.0000**	**-44 529.0000**	**-51 918.0000**	**-25 252.0000**	**-21 420.0000**	**-53 347.0000**
Sigma	**10.4247 (0.1560)**	**17.1750 (0.1070)**	**21.5147 (0.1550)**	**7.4239 (0.0465)**	**18.2480 (0.1750)**	**31.6252 (0.3570)**	**6.5181.0000 (0.0390)**
Observations with share=0	**1 711.0000**	**8 723.0000**	**971.0000**	**6 760.0000**	**1 265.0000**	**2 138.0000**	**5 615.0000**
Observations with share>0	**2 362.0000**	**14 108.0000**	**9 745.0000**	**13 766.0000**	**5 619.0000**	**4 117.0000**	**14 958.0000**

Source: Authors' estimates based on SEDLAC (CEDLAS and The World Bank).

Note: Dependent variable is service share on household total consumption. In "+" service as a share of household total expenditure. Standard errors in parentheses: "a" p<0.01, "b" p<0.05, "c" p<0.1.

Table 17. Marginal effects on fixed telephone shares: Tobit estimates

	Bolivia (Plurinational State of)+	Colombia+	Ecuador	Mexico	Nicaragua	Panama	Peru
Log per capita household consumption	0.1245[a] (0.0109)	-0.0426 (0.0612)	0.6557[a] (0.0265)	1.181.1[a] (0.0412)	0.5761[a] (0.0247)	0.6727[a] (0.0368)	0.1547[a] (0.0056)
Household size	-0.2670[a] (0.0232)	-4.9338[a] (0.1488)	-0.4806[a] (0.0378)	-0.9527[a] (0.0509)	-0.8954[a] (0.0406)	4.3756[a] (0.0439)	-0.4520[a] (0.0144)
Female head of household	0.0484[a] (0.0169)	0.8714[a] (0.1106)	0.4466[a] (0.0484)	0.9332[a] (0.0673)	0.5951[a] (0.0451)	0.5603[a] (0.0554)	0.0791[a] (0.0088)
Married head of household	0.0325[c] (0.0171)	0.4402[a] (0.1142)	0.3266[a] (0.0475)	0.5312[a] (0.0686)	0.5560[a] (0.0466)	0.4380[a] (0.0565)	0.0456[a] (0.0087)
Age of head of household	0.0053[a] (0.0004)	0.0694[a] (0.0028)	0.0175[a] (0.0010)	0.0432[a] (0.0015)	0.0362[a] (0.0011)	0.0246[a] (0.0014)	0.0056[a] (0.0002)
Education of head of household	0.0128[a] (0.0013)	0.2137[a] (0.0102)	0.0371[a] (0.0036)	0.0696[a] (0.0057)	0.0634[a] (0.0038)	0.0432[a] (0.0051)	0.0129[a] (0.0007)
Rural household	0.0177[a] (0.0033)	-0.0196 (0.0270)	0.0865[a] (0.0086)	0.1036[a] (0.0119)	0.1203[a] (0.0089)	0.0567[a] (0.0107)	0.0256[a] (0.0015)
Log likelihood	**3 456.0000**	**8 471.0000**	**6 928.0000**	**10 631.0000**	**12 459.0000**	**4 551.0000**	**16 526.0000**
Sigma	**4.1332 (0.1340)**	**10.3424 (0.0645)**	**3.6881 (0.0477)**	**7.1670 (0.0749)**	**4.8402 (0.0430)**	**5.2900 (0.1020)**	**3.8797 (0.0495)**
Observations with share=0	**3 456.0000**	**8 471.0000**	**6 928.0000**	**10 631.0000**	**12 459.0000**	**4 551.0000**	**16 526.0000**
Observations with share>0	**617.0000**	**14 114.0000**	**3 788.0000**	**5 903.0000**	**8 067.0000**	**1 687.0000**	**4 047.0000**

Source: Authors' estimates based on SEDLAC (CEDLAS and The World Bank).

Note: Dependent variable is service share on household total consumption. In "+" service as a share of household total expenditure. Standard errors in parentheses: "a" p<0.01, "b" p<0.05, "c" p<0.1.

Table 18. Marginal effects on mobile telephone shares: Tobit estimates

	Bolivia (Plurinational State of)+	Colombia+	Ecuador	El Salvador+	Mexico	Panama	Peru
Log per capita household consumption	0.5361[a] (0.0368)	0.7022[a] (0.0308)	0.8293[a] (0.0434)	0,8274[a] (0.0266)	0.6085[a] (0.0204)	0.6002[a] (0.0302)	0.2240[a] (0.0070)
Household size	-0.6128[a] (0.0497)	-0.5407[a] (0.0736)	-0.2358[a] (0.0567)	0.1644[a] (0.0317)	-0.2227[a] (0.0310)	-0.2828[a] (0.0355)	-0.2331[a] (0.0098)
Female head of household	0.1005[a] (0.0601)	-0.1710[a] (0.0527)	-0.2747[a] (0.0816)	0.1079[b] (0.0427)	0.1283[a] (0.0367)	0.1036[b] (0.0455)	-0.0270[b] (0.0108)
Married head of household	0.0265 (0.0602)	-0.0261 (0.0540)	-0.2075[a] (0.0780)	0.0723[a] (0.0432)	0.0461 (0.0376)	0.0831[a] (0.0450)	-0.0335[a] (0.0104)
Age of head of household	-0.0050[a] (0.0014)	-0.0117[a] (0.0014)	-0.0152[a] (0.0017)	-0.0060[a] (0.0010)	-0.0129[a] (0.0009)	-0.0122[a] (0.0012)	-0.0019[a] (0.0003)
Education of head of household	0.0270[a] (0.0047)	0.1082[a] (0.0049)	0.0363[a] (0.0062)	0.0269[a] (0.0036)	0.0315[a] (0.0031)	0.0272[a] (0.0042)	0.0094[a] (0.0009)
Rural household	0.1068[a] (0.0114)	0.1883[a] (0.0137)	0.2789[a] (0.0140)	0.1402[a] (0.0076)	0.1369[a] (0.0074)	0.1032[a] (0.0085)	0.0360[a] (0.0019)
Log likelihood	**-4 633.0000**	**-24 886.0000**	**-19 346.0000**	**-19 532.0000**	**-28 853.0000**	**-7 123.0000**	**-14 479.0000**
Sigma	**3.5361 (0.0773)**	**13.3240 (0.1480)**	**4.1075 (0.0423)**	**5.3138 (0.0626)**	**3.9495 (0.0347)**	**3.4352 (0.0587)**	**2.3266 (0.0282)**
Observations with share=0	**2 738.0000**	**17 812.0000**	**4 999.0000**	**11 759.0000**	**12 374.0000**	**4 124.0000**	**16 110.0000**
Observations with share>0	**1 335.0000**	**4 994.0000**	**5 717.0000**	**4 776.0000**	**8 152.0000**	**2 089.0000**	**4 463.0000**

Source: Authors' estimates based on SEDLAC (CEDLAS and The World Bank).

Note: Dependent variable is service share on household total consumption. In "+" service as a share of household total expenditure. Standard errors in parentheses: "a" p<0.01, "b" p<0.05, "c" p<0.1.

Table 19. Marginal effects on total telecommunication shares: Tobit estimates

	Bolivia (Plurinational State of)+	Colombia+	Ecuador	El Salvador+	Mexico	Nicaragua	Panama	Peru
Log per capita household consumption	1.2083[a] (0.0616)	0.4240[a] (0.0875)	1.6034[c] (0.0666)	1.9181[a] (0.0523)	0.9643[a] (0.0350)	0.9554[a] (0.0387)	1.4166[a] (0.0600)	0.7349[a] (0.0184)
Household size	-0.7826[a] (0.0786)	-6.1783[a] (0.2007)	-0.8672[c] (0.0879)	-0.7495[a] (0.0641)	-0.8392[a] (0.0527)	-0.6776[a] (0.0470)	-0.7683[a] (0.0717)	-0.7504[c] (0.0242)
Female head of household	0.4868[a] (0.1028)	0.5561[a] (0.1576)	-0.0860 (0.1252)	1.0851[a] (0.0866)	0.8623[a] (0.0643)	0.2826[a] (0.0560)	0.7507[a] (0.0922)	0.1156[a] (0.0297)
Married head of household	0.2946[a] (0.1032)	0.2417 (0.1624)	-0.3088[b] (0.1204)	0.6088[c] (0.0882)	0.6198[a] (0.0661)	0.1244[b] (0.0580)	0.5826[a] (0.0918)	0.0749[a] (0.0287)
Age of head of household	0.0092[a] (0.0024)	0.0665[a] (0.0040)	-0.0151[a] (0.0026)	0.0387[a] (0.0019)	0.0175[a] (0.0015)	0.0038[a] (0.0014)	0.0152[a] (0.0022)	0.0102[a] (0.0007)
Education of head of household	0.0941[a] (0.0082)	0.3590[a] (0.0145)	0.0753[a] (0.0096)	0.0898[a] (0.0075)	0.0851[c] (0.0055)	0.0327[c] (0.0046)	0.0895[a] (0.0087)	0.0473[a] (0.0024)
Rural household	0.1433[a] (0.0190)	0.0460 (0.0385)	0.2974[a] (0.0216)	0.1890[a] (0.0151)	0.1704[a] (0.0127)	0.0935[c] (0.0084)	0.1484[a] (0.0172)	0.1053[a] (0.0050)
Log likelihood	**-7 148.0000**	**-65 213.0000**	**-25 271.0000**	**-32 525.0000**	**-45 707.0000**	**-6 768.0000**	**-10 663.0000**	**-24 405.0000**
Sigma	**3.7891 (0.0588)**	**14.7118 (0.0887)**	**4.9927 (0.0428)**	**6.3732 (0.0534)**	**4.1722 (0.0259)**	**7.3775 (0.1430)**	**4.6835 (0.0634)**	**3.5701 (0.0319)**
Observations with share=0	**1 804.0000**	**7 979.0000**	**3 137.0000**	**7 998.0000**	**6 090.0000**	**5 274.0000**	**3 156.0000**	**13 252.0000**
Observations with share>0	**2 269.0000**	**14 852.0000**	**7 579.0000**	**8 537.0000**	**14 436.0000**	**1 610.0000**	**3 099.0000**	**7 321.0000**

Source: Authors' estimates based on SEDLAC (CEDLAS and The World Bank).

Note: Dependent variable is service share on household total consumption. In "+" service as a share of household total expenditure. Standard errors in parentheses: "a" p<0.01, "b" p<0.05, "c" p<0.1.

Table 20. Marginal effects on public transport shares: Tobit estimates

	Bolivia (Plurinational State of)+	Colombia+	Ecuador	Mexico	Nicaragua	Peru
Log per capita household consumption	0.7318[a] (0.1136)	-1.9500[a] (0.1578)	-2.0412[a] (0.1680)	-0.3272[a] (0.0591)	3.1834[a] (0.1488)	2.1363[a] (0.0710)
Household size	-0.3731[b] (0.1515)	-5.8544[a] (0.3037)	0.3089 (0.2228)	-0.6906[a] (0.0881)	0.2880[c] (0.1732)	-0.9290[a] (0.0899)
Female head of household	0.3973[b] (0.2020)	0.7374[b] (0.2878)	0.6874[b] (0.3237)	0.6304[a] (0.1098)	0.2353 (0.2367)	0.2234[c] (0.1218)
Married head of household	0.5080[b] (0.2012)	-0.0615 (0.2959)	0.0616 (0.3125)	-0.2286[b] (0.1130)	-0.0909 (0.2401)	0.4642[a] (0.1166)
Age of head of household	0.0146[a] (0.0045)	-0.0209[a] (0.0072)	0.0035 (0.0066)	-0.0244[a] (0.0026)	-0.0116[b] (0.0053)	-0.0091[a] (0.0027)
Education of head of household	0.0535[a] (0.0162)	0.2823[a] (0.0266)	0.1591[a] (0.0251)	-0.0508[a] (0.0095)	-0.0127 (0.0209)	0.0381[a] (0.0100)
Rural household	-0.0767[b] (0.0362)	0.14214[b] (0.0674)	0.2062[a] (0.0546)	0.2193[a] (0.0213)	0.3899[a] (0.0331)	0.2978[a] (0.0194)
Log likelihood	**-10 021.0000**	**-77 270.0000**	**-37 392.0000**	**-54 199.0000**	**-15 589.0000**	**-56 344.0000**
Sigma	**6.2463 (0.0889)**	**24.5761 (0.1470)**	**13.1948 (0.1010)**	**7.5577 (0.0475)**	**12.0304 (0.1560)**	**7.0405 (0.0417)**
Observations with share=0	**1 306.0000**	**7 304.0000**	**1 757.0000**	**6 304.0000**	**3 405.0000**	**5 050.0000**
Observations with share>0	**2 767.0000**	**15 527.0000**	**8 959.0000**	**14 222.0000**	**3 479.0000**	**15 523.0000**

Source: Authors' estimates based on SEDLAC (CEDLAS and The World Bank).

Note: Dependent variable is service share on household total consumption. In "+" service as a share of household total expenditure. Standard errors in parentheses: "a" p<0.01, "b" p<0.05, "c" p<0.1.

Table 21. Marginal effects on water shares: Tobit estimates

	Bolivia (Plurinational State of)+	Colombia+	Ecuador	El Salvador+	Mexico	Nicaragua	Panama	Peru
Log per capita household consumption	-0.1718[a] (0.0332)	-0.7147[a] (0.0400)	0.0569[b] (0.0255)	-0.7248[a] (0.0295)	-0.0746[a] (0.0136)	-0.0560[b] (0.0250)	-0.0282 (0.0242)	-0.0416[a] (0.0126)
Household size	-1.1500[a] (0.0457)	-2.4873[a] (0.0780)	-0.6722[a] (0.0347)	-1.1452[a] (0.0393)	-0.4706[a] (0.0210)	-1.1295[a] (0.0317)	4.4258[a] (0.0314)	-1.0529[a] (0.0173)
Female head of household	0.0947 (0.0591)	0.1806[b] (0.0736)	0.2056[a] (0.0490)	0.2032[a] (0.0528)	0.0714[a] (0.0253)	0.1650[a] (0.0411)	0.1254[a] (0.0398)	0.0874[a] (0.0216)
Married head of household	-0.0543 (0.0589)	-0.0387 (0.0756)	0.2397[a] (0.0475)	0.0703 (0.0538)	0.0838[a] (0.0261)	0.0778[c] (0.0421)	0.0197 (0.0391)	0.0221 (0.0209)
Age of head of household	0.0059[a] (0.0013)	0.0401[a] (0.0018)	0.0091[a] (0.0010)	0.0206[a] (0.0012)	0.0032[a] (0.0006)	0.0116[a] (0.0009)	0.0093[a] (0.0010)	0.0057[a] (0.0005)
Education of head of household	0.0172[a] (0.0048)	0.0900[a] (0.0068)	0.0030 (0.0038)	0.0607[a] (0.0047)	0.0038[c] (0.0022)	0.0273[a] (0.0037)	0.0107[a] (0.0039)	0.0062[a] (0.0018)
Rural household	-0.0678[a] (0.0107)	-0.1458[a] (0.0173)	-0.0014 (0.0084)	-0.2331[a] (0.0091)	-0.0168[a] (0.0050)	-0.0392[a] (0.0060)	4.0413[a] (0.0069)	-0.0277[a] (0.0035)
Log likelihood	**-6 711.0000**	**-55 828.0000**	**-17 691.0000**	**-36 141.0000**	**-30 824.0000**	**-8 973.0000**	**-9 032.0000**	**-26 697.0000**
Sigma	**1.7656 (0.0236)**	**5.9149 (0.0335)**	**2.3686 (0.0226)**	**3.0762 (0.0197)**	**2.2776 (0.0165)**	**2.0000 (0.0263)**	**1.4393 (0.0162)**	**1.5883 (0.0111)**
Observations with share=0	**1 080.0000**	**4 952.0000**	**4 311.0000**	**3 480.0000**	**9 546.0000**	**3 484.0000**	**1 508.0000**	**8 882.0000**
Observations with share>0	**2 993.0000**	**16 368.0000**	**6 398.0000**	**13 054.0000**	**10 980.0000**	**3 393.0000**	**4 355.0000**	**11 691.0000**

Source: Authors' estimates based on SEDLAC (CEDLAS and The World Bank).

Note: Dependent variable is service share on household total consumption. In "+" service as a share of household total expenditure. Standard errors in parentheses: "a" p<0.01, "b" p<0.05, "c" p<0.1.

Table 22. Marginal effects on electricity shares: Tobit estimates

	Bolivia (Plurinational State of)+	Colombia+	Ecuador	El Salvador+	Mexico	Nicaragua	Panama	Peru
Log per capita household consumption	-0.0664 (0.0744)	-1.3953[a] (0.0651)	0.0061 (0.0487)	-0.3549[a] (0.0514)	-0.1971[a] (0.0328)	0.5447[a] (0.0449)	0.6542[a] (0.0577)	-0.0415[b] (0.0192)
Household size	-2.3082[a] (0.1018)	-1.7830[a] (0.1237)	-0.2364[a] (0.0652)	-1.4889[a] (0.0680)	-0.5535[a] (0.0498)	-1.6430[a] (0.0549)	-0.9962[a] (0.0726)	-1.4176[a] (0.0253)
Female head of household	0.3880[a] (0.1327)	0.1805 (0.1197)	0.6245[a] (0.0942)	1.0179[a] (0.0918)	0.0905 (0.0615)	0.3871[a] (0.0728)	0.8622[a] (0.0929)	0.2384[a] (0.0336)
Married head of household	0.0952 (0.1323)	0.0729 (0.1230)	0.7132[a] (0.0912)	0.8725[a] (0.0936)	0.2030[a] (0.0632)	0.2267[a] (0.0745)	0.8217[a] (0.0919)	0.1820[a] (0.0323)
Age of head of household	0.0221[a] (0.0030)	0.0687[a] (0.0030)	0.0277[a] (0.0019)	0.0416[a] (0.0020)	0.0194[a] (0.0015)	0.0187[a] (0.0017)	0.0226[a] (0.0023)	0.0168[a] (0.0008)
Education of head of household	0.0597[a] (0.0107)	0.1462[a] (0.0110)	0.0381[a] (0.0073)	0.0497[a] (0.0081)	0.0295[a] (0.0053)	0.0539[a] (0.0065)	0.0570[a] (0.0090)	0.0547[a] (0.0028)
Rural household	-0.0923[a] (0.0239)	-0.2209[a] (0.0280)	-0.0427[a] (0.0160)	-0.3209[a] (0.0158)	-0.0086 (0.0120)	-0.0030 (0.0105)	0.0058 (0.0166)	-0.0327[a] (0.0054)
Log likelihood	**-8 739.0000**	**-73 783.0000**	**-23 842.0000**	**-44 693.0000**	**-44 211.0000**	**-11 403.0000**	**-12 981.0000**	**-33 476.0000**
Sigma	**3.7399 (0.0519)**	**9.6287 (0.0499)**	**3.6843 (0.0314)**	**4.8306 (0.0295)**	**4.5205 (0.0300)**	**3.3176 (0.0407)**	**3.3444 (0.0369)**	**1.9865 (0.0127)**
Observations with share=0	**1 189.0000**	**3 456.0000**	**2 919.0000**	**2 346.0000**	**7 426.0000**	**3 141.0000**	**1 678.0000**	**6 854.0000**
Observations with share>0	**2 884.0000**	**19 273.0000**	**7 797.0000**	**14 187.0000**	**13 100.0000**	**3 740.0000**	**4 484.0000**	**13 719.0000**

Source: Authors' estimates based on SEDLAC (CEDLAS and The World Bank).

Note: Dependent variable is service share on household total consumption. In "+" service as a share of household total expenditure. Standard errors in parentheses: "a" p<0.01, "b" p<0.05, "c" p<0.1.

Table 23. Marginal effects on gas shares: Tobit estimates

	Bolivia (Plurinational State of)+	Colombia+	Ecuador	El Salvador+	Mexico	Nicaragua	Panama	Peru
Log per capita household consumption	-0.2251[a] (0.0416)	-1.2880[a] (0.0349)	-0.3181[a] (0.0115)	0.0328[c] (0.0170)	0.0112 (0.0260)	0.2950[a] (0.0227)	-0.0995[a] (0.0204)	0.1021[a] (0.0162)
Household size	-1.2207[a] (0.0572)	-2.0401[a] (0.0683)	0.0209 (0.0152)	-0.4268[a] (0.0220)	-0.6400[a] (0.0395)	-0.9682[a] (0.0331)	-0.1430[a] (0.0262)	-1.1608[a] (0.0222)
Female head of household	0.1583[b] (0.0735)	0.4473[a] (0.0644)	0.1680[a] (0.0224)	0.3738[a] (0.0304)	0.3244[a] (0.0486)	0.1708[a] (0.0352)	0.1555[a] (0.0330)	0.3197[a] (0.0275)
Married head of household	-0.0137 (0.0734)	0.6033[a] (0.0664)	0.1647[a] (0.0216)	0.3522[a] (0.0310)	0.4347[a] (0.0502)	0.0692[c] (0.0366)	0.1194[a] (0.0325)	0.2732[a] (0.0267)
Age of head of household	-0.0063[a] (0.0016)	0.0119[a] (0.0016)	0.0006 (0.0004)	0.0010 (0.0007)	0.0175[a] (0.0011)	-0.0003 (0.0008)	-0.0014[c] (0.0008)	0.0017[a] (0.0006)
Education of head of household	0.0219[a] (0.0059)	0.0149[b] (0.0059)	-0.0045[a] (0.0017)	0.0155[a] (0.0026)	0.0118[a] (0.0041)	0.0337[a] (0.0030)	0.0051 (0.0032)	0.0431[a] (0.0022)
Rural household	-0.1251[a] (0.0136)	-0.2682[a] (0.0150)	-0.0462[a] (0.0038)	-0.0016 (0.0052)	0.0499[a] (0.0094)	-0.0034 (0.0056)	-0.1091[a] (0.0064)	-0.0014 (0.0046)
Log likelihood	**-6 863.0000**	**-54 101.0000**	**-12 535.0000**	**-23 877.0000**	**-36 247.0000**	**-6 650.0000**	**-8 458.0000**	**-26 434.0000**
Sigma	**2.2452 (0.0333)**	**5.3178 (0.0315)**	**0.7896 (0.0060)**	**2.3167 (0.0203)**	**3.9821 (0.0308)**	**3.5317 (0.0638)**	**1.3792 (0.0173)**	**2.3289 (0.0189)**
Observations with share=0	**1 430.0000**	**6 826.0000**	**1 360.0000**	**8 317.0000**	**10 038.0000**	**4 906.0000**	**2 444.0000**	**11 157.0000**
Observations with share>0	**2 643.0000**	**15 841.0000**	**9 356.0000**	**8 218.0000**	**10 488.0000**	**1 978.0000**	**3 802.0000**	**9 416.0000**

Source: Authors' estimates based on SEDLAC (CEDLAS and The World Bank).

Note: Dependent variable is service share on household total consumption. In "+" service as a share of household total expenditure. Standard errors in parentheses: "a" p<0.01, "b" p<0.05, "c" p<0.1.

Table 24. List of Sub Saharan Africa household surveys

Country	Year	Survey	Households	Rural share	Sample share	HHs (Millions)
Benin	2003	Questionnaire des indicateurs de base du bien-être	5 350.0000	0.6153	0.0039	1.4
Burkina Faso	2003	Enquête burkinabe sur les conditions de vie des ménages	8 500.0000	0.6941	0.0048	1.8
Burundi	1998	Enquête prioritaire	7 086.0000	0.5755	0.0055	1.3
Cameroon	2001	Deuxième enquête camerounaise auprès des ménages	10 992.0000	0.3530	0.0035	3.1
Côte d'Ivoire	2002	Enquête du niveau de vie des ménages	10 801.0000	0.4787	0.0034	3.2
Ethiopia	2000	Household income consumption and expenditure survey	25 861.0000	0.6664	0.0022	11.5
Gambia	1994	Enquête intégrale sur les conditions de vies des ménages (AV)	4 416.0000	0.3804	0.0046	1.0
Ghana	1998	Ghana living standards survey	5 998.0000	0.6334	0.0014	4.4
Guinea-Bissau	1998	Household economic survey	2 085.0000	0.5071	0.0089	0.2
Kenya	2002	Questionario de indicadores basicos de bem-estar	3 216.0000	0.7910	0.0206	02
Madagascar	1997	Welfare monitoring survey III	10 874.0000	0.8243	0.0020	5.5
Malawi	2004	Integrated household survey	11 280.0000	0.8723	0.0042	2.7
Mali	2005	Enquête périodique auprès des ménages	11 781.0000	0.5027	0.0030	3.9
Mozambique	2001	L'enquête malienne d'évaluation de la pauvreté	7 480.0000	0.6404	0.0072	1.0
Niger	2005	Questionnaire des indicateurs de base du bien-être	6 998.0000	0.6916	0.0034	2.1
Nigeria	2004	Nigeria living standards survey	19 815.0000	0.7578	0.0007	27.5
Rwanda	1998	Enquête intégrale sur les conditions de vie des ménages	6 420.0000	0.6210	0.0040	1.6
Senegal	2001	Enquête sénégalaise auprès des ménages	6 593.0000	0.4846	0.0062	1.1
Tanzania (United Republic of)	2000	Household budget survey	22 132.0000	0.3435	0.0034	6.4
Togo	2006	Questionnaire des indicateurs de base du bien-être	7 500.0000	0.6533	0.0066	1.1
Uganda	2005	Uganda national household survey	7 425.0000	0.7712	0.0014	5.2
South Africa	2000	Income and expenditure survey	25 749.0000	0.4314	0.0024	10.8
Zambia	2003	Living conditions monitoring survey III	4 837.0000	0.4788	0.0023	2.1

Source: SSA's household surveys collected by the authors.

Table 25. Demographic characteristics by country

Population, age and male share by region

Country	National			Urban			Rural		
	Population	Age	Male	Population	Age	Male	Population	Age	Male
Benin	6.7	21.7	0.487	2.4	22.7	0.487	4.3	21.1	0.487
Burkina-Faso	9.9	24.4	0.485	1.9	25.2	0.496	8.0	24.2	0.483
Burundi	6.1	20.8	0.470	0.3	21.9	0.503	5.8	20.7	0.469
Cameroon	15.5	22.3	0.490	6.6	21.7	0.499	8.8	22.7	0.483
Côte d'Ivoire	17.1	22.2	0.498	8.6	21.7	0.498	8.3	22.7	0.498
Ethiopia	55.5	21.2	0.492	7.5	23.1	0.453	48.0	20.9	0.498
Gambia	1.8	22.0	0.501	0.7	21.4	0.495	1.0	21.2	0.495
Ghana	19.5	23.4	0.478	6.8	24.1	0.468	12.8	23.0	0.483
GIN	6.3	22.7	0.481	2.1	21.7	0.496	4.2	23.1	0.474
Guinea-Bissau	1.2	21.1	0.492	0.3	20.7	0.493	0.9	21.3	0.491
Kenya	25.5	22.0	0.491	4.0	21.8	0.516	21.5	22.1	0.486
Madagascar	18.8	21.7	0.494	4.1	23.0	0.489	14.7	21.3	0.496
Mali	10.6	21.4	0.497	2.8	21.4	0.494	7.8	21.4	0.498
Niger	12.9	20.2	0.494	2.2	21.7	0.490	10.7	19.9	0.495
Nigeria	128.9	24.3	0.509	56.6	24.5	0.512	72.4	24.1	0.506
Rwanda	8.0	21.0	0.464	0.8	19.9	0.469	7.1	21.2	0.463
Senegal	10.4	21.8	0.480	4.3	22.4	0.478	6.1	21.3	0.481
Tanzania (United Republic of)	31.9	22.1	0.484	6.2	22.6	0.480	25.7	21.9	0.485
Togo	5.3	23.3	0.496	1.8	23.9	0.478	3.5	23.0	0.505
Uganda	28.9	19.5	0.488	4.6	19.8	0.478	24.3	19.4	0.490
ZAF	41.8	26.9	0.476	24.0	28.2	0.483	17.7	25.0	0.468
Zambia	11.2	20.9	0.490	4.7	20.7	0.492	6.6	21.0	0.489

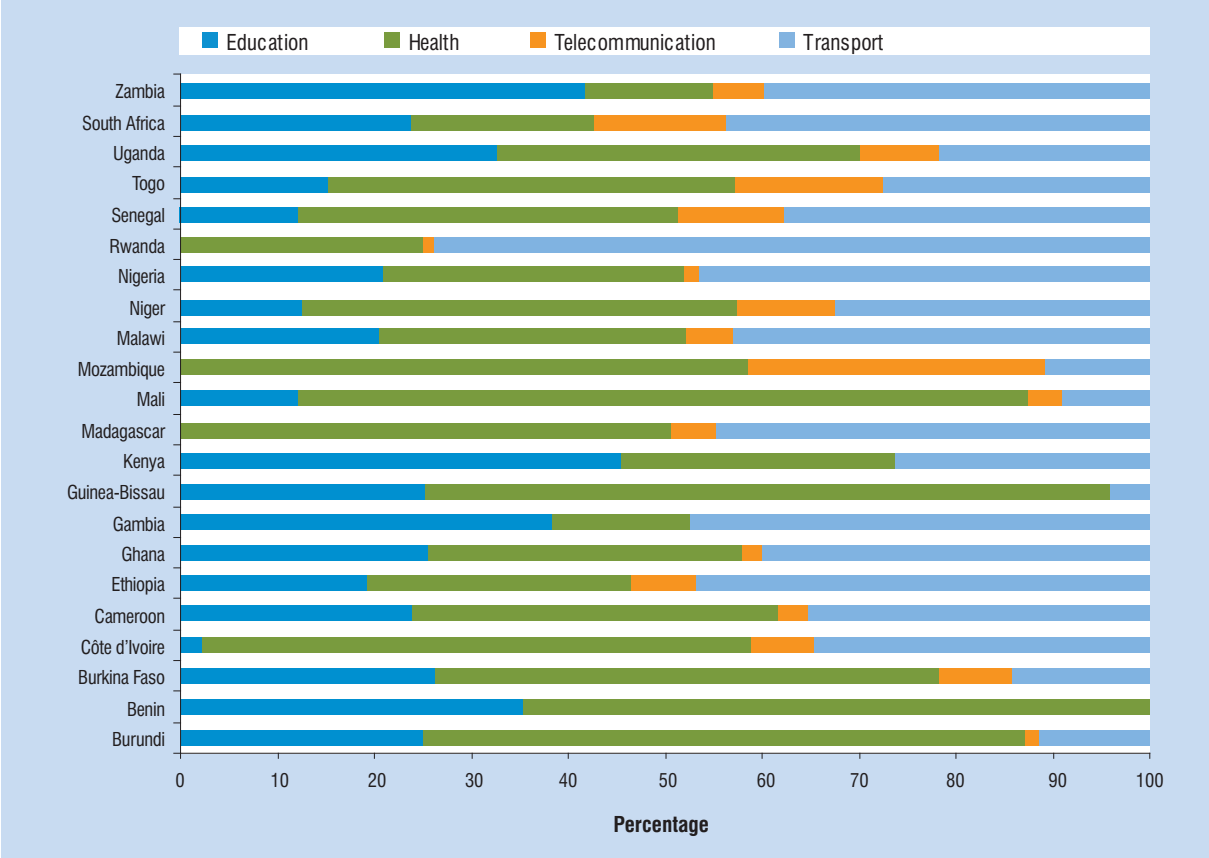
Source: SSA's household surveys collected by the authors. Population is in millions of individuals.

Table 26. Expenditure on services as a percentage of total expenditure in SSA (%)

Country	Education	Health	Telecoms	Transport	Total
Benin	3.0	5.5	...	...	10.6
Burkina Faso	1.7	3.3	0.5	0.9	10.2
Burundi	2.6	6.4	0.1	1.2	15.6
Cameroon	2.9	4.5	0.4	4.2	15.9
Côte d'Ivoire	0.3	8.7	1.0	5.4	16.1
Ethiopia	0.6	0.9	0.2	1.6	3.8
Gambia	5.2	1.9	...	6.5	13.6
Ghana	2.4	3.0	0.2	3.7	13.0
Guinea-Bissau	1.3	3.5	...	0.2	5.0
Kenya	3.4	2.1	...	2.0	12.2
Madagascar	...	1.0	0.1	0.9	3.4
Malawi	1.0	1.5	0.2	2.1	7.7
Mali	0.5	3.0	0.1	0.4	8.0
Mozambique	...	0.2	0.1	0.0	0.6
Niger	0.4	1.3	0.3	1.0	6.9
Nigeria	1.0	1.5	0.1	2.2	8.6
Rwanda	...	0.4	0.0	1.1	4.4
Senegal	1.2	3.7	1.1	3.6	16.7
Tanzania (United Republic of)	...	...	...	...	5.2
Togo	1.8	5.0	1.8	3.3	32.0
Uganda	4.1	4.7	1.0	2.7	16.3
South Africa	2.4	1.9	1.4	4.4	15.6
Zambia	2.2	0.7	0.3	2.1	6.1

Source: Authors' calculations based on SSA's household surveys.

Figure 15. Expenditures on each service as a percentage of total expenditures on services



Source: Authors' calculations based on Asia's household surveys

Table 27. Share of education on total expenditure by total expenditure quintiles

Country	quintiles of per capita total expenditure (%)					Kakwani index
	q1	q2	q3	q4	q5	
Benin	4.3	5.3	5.5	6.2	6.2	-4.5[x]
Burkina-Faso	0.9	2.3	3.3	4.2	5.9	4.9[x]
Burundi	12.5	7.1	5.4	3.5	3.2	-48.3
Cameroon	4.2	4.5	4.7	4.8	4.4	-4.9[x]
Côte d'Ivoire	7.1	8.0	8.9	9.2	10.6	7.6[x]
Ethiopia	0.5	0.7	1.0	1.2	1.1	23.2
Gambia	3.2	2.0	1.4	1.4	1.6	-9.9[x]
Ghana	2.2	2.8	3.2	3.3	3.6	-17.1
Guinea-Bissau	2.9	3.5	3.8	3.6	3.9	0.4[x]
Kenya	1.4	1.7	2.1	2.2	3.3	9.4[x]
Madagascar	0.6	0.8	1.1	1.3	1.4	...
Malawi	1.5	1.6	1.6	1.5	1.4	10.0
Mali	1.3	2.6	2.9	3.4	4.9	12.4[x]
Mozambique	0.2	0.1	0.2	0.1	0.3	...
Niger	0.8	0.9	1.0	1.4	2.5	21.6
Nigeria	0.6	1.2	1.5	1.8	2.2	19.7
Rwanda	0.3	0.3	0.4	0.5	0.4	...
Senegal	3.9	3.8	3.7	3.5	3.7	15.8
Tanzania (United Republic of)	...	...	...	...	...	...
Togo	2.5	3.9	7.7	5.5	5.5	-10.9[x]
Uganda	4.5	4.9	5.5	5.5	2.9	-43.1[x]
South Africa	0.9	1.0	1.2	2.1	4.1	-1.0[x]
Zambia	0.3	0.6	0.7	0.9	1.0	11.7[x]

Table 28. Share of health on total expenditure by total expenditure quintiles

Country	quintiles of per capita total expenditure (%)					Kakwani index
	q1	q2	q3	q4	q5	
Benin	2.6	2.6	3.2	3.3	3.3	-3.6[x]
Burkina-Faso	0.8	1.1	1.6	2.1	2.8	8.1[x]
Burundi	4.1	2.9	2.1	1.5	2.1	-48.6
Cameroon	2.2	3.0	3.2	3.1	2.7	-0.2[x]
Côte d'Ivoire	0.3	0.3	0.4	0.4	0.4	7.3[x]
Ethiopia	0.2	0.3	0.6	0.9	1.2	1.3[x]
Gambia	8.5	4.7	4.0	4.9	4.1	-1.9[x]
Ghana	1.6	2.9	2.8	2.8	1.6	-2.2[x]
Guinea-Bissau	0.9	1.0	1.2	1.6	1.7	-3.7[x]
Kenya	2.6	3.3	3.5	3.9	3.9	11.6[x]
Madagascar	...	...	...	...	...	0.1[x]
Malawi	0.8	0.9	0.8	0.9	1.6	-17.8
Mali	0.3	0.4	0.4	0.5	0.8	15.7[x]
Mozambique	...	...	...	...	...	20.0[x]
Niger	0.1	0.1	0.3	0.5	0.9	6.5[x]
Nigeria	0.1	0.4	0.7	1.4	2.3	3.7[x]
Rwanda	...	...	...	...	...	...
Senegal	0.9	0.7	0.9	1.1	2.2	1.2[x]
Tanzania (United Republic of)	...	...	...	...	...	...
Togo	1.8	1.3	1.9	2.0	2.2	-24.3[x]
Uganda	2.6	3.4	3.8	5.5	5.0	-62.0[x]
South Africa	2.7	1.9	1.9	2.6	2.8	11.4
Zambia	0.7	1.5	2.1	2.5	4.3	2.9[x]

Note: All Kakwani and concentration indices are statistically different from zero unless it is indicated with an "x" next to the coefficient.

Table 29. Share of telecommunications on total expenditure by total expenditure quintiles

Country	quintiles of per capita total expenditure (%)					Kakwani index
	q1	q2	q3	q4	q5	
Benin	...	...	...	...	...	...
Burkina-Faso	0.0	0.0	0.1	0.4	1.9	29.1
Burundi	0.0	0.0	0.0	0.0	0.6	-43.2
Cameroon	0.0	0.1	0.2	0.5	1.0	28.1
Côte d'Ivoire	0.3	0.6	0.9	1.1	1.9	19.4
Ethiopia	0.0	0.0	0.1	0.3	0.7	58.5
Gambia	...	...	...	...	...	...
Ghana	0.0	0.0	0.1	0.2	0.6	26.4
Guinea-Bissau	...	...	...	...	...	...
Kenya	...	...	...	...	...	...
Madagascar	0.0	0.0	0.0	0.0	0.4	47.2
Malawi	0.0	0.0	0.0	0.1	1.0	42.0
Mali	0.0	0.0	0.1	0.1	0.5	39.9[x]
Mozambique	0.0	0.0	0.0	0.1	0.4	40.2
Niger	0.0	0.0	0.1	0.3	1.1	41.6
Nigeria	0.0	0.0	0.0	0.1	0.3	35.1
Rwanda	0.0	0.0	0.0	0.0	0.1	30.4[x]
Senegal	0.2	0.4	0.7	1.3	2.7	31.6
Tanzania (United Republic of)	...	...	...	...	...	...
Togo	1.1	1.6	1.6	2.2	2.8	44.7[x]
Uganda	0.2	0.5	1.0	1.6	1.8	-33.9[x]
South Africa	0.7	1.1	1.4	1.7	2.0	4.3[x]
Zambia	0.0	0.0	0.0	0.1	1.2	36.0[x]

Table 30. Share of transport on total expenditure by total expenditure quintiles

Country	quintiles of per capita total expenditure (%)					Kakwani index
	q1	q2	q3	q4	q5	
Benin	...	...	...	...	...	0.0
Burkina-Faso	0.1	0.4	0.8	1.2	2.1	16.2
Burundi	0.7	0.6	0.8	1.0	2.8	-34.3
Cameroon	2.9	3.8	4.5	4.8	5.1	5.5
Côte d'Ivoire	3.2	4.2	5.1	6.3	8.0	9.5
Ethiopia	0.2	0.7	1.4	2.1	3.3	34.9
Gambia	7.6	4.7	5.2	5.6	9.4	15.0
Ghana	2.3	3.0	3.8	4.2	5.1	4.9[x]
Guinea-Bissau	0.1	0.2	0.2	0.2	0.4	26.5[x]
Kenya	0.8	1.4	1.9	2.3	3.6	13.1
Madagascar	0.1	0.2	0.4	0.8	3.1	34.7
Malawi	0.4	0.8	1.6	2.7	4.9	19.5
Mali	0.1	0.2	0.3	0.4	0.9	28.9[x]
Mozambique	0.0	0.0	0.0	0.0	0.1	43.9[x]
Niger	0.3	0.5	0.6	1.2	2.2	16.3
Nigeria	0.6	1.4	1.9	2.7	4.4	11.9
Rwanda	0.1	0.3	0.7	1.6	2.6	20.4[x]
Senegal	2.4	2.6	3.0	3.6	6.4	21.2
Tanzania (United Republic of)	...	...	...	...	...	...
Togo	1.8	1.3	3.9	3.7	5.6	85.6[x]
Uganda	1.3	2.3	2.9	3.5	3.6	-41.1[x]
South Africa	3.1	3.8	4.8	5.4	4.8	-0.8[x]
Zambia	0.4	0.9	1.4	2.2	5.6	24.8[x]

Note: All Kakwani and concentration indices are statistically different from zero unless it is indicated with an "x" next to the coefficient.

Table 31. Share of services on total expenditure by total expenditure quintiles

Country	quintiles of per capita total expenditure (%)					Kakwani index
	q1	q2	q3	q4	q5	
Benin	7.7	9.3	10.9	12.2	12.8	-1.6[x]
Burkina-Faso	2.5	5.2	8.5	13.0	21.4	13.4
Burundi	18.9	12.1	10.8	10.8	25.3	-44.4
Cameroon	10.7	14.0	16.5	18.4	19.9	7.2
Côte d'Ivoire	11.2	13.5	15.7	17.7	22.5	10.5
Ethiopia	1.0	2.0	3.3	5.2	7.4	27.8
Gambia	19.3	11.4	10.7	11.9	15.0	6.4[x]
Ghana	8.6	11.9	13.5	14.9	15.8	1.9[x]
Guinea-Bissau	3.9	4.6	5.2	5.3	6.0	-0.2[x]
Kenya	5.9	8.3	10.4	14.1	22.4	15.5
Madagascar	1.2	1.6	2.3	3.4	8.5	26.2
Malawi	4.0	5.4	6.6	8.4	13.9	15.7
Mali	3.1	5.8	6.9	8.6	15.3	19.2
Mozambique	0.3	0.2	0.4	0.5	1.6	28.1[x]
Niger	3.1	4.2	5.1	8.2	14.0	12.5
Nigeria	3.1	6.4	7.9	10.2	15.6	12.8
Rwanda	1.7	3.1	4.4	5.0	8.0	14.5[x]
Senegal	14.6	13.8	14.8	16.5	23.6	12.5
Tanzania (United Republic of)	2.2	3.0	3.5	5.4	11.6	14.9
Togo	26.6	27.9	35.0	32.6	38.1	18.1[x]
Uganda	10.6	14.2	17.1	21.4	18.1	-44.7[x]
South Africa	10.0	11.7	14.1	18.2	23.8	6.8
Zambia	1.6	3.4	4.7	6.4	14.6	22.2

Note: All Kakwani and concentration indices are statistically different from zero unless it is indicated with an "x" next to the coefficient.

Table 32. Marginal effects on education expenditure shares: Tobit estimates

Country	Rural household	Age of head of household	Female head of household	Married head of household	Education of head of household	Log of per capita expenditure	Household size
Benin	-0.021[a] (0.003)	0.001[a] (0.000)	0.042[a] (0.004)	0.009[b] (0.004)	0.007[a] (0.000)	-0.011[a] (0.002)	0.012[a] (0.001)
Burkina Faso	-0.046[a] (0.002)	0.000[a] (0.000)	-0.027[a] (0.004)	0.006[b] (0.003)	0.004[a] (0.000)	-0.005[a] (0.001)	0.005[a] (0.000)
Burundi	0.136[a] (0.015)	0.001[a] (0.000)	-0.052[a] (0.008)	0.005 (0.008)	0.005[a] (0.001)	0.001 (0.002)	0.026[a] (0.001)
Cameroon	-0.007[a] (0.001)	0.001[a] (0.000)	-0.019[a] (0.002)	-0.002 (0.002)	0.005[a] (0.000)	-0.008[a] (0.001)	0.005[a] (0.000)
Côte d'Ivoire	0.037[a] (0.009)	0.003a (0.000)	0.019 (0.017)	0.012 (0.013)	0.003[a] (0.001)	0.019[a] (0.005)	0.011[a] (0.001)
Ethiopia	-0.006[a] (0.001)	0.000[a] (0.000)	-0.006a (0.001)	0.000 (0.001)	0.001[a] (0.000)	0.003[a] (0.000)	0.003[a] (0.000)
Gambia	-0.011 (0.021)	0.002[a] (0.001)	-0.059[a] (0.022)	-0.022 (0.025)	0.007[a] (0.002)	-0.001 (0.010)	0.009[a] (0.002)
Ghana	-0.030[a] (0.003)	0.000 (0.000)	-0.033a (0.003)	0.018[a] (0.003)	...	0.008[a] (0.002)	0.013[a] (0.001)
Guinea-Bissau	-0.025[a] (0.002)	0.000[a] (0.000)	-0.012[a] (0.003)	-0.008[a] (0.002)	0.002[a] (0.000)	0.000 (0.001)	0.002[a] (0.000)
Kenya	-0.004 (0.003)	0.001[a] (0.000)	-0.038[a] (0.003)	0.027a (0.003)	0.004[a] (0.000)	0.020[a] (0.002)	0.016[a] (0.000)
Madagascar	...	...	...	...	...	...	...
Malawi	-0.006[a] (0.001)	0.000[a] (0.000)	-0.013[a] (0.002)	-0.007[a] (0.002)	0.002[a] (0.000)	0.004[a] (0.001)	0.009[a] (0.000)
Mali	-0.022[a] (0.002)	0.000 (0.000)	0.000 (0.004)	...	...	0.008[a] (0.001)	0.001[a] (0.000)
Mozambique	...	...	...	...	...	...	...
Niger	-0.019[a] (0.004)	0.000[a] (0.000)	-0.019[b] (0.009)	0.000 (0.007)	0.002[a] (0.000)	0.000 (0.001)	0.006[a] (0.001)
Nigeria	-0.176[a] (0.008)	0.002[a] (0.000)	-0.082[a] (0.012)	0.027[a] (0.011)	0.004[a] (0.001)	0.154[a] (0.006)	0.023[a] (0.001)
Rwanda	...	...	...	...	...	...	...
Senegal	-0.005[a] (0.001)	0.000[a] (0.000)	-0.008[a] (0.001)	0.005[a] (0.001)	0.002[a] (0.000)	-0.001[b] (0.001)	0.001[a] (0.000)
Tanzania (United Republic of)	...	...	...	...	...	...	...
Togo	0.000 (0.007)	0.000 (0.000)	0.004 (0.008)	-0.003 (0.008)	0.000 (0.001)	0.006[b] (0.003)	0.001 (0.002)
Uganda	-0.050[a] (0.003)	0.001[a] (0.000)	-0.045[a] (0.004)	0.005 (0.004)	0.006[a] (0.000)	-0.005[a] (0.001)	0.014[a] (0.000)
South Africa	-0.003[b] (0.001)	0.000[a] (0.000)	-0.020[a] (0.001)	0.004[a] (0.001)	0.002[a] (0.000)	0.004[a] (0.001)	0.011[a] (0.000)
Zambia	-0.015[a] (0.002)	0.001[a] (0.000)	-0.020[a] (0.003)	0.001 (0.003)	0.004[a] (0.000)	0.011[a] (0.001)	0.009[a] (0.000)

Source: Authors' own estimates based on national household surveys.

Note: Dependent variable is the service share on total household expenditure. Standard errors are in squared brackets and a stands for significance "a" the 1 per cent level and "b" for statistical significance at the 5 per cent level.

Table 33. Marginal effects on health expenditure shares: Tobit estimates

Country	Rural household	Age of head of household	Female head of household	Married head of household	Education of head of household	Log of per capita expenditure	Household size
Benin	-0.003 (0.002)	0.000 (0.000)	0.012[a] (0.003)	0.008[a] (0.003)	0.001[a] (0.000)	0.000 (0.002)	-0.003[a] (0.000)
Burkina Faso	0.021[a] (0.007)	0.000 (0.000)	-0.047[a] (0.011)	0.037[a] (0.010)	-0.002[b] (0.001)	0.072 (0.004)	0.008[a] (0.001)
Burundi	0.027[c] (0.014)	0.000[c] (0.000)	-0.008[a] (0.008)	0.007[a] (0.008)	0.004[a] (0.001)	-0.036[a] (0.002)	-0.002[c] (0.001)
Cameroon	-0.010[a] (0.005)	0.001[a] (0.000)	-0.020[a] (0.007)	-0.011[a] (0.006)	0.005[a] (0.001)	0.048 (0.003)	0.006 (0.001)
Côte d'Ivoire	0.013[a] (0.004)	0.001[a] (0.000)	-0.034[a] (0.007)	0.020[a] (0.005)	-0.001[b] (0.000)	0.026[a] (0.002)	0.002[a] (0.001)
Ethiopia	0.013[a] (0.001)	0.000[a] (0.000)	-0.002 (0.001)	0.005[a] (0.002)	0.000[c] (0.000)	0.013[a] (0.001)	0.003a (0.000)
Gambia	0.008 (0.008)	0.000 (0.000)	-0.007 (0.008)	0.000 (0.009)	0.000 (0.001)	-0.005 (0.003)	0.000 (0.001)
Ghana	0.000 (0.002)	0.000[a] (0.000)	-0.009[a] (0.002)	0.008[a] (0.002)	...	0.011[a] (0.001)	0.002[a] (0.000)
Guinea-Bissau	-0.004 (0.004)	0.000[c] (0.000)	0.001 (0.006)	0.005 (0.005)	0.000 (0.000)	0.009[a] (0.002)	0.002[a] (0.000)
Kenya	0.002 (0.005)	0.000 (0.000)	-0.018[a] (0.005)	0.030[a] (0.005)	0.000 (0.001)	0.039[a] (0.003)	0.013[a] (0.001)
Madagascar	0.006[a] (0.001)	0.000[a] (0.000)	0.002 (0.001)	0.000 (0.001)	0.000[a] (0.000)	0.004[a] (0.001)	0.001[a] (0.000)
Malawi	0.006[a] (0.001)	0.000[a] (0.000)	-0.005[a] (0.002)	0.007[a] (0.002)	0.000[a] (0.000)	0.000 (0.001)	0.002[a] (0.000)
Mali	0.013[a] (0.005)	0.000 (0.000)	0.026[a] (0.008)	...	...	0.048[a] (0.003)	0.001[a] (0.000)
Mozambique	-0.003 (0.003)	0.000[b] (0.000)	-0.005 (0.005)	0.021[a] (0.005)	0.000 (0.000)	-0.002[a] (0.001)	0.000 (0.000)
Niger	0.009[a] (0.005)	0.000 (0.000)	-0.020[b] (0.012)	0.022[a] (0.008)	0.001 (0.001)	-0.003[c] (0.002)	0.000 (0.001)
Nigeria	-0.012[a] (0.002)	0.001[a] (0.000)	-0.022[a] (0.003)	0.005[b] (0.002)	0.000 (0.000)	0.031[a] (0.001)	0.004[a] (0.000)
Rwanda	-0.035[a] (0.008)	0.000 (0.000)	-0.029[a] (0.009)	0.024[a] (0.009)	0.000 (0.001)	0.012[a] (0.003)	0.002[a] (0.001)
Senegal	0.015[a] (0.002)	0.000[b] (0.000)	-0.004[c] (0.002)	-0.003 (0.002)	0.000[c] (0.000)	0.003[a] (0.001)	0.001[a] (0.000)
Tanzania (United Republic of)	...	...	...	...	...	...	...
Togo	-0.031 (0.022)	0.001 (0.001)	-0.034 (0.025)	-0.002 (0.024)	0.003 (0.002)	0.038[a] (0.011)	0.015[a] (0.005)
Uganda	0.005 (0.004)	0.000[b] (0.000)	-0.001 (0.004)	0.010[b] (0.004)	-0.001[a] (0.000)	-0.007[a] (0.001)	0.004[a] (0.000)
South Africa	0.001 (0.001)	0.001[a] (0.000)	-0.003[a] (0.001)	0.008[a] (0.001)	0.001[a] (0.000)	0.017[a] (0.000)	0.003[a] (0.000)
Zambia	-0.001 (0.001)	0.000[b] (0.000)	-0.005[b] (0.002)	0.002 (0.002)	-0.001[a] (0.000)	0.008[a] (0.001)	0.002[a] (0.000)

Source: Authors' own estimates based on national household surveys.

Note: Dependent variable is the service share on total household expenditure. Standard errors are in squared brackets and a stands for significance "a" the 1 per cent level, "b" for statistical significance at the 5 per cent level, and "c" for statistical significance at the 10 per cent level.

Table 34. Marginal effects on telecommunication expenditure shares: Tobit estimates

Country	Rural household	Age of head of household	Female head of household	Married head of household	Education of head of household	Log of per capita expenditure	Household size
Benin	...	...	...	...	...	...	...
Burkina Faso	-0.046[a] (0.005)	0.000 (0.000)	-0.022[a] (0.008)	0.020 (0.006)	0.005[a] (0.000)	0.052 (0.003)	0.006[a] (0.001)
Burundi	0.006 (0.005)	0.000 (0.000)	0.000 (0.004)	-0.003 (0.003)	0.002[a] (0.000)	0.016[a] (0.002)	0.004[a] (0.001)
Cameroon	-0.011[a] (0.001)	0.000[a] (0.000)	0.001[a] (0.001)	-0.005 (0.001)	0.002[a] (0.000)	0.011[a] (0.001)	0.001[a] (0.000)
Côte d'Ivoire	-0.010[a] (0.002)	0.000[b] (0.000)	0.001 (0.003)	-0.008 (0.002)	0.002[a] (0.000)	0.018[a] (0.001)	0.002[a] (0.000)
Ethiopia	-0.036[a] (0.004)	0.001[a] (0.000)	-0.028[a] (0.004)	-0.009[b] (0.004)	0.005[a] (0.000)	0.046[a] (0.002)	0.011[a] (0.001)
Gambia	..	...	...	...	...	...	...
Ghana	-0.020[a] (0.002)	0.000[a] (0.000)	-0.005[b] (0.002)	0.000 (0.003)		0.028[a] (0.002)	0.004[a] (0.000)
Guinea-Bissau	...	...	...	...	...	...	...
Kenya	...	...	...	...	...	...	...
Madagascar	0.019[b] (0.009)	0.000 (0.000)	0.003 (0.014)	-0.017 (0.013)	0.016[a] (0.001)	0.092[a] (0.007)	0.016[a] (0.002)
Malawi	-0.037[a] (0.004)	0.000 (0.000)	-0.014[b] (0.006)	0.004 (0.005)	0.005[a] (0.000)	0.048[a] (0.003)	0.008[a] (0.001)
Mali	-0.215[a] (0.022)	0.001[b] (0.001)	-0.017 (0.020)	...	...	0.141[a] (0.012)	0.005[a] (0.001)
Mozambique	-0.040[a] (0.012)	0.001 (0.000)	-0.066 (0.014)[a]	0.032 (0.015)	0.013[a] (0.002)	0.004[c] (0.002)	-0.003 (0.002)
Niger	-0.058[a] (0.007)	0.000 (0.000)	-0.054 (0.012)[a]	0.014 (0.009)	0.007[a] (0.001)	0.004[c] (0.002)	0.001 (0.001)
Nigeria	-0.135[a] (0.007)	0.000 (0.000)	-0.013[c] (0.007)	-0.003 (0.006)	0.002[a] (0.000)	0.066[a] (0.004)	0.006[a] (0.001)
Rwanda	0.000 (0.001)	0.000[c] (0.000)	0.002 (0.001)[a]	-0.004 (0.001)	0.000[a] (0.000)	0.001[a] (0.000)	0.000[a] (0.000)
Senegal	-0.010[a] (0.001)	0.000[b] (0.000)	-0.007 (0.001)[a]	-0.006 (0.001)	0.001[a] (0.000)	0.018[a] (0.001)	0.002[a] (0.000)
Tanzania (United Republic of)	...	...	...	...	...	...	...
Togo	-0.004 (0.013)	-0.001 (0.000)	-0.012 (0.014)	-0.005 (0.013)	-0.001 (0.001)	0.033[a] (0.007)	0.012[a] (0.003)
Uganda	-0.038[a] (0.002)	-0.001[a] (0.000)	0.013[a] (0.002)	-0.013 (0.002)	0.005[a] (0.000)	0.007[a] (0.001)	0.001[a] (0.000)
South Africa	-0.008[a] (0.001)	0.000[a] (0.000)	-0.004[a] (0.001)	0.001[b] (0.001)	0.001[a] (0.000)	0.007[a] (0.000)	0.001[a] (0.000)
Zambia	-0.002 (0.003)	0.000[a] (0.000)	-0.020[a] (0.005)	0.010[b] (0.005)	0.003[a] (0.000)	0.032[a] (0.002)	0.004[a] (0.001)

Source: Authors' own estimates based on national household surveys.

Note: Dependent variable is the service share on total household expenditure. Standard errors are in squared brackets and a stands for significance "a" the 1 per cent level, "b" for statistical significance at the 5 per cent level, and "c" for statistical significance at the 10 per cent level.

Table 35. Marginal effects on transport expenditure shares: Tobit estimates

Country	Rural household	Age of head of household	Female head of household	Married head of household	Education of head of household	Log of per capita expenditure	Household size
Benin	...	...	...	...	...	...	...
Burkina Faso	0.064[a] (0.009)	-0.001[b] (0.000)	-0.024[a] (0.014)	0.023[a] (0.012)	0.003[a] (0.001)	0.088[a] (0.005)	0.010[a] (0.001)
Burundi	0.038[a] -(0.008)	0.000[b] (0.000)	-0.024[a] (0.006)	0.008 (0.006)	0.002[b] (0.001)	0.021[a] (0.002)	0.004 (0.209)
Cameroon	-0.010[a] (0.005)	0.001[c] (0.000)	-0.020[a] (0.007)	-0.011[a] (0.006)	0.005[a] (0.001)	0.048 (0.003)	0.006[c] (0.001)
Côte d'Ivoire	-0.015[a] (0.004)	0.000 (0.000)	0.005 (0.005)	-0.022[a] (0.004)	0.004[a] (0.000)	0.019[a] (0.002)	0.003[a] (0.001)
Ethiopia	-0.019[a] (0.001)	0.000 (0.000)	0.000 (0.001)	0.002 (0.002)	0.002[a] (0.000)	0.022[a] (0.001)	0.003[a] (0.000)
Gambia	0.017 (0.017)	0.000 (0.001)	0.015 (0.018)	0.017 (0.020)	0.002 (0.002)	0.039[a] (0.009)	0.004[a] (0.001)
Ghana	-0.010[a] (0.002)	0.000[a] (0.000)	-0.001 (0.002)	0.001 (0.002)	...	0.016[a] (0.001)	0.002[a] (0.000)
Guinea-Bissau	-0.009[a] (0.003)	0.000 (0.000)	0.003 (0.004)	-0.004 (0.003)	0.000[c] (0.000)	0.012[a] (0.002)	0.001[a] (0.000)
Kenya	-0.021[a] (0.003)	0.000[a] (0.000)	0.004 (0.003)	0.001 (0.003)	0.002[a] (0.000)	0.034[a] (0.002)	0.005[a] (0.000)
Madagascar	0.097[a] (0.006)	0.000 (0.000)	-0.018[c] (0.011)	0.037[a] (0.010)	0.013[a] (0.001)	0.101[a] (0.005)	0.008[a] (0.001)
Malawi	-0.018[a] (0.006)	-0.001[a] (0.000)	0.009 (0.008)	0.019[a] (0.007)	0.001[b] (0.001)	0.094[a] (0.003)	0.018[a] (0.001)
Mali	-0.411[a] (0.136)	0.007 (0.005)	0.020 (0.202)	...	...	-0.418[a] (0.088)	-0.024[a] (0.008)
Mozambique	0.235 (0.145)	0.000 (0.005)	-0.235 (0.165)	0.020 (0.161)	0.016 (0.017)	0.024 (0.022)	-0.025 (0.024)
Niger	-0.004 (0.004)	0.000 (0.000)	-0.018[c] (0.010)	-0.022[a] (0.006)	0.004[a] (0.000)	0.000 (0.002)	-0.001 (0.001)
Nigeria	-0.056[a] (0.002)	0.000[a] (0.000)	-0.004 (0.003)	-0.008[a] (0.003)	0.001[a] (0.000)	0.052[a] (0.001)	0.002[a] (0.000)
Rwanda	-0.104[a] (0.008)	0.000 (0.000)	0.003 (0.008)	-0.014 (0.009)	0.003[a] (0.001)	0.027[a] (0.003)	0.007[a] (0.001)
Senegal	0.011[a] (0.002)	0.000 (0.000)	0.006[a] (0.002)	-0.007[a] (0.002)	0.001[a] (0.000)	0.022[a] (0.001)	0.001[a] (0.000)
Tanzania (United Republic of)	...	...	...	...	...	...	...
Togo	-0.004 (0.031)	0.002[c] (0.001)	-0.019 (0.032)	0.026 (0.032)	0.001 (0.003)	0.065[a] (0.015)	0.010 (0.007)
Uganda	-0.022[a] (0.003)	0.000[a] (0.000)	0.014[a] (0.003)	-0.014[a] (0.003)	0.004[a] (0.000)	0.006[a] (0.001)	0.001[a] (0.000)
South Africa	-0.010[a] (0.001)	0.000[c] (0.000)	0.005[a] (0.001)	0.001 (0.001)	0.001[a] (0.000)	0.000 (0.000)	0.001[a] (0.000)
Zambia	0.005 (0.004)	0.000[a] (0.000)	0.007 (0.007)	0.002 (0.006)	0.000 (0.001)	0.055[a] (0.003)	0.007[a] (0.001)

Source: Authors' own estimates based on national household surveys.

Note: Dependent variable is the service share on total household expenditure. Standard errors are in squared brackets and a stands for significance "a" the 1 per cent level, "b" for statistical significance at the 5 per cent level, and "c" for statistical significance at the 10 per cent level.

Table 36. Marginal effects on services expenditure shares: Tobit estimates

Country	Rural household	Age of head of household	Female head of household	Married head of household	Education of head of household	Log of per capita expenditure	Household size
Benin	0.017[a] (0.004)	0.000 (0.000)	0.012[b] (0.006)	0.027[a] (0.006)	0.000[b] (0.000)	0.042[a] (0.003)	0.005[a] (0.001)
Burkina Faso	-0.079[a] (0.003)	0.000 (0.000)	-0.018[a] (0.005)	-0.008 (0.005)	0.002[a] (0.000)	0.035[a] (0.002)	0.003[a] (0.000)
Burundi	-0.061[a] (0.010)	0.000 (0.000)	0.012[b] (0.006)	-0.024[a] (0.006)	0.003[a] (0.001)	0.025[a] (0.002)	0.005[a] (0.001)
Cameroon	-0.066[a] (0.003)	0.001[a] (0.000)	-0.010[a] (0.003)	-0.013[a] (0.003)	0.008[a] (0.000)	-0.003[a] (0.001)	0.001[a] (0.000)
Côte d'Ivoire	-0.010[b] (0.005)	0.001[a] (0.000)	-0.020[a] (0.007)	-0.011[b] (0.006)	0.005[a] (0.001)	0.048[a] (0.003)	0.006[a] (0.001)
Ethiopia	-0.026[a] (0.001)	0.000[a] (0.000)	-0.007[a] (0.002)	0.003[b] (0.002)	0.003[a] (0.000)	0.025[a] (0.001)	0.005[a] (0.000)
Gambia	-0.010 (0.023)	0.001 (0.001)	-0.030 (0.025)	-0.001 (0.028)	0.007[a] (0.003)	0.014 (0.011)	0.008[a] (0.002)
Ghana	-0.030[a] (0.003)	0.000[a] (0.000)	-0.010[a] (0.003)	0.009[a] (0.003)	...	0.030[a] (0.002)	0.008[a] (0.001)
Guinea-Bissau	-0.019[a] (0.004)	0.000[a] (0.000)	-0.006[a] (0.005)	-0.001[a] (0.005)	0.001[a] (0.000)	0.006[a] (0.002)	0.003[a] (0.000)
Kenya	-0.097[a] (0.004)	0.001[a] (0.000)	-0.009[b] (0.004)	0.004 (0.004)	0.005[a] (0.000)	0.072[a] (0.002)	0.015[a] (0.001)
Madagascar	-0.015[a] (0.002)	0.000[b] (0.000)	-0.005[c] (0.003)	0.004 (0.003)	0.004[a] (0.000)	0.033[a] (0.001)	0.002[a] (0.000)
Malawi	-0.026[a] (0.003)	0.000[b] (0.000)	0.001 (0.003)	-0.007[b] (0.003)	0.001[a] (0.000)	0.047[a] (0.001)	0.012[a] (0.000)
Mali	-0.072[a] (0.005)	0.000 (0.000)	0.034[a] (0.008)	...	...	0.055[a] (0.003)	0.003[a] (0.000)
Mozambique	-0.029[a] (0.003)	0.000 (0.000)	-0.004 (0.005)	0.014[a] (0.005)	0.003[a] (0.000)	-0.001 (0.001)	0.000 (0.001)
Niger	-0.123[a] (0.006)	0.000 (0.000)	-0.067[a] (0.016)	0.008 (0.010)	0.009[a] (0.001)	-0.021[a] (0.002)	-0.003[a] (0.001)
Nigeria	-0.032[a] (0.002)	0.000[c] (0.000)	0.000 (0.003)	-0.008[b] (0.003)	0.000[b] (0.000)	0.078[a] (0.001)	0.008[a] (0.000)
Rwanda	-0.073[a] (0.007)	-0.001[a] (0.000)	0.039[a] (0.006)	-0.018[a] (0.007)	0.003[a] (0.001)	0.025[a] (0.002)	0.003[b] (0.001)
Senegal	-0.034[a] (0.003)	0.000[a] (0.000)	-0.004 (0.004)	-0.034[a] (0.004)	0.006[a] (0.000)	0.004 (0.002)	-0.002[a] (0.000)
Tanzania (United Republic of)	0.003 (0.003)	-0.001[a] (0.000)	0.090[a] (0.003)	-0.066[a] (0.003)	0.000 (0.000)	0.032[a] (0.002)	0.000 (0.000)
Togo	-0.008 (0.029)	0.001 (0.001)	-0.044 (0.031)	0.031 (0.031)	0.004 (0.003)	0.052[a] (0.014)	0.015[b] (0.006)
Uganda	-0.175[a] (0.005)	-0.001[a] (0.000)	-0.004 (0.005)	-0.039[a] (0.005)	0.010[a] (0.001)	-0.015[a] (0.001)	0.004[a] (0.001)
South Africa	-0.009[a] (0.002)	0.001[a] (0.000)	0.009[a] (0.002)	0.001 (0.002)	0.007[a] (0.000)	0.031[a] (0.001)	0.007[a] (0.000)
Zambia	-0.027[a] (0.003)	0.000[b] (0.000)	-0.007 (0.005)	-0.009[b] (0.005)	0.003[a] (0.000)	0.054[a] (0.002)	0.011[a] (0.001)

Source: Authors' own estimates based on national household surveys.

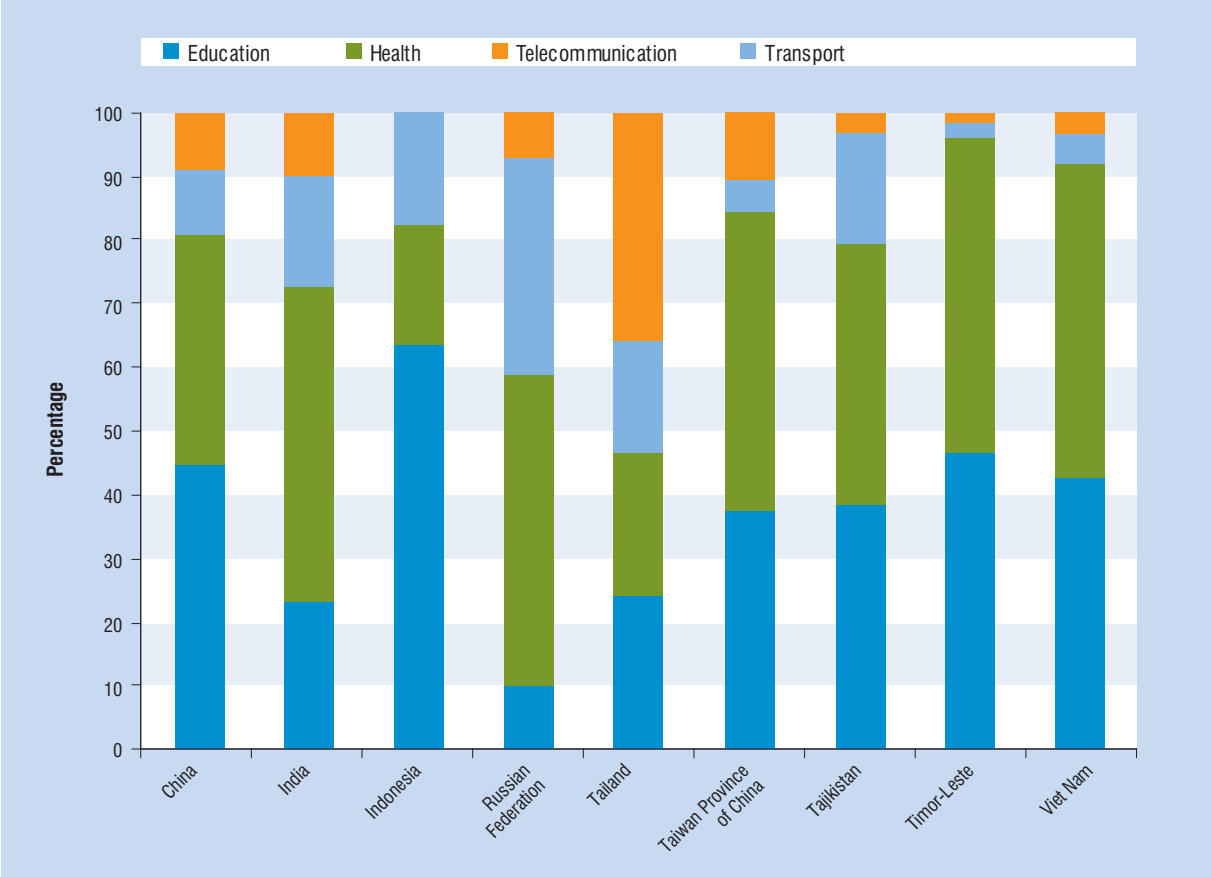
Note: Dependent variable is the service share on total household expenditure. Standard errors are in squared brackets and a stands for significance "a" the 1 per cent level, "b" for statistical significance at the 5 per cent level, and "c" for statistical significance at the 10 per cent level.

Table 37. Expenditure on services as a percentage of total expenditure in Asia

Country/Economy	Education (%)	Health (%)	Telecoms (%)	Transport (%)	Total (%)
China	3.2	2.6	0.7	0.6	7.1
India	3.7	8.2	2.8	1.7	16.5
Indonesia	6.1	1.8	1.7	...	9.6
Russian Federation	0.9	4.3	3.0	0.6	8.7
Taiwan Province of China	10.9	13.7	1.4	3.1	29.0
Tajikistan	4.4	4.8	2.0	0.3	11.5
Thailand	2.2	2.1	1.6	3.4	9.3
Timor-Leste	0.7	0.7	0.0	0.0	1.5
Viet Nam	4.5	5.2	0.5	0.4	10.6

Source: Authors' calculations based on Asia's household surveys.

Figure 16. Expenditures on each service as a percentage of total expenditures on services



Source: Authors' calculations based on Asia's household surveys.

Table 38. Expenditures on education by expenditure quintiles

a. Distribution of expenditures on education (%)

Country/Economy	quintiles of per capita household expenditure					Concentration index
	q1	q2	q3	q4	q5	
China	5.27	10.14	15.36	22.57	46.66	0.407
India	3.10	6.53	11.64	21.27	57.46	0.535
Indonesia	3.35	6.85	11.03	19.42	59.35	0.544
Russian Federation	5.25	9.45	16.74	21.65	46.91	0.459
Taiwan Province of China	7.82	15.32	22.84	26.90	27.12	0.220
Tajikistan	7.86	9.93	14.49	21.31	46.40	0.379
Thailand	3.72	6.81	12.07	21.35	56.05	0.588
Timor-Leste	8.27	12.86	25.11	24.36	29.39	0.421
Viet Nam	6.66	10.28	13.88	23.02	46.16	0.458

b. Expenditures on education as a share of household total expenditure (%)

Country/Economy	quintiles of per capita household expenditure					Kakwani index
	q1	q2	q3	q4	q5	
China	5.67	4.89	3.87	3.47	3.53	-0.062
India	2.17	2.80	3.54	4.44	5.53	0.132
Indonesia	4.77	5.45	5.77	6.55	7.75	0.074
Russian Federation	0.80	0.79	0.93	0.83	0.88	0.022
Taiwan Province of China	8.26	11.21	12.51	12.64	9.67	0.213
Tajikistan	5.10	3.86	4.11	4.28	4.40	0.022
Thailand	1.46	1.70	2.14	2.61	3.19	0.168
Timor-Leste	0.73	0.93	0.70	0.60	0.38	-0.176
Viet Nam	3.40	3.95	4.23	5.22	5.61	0.059

Note: All Kakwani and concentration indices are statistically different from zero unless it is indicated with an "x" next to the coefficient.

Figure 17. Concentration curves for education

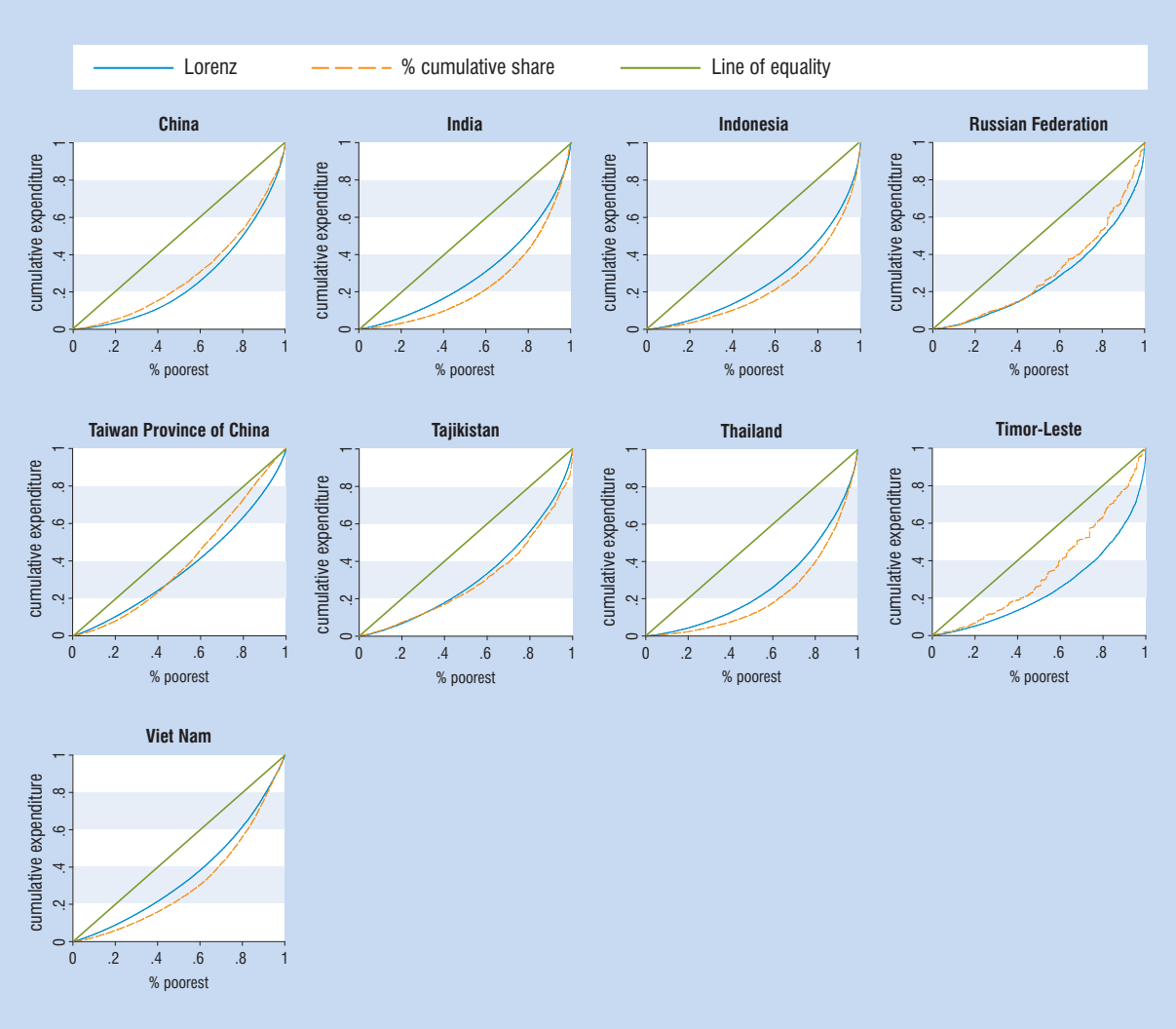


Table 39. Expenditures on health by expenditure quintiles

a. Distribution of expenditures on health (%)

Country/Economy	quintiles of per capita household expenditure					Concentration index
	q1	q2	q3	q4	q5	
China	4.54	8.77	14.71	22.45	49.53	0.448
India	3.63	7.33	11.97	19.60	57.47	0.543
Indonesia	2.78	6.12	10.55	19.97	60.58	0.573
Russian Federation	5.92	10.30	13.39	21.49	48.89	0.430
Taiwan Province of China	11.87	15.46	17.37	21.19	34.11	0.217
Tajikistan	4.40	8.67	13.26	22.10	51.56	0.457
Thailand	3.72	7.14	11.44	19.29	58.41	0.549
Timor-Leste	6.26	7.27	17.47	22.14	46.86	0.421
Viet Nam	7.78	11.92	16.02	22.06	42.23	0.392

b. Expenditures on health as a share of household total expenditure (%)

Country/Economy	quintiles of per capita household expenditure					Kakwani index
	q1	q2	q3	q4	q5	
China	3.46	3.04	2.66	2.47	2.62	-0.021
India	5.62	7.11	8.22	9.27	10.99	0.141
Indonesia	1.32	1.57	1.77	2.16	2.32	-0.105[x]
Russian Federation	5.08	4.31	3.74	4.06	4.09	-0.006[x]
Taiwan Province of China	15.49	14.60	13.31	12.80	12.25	-0.043
Tajikistan	3.27	4.03	4.55	5.43	6.63	0.100
Thailand	1.46	1.77	2.03	2.34	3.08	0.120
Timor-Leste	0.74	0.87	0.49	0.74	0.74	0.018
Viet Nam	4.20	4.90	5.42	5.63	6.01	-0.006

Note: All Kakwani and concentration indices are statistically different from zero unless it is indicated with an "x" next to the coefficient.

Figure 18. Concentration curves for health

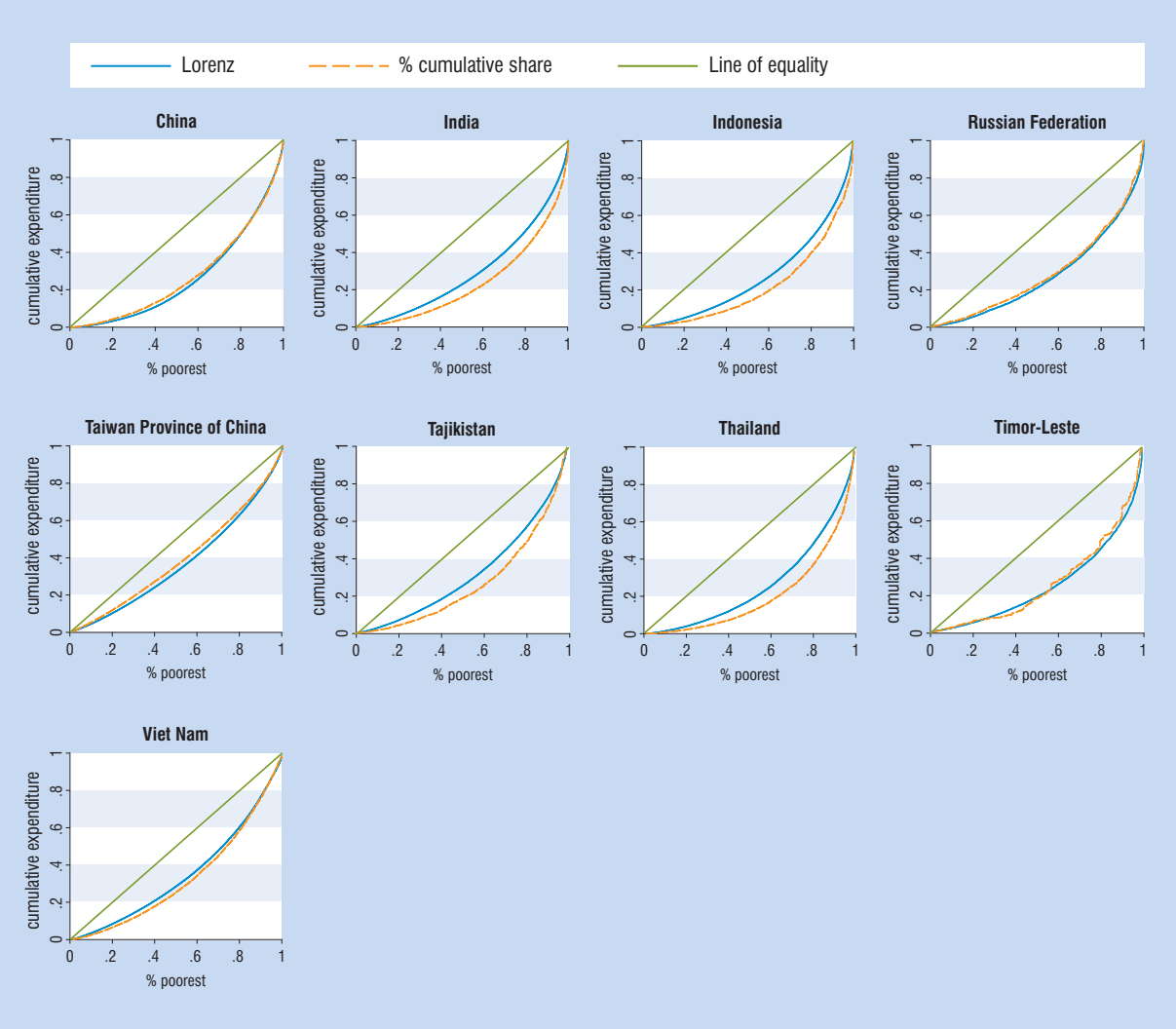


Table 40. Expenditures on telecommunication by expenditure quintiles

a. Distribution of expenditures on telecommunication (%)

Country/Economy	quintiles of per capita household expenditure					Concentration index
	q1	q2	q3	q4	q5	
China	0.00	0.47	4.26	24.88	70.38	0.262
India	0.68	2.70	6.94	18.62	71.06	0.708
Indonesia	...	...	...	...	...	...
Russian Federation	3.01	7.11	10.78	20.10	59.01	0.557
Taiwan Province of China	9.16	13.54	17.88	23.36	36.06	0.268
Tajikistan	3.66	6.41	8.92	16.48	64.53	0.613
Thailand	1.06	4.32	11.26	23.57	59.79	0.649
Timor-Leste	0.00	0.00	0.05	12.60	87.35	0.856
Viet Nam	0.64	1.58	3.24	11.52	83.02	0.816

b. Expenditures on telecommunication as a share of household total expenditure (%)

Country/Economy	quintiles of per capita household expenditure					Kakwani index
	q1	q2	q3	q4	q5	
China	0.00	0.32	0.28	0.65	0.89	0.7463
India	0.26	0.70	1.28	2.36	3.96	0.3056
Indonesia	...	...	...	...	...	...
Russian Federation	0.44	0.54	0.56	0.72	0.89	0.1206
Taiwan Province of China	2.79	3.01	3.21	3.30	3.11	0.0086[x]
Tajikistan	0.25	0.27	0.27	0.37	0.57	0.2569
Thailand	0.66	1.82	3.41	4.95	5.99	0.2299
Timor-Leste	0.00	0.02	0.00	0.00	0.10	0.4530
Viet Nam	0.04	0.08	0.13	0.33	1.18	0.4175

Note: All Kakwani and concentration indices are statistically different from zero unless it is indicated with an "x" next to the coefficient.

Figure 19. Concentration curves for telecommunication

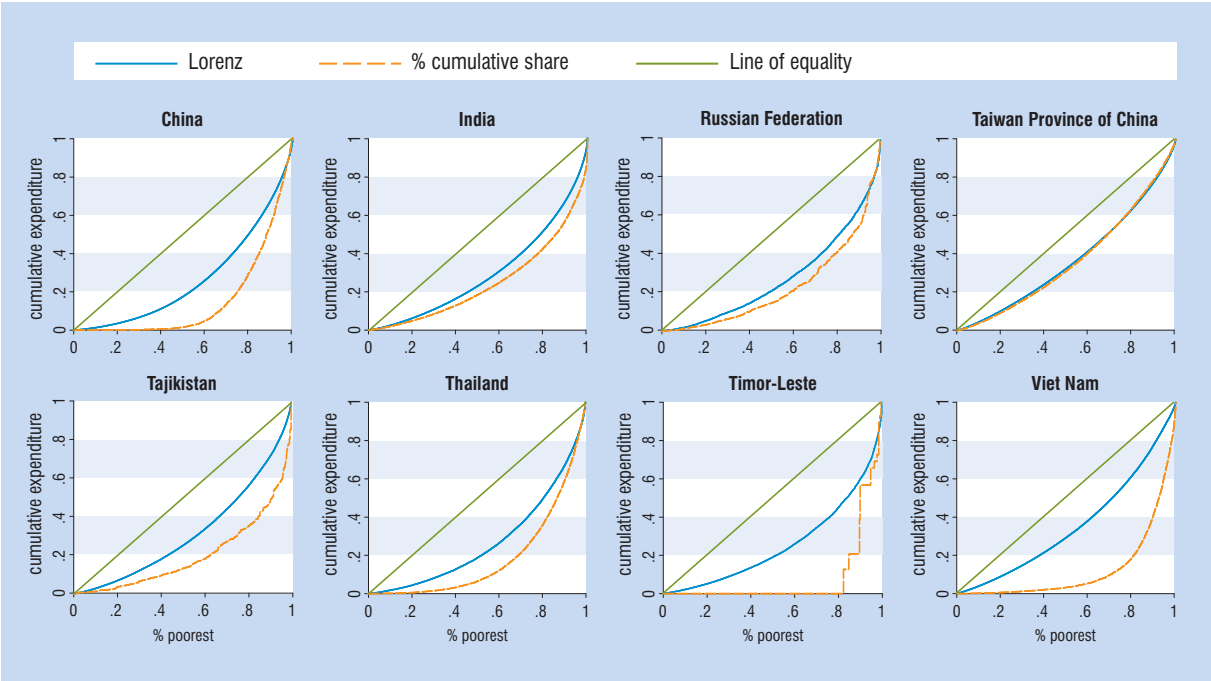


Table 41. Expenditures on transport by expenditure quintiles

a. Distribution of expenditures on transport (%)

Country/Economy	quintiles of per capita household expenditure					Concentration index
	q1	q2	q3	q4	q5	
China	4.60	8.95	14.67	24.24	47.54	0.441
India	4.81	8.05	11.98	18.05	57.11	0.481
Indonesia	7.55	12.31	16.71	23.67	39.76	0.322
Russian Federation	3.35	7.17	10.93	16.73	61.82	0.573
Taiwan Province of China	9.09	12.28	16.95	22.64	39.04	0.288
Tajikistan	2.06	5.37	11.23	18.84	62.50	0.564
Thailand	4.18	8.81	15.88	26.91	44.23	0.498
Timor-Leste	0.45	4.96	1.87	7.20	85.51	0.589
Viet Nam	9.09	14.77	19.97	24.26	31.90	0.299

b. Expenditures on transport as a share of household total expenditure (%)

Country/Economy	quintiles of per capita household expenditure					Kakwani index
	q1	q2	q3	q4	q5	
China	1.470	1.39	1.17	1.16	1.07	-0.028[x]
Indonesia	2.150	1.86	1.69	1.55	1.15	-0.147
India	2.560	2.60	2.75	2.83	3.35	0.078
Russian Federation	2.360	2.73	2.76	2.86	4.11	0.130[x]
Taiwan Province of China	1.320	1.24	1.35	1.43	1.48	0.066[x]
Thailand	1.010	1.35	1.73	2.04	1.76	0.078
Tajikistan	0.730	1.23	1.90	2.32	3.87	0.207
Timor-Leste	0.004	0.01	0.02	0.01	0.09	0.188
Viet Nam	0.400	0.52	0.59	0.56	0.42	-0.099

Note: All Kakwani and concentration indices are statistically different from zero unless it is indicated with an "x" next to the coefficient.

Figure 20. Concentration curves for transport

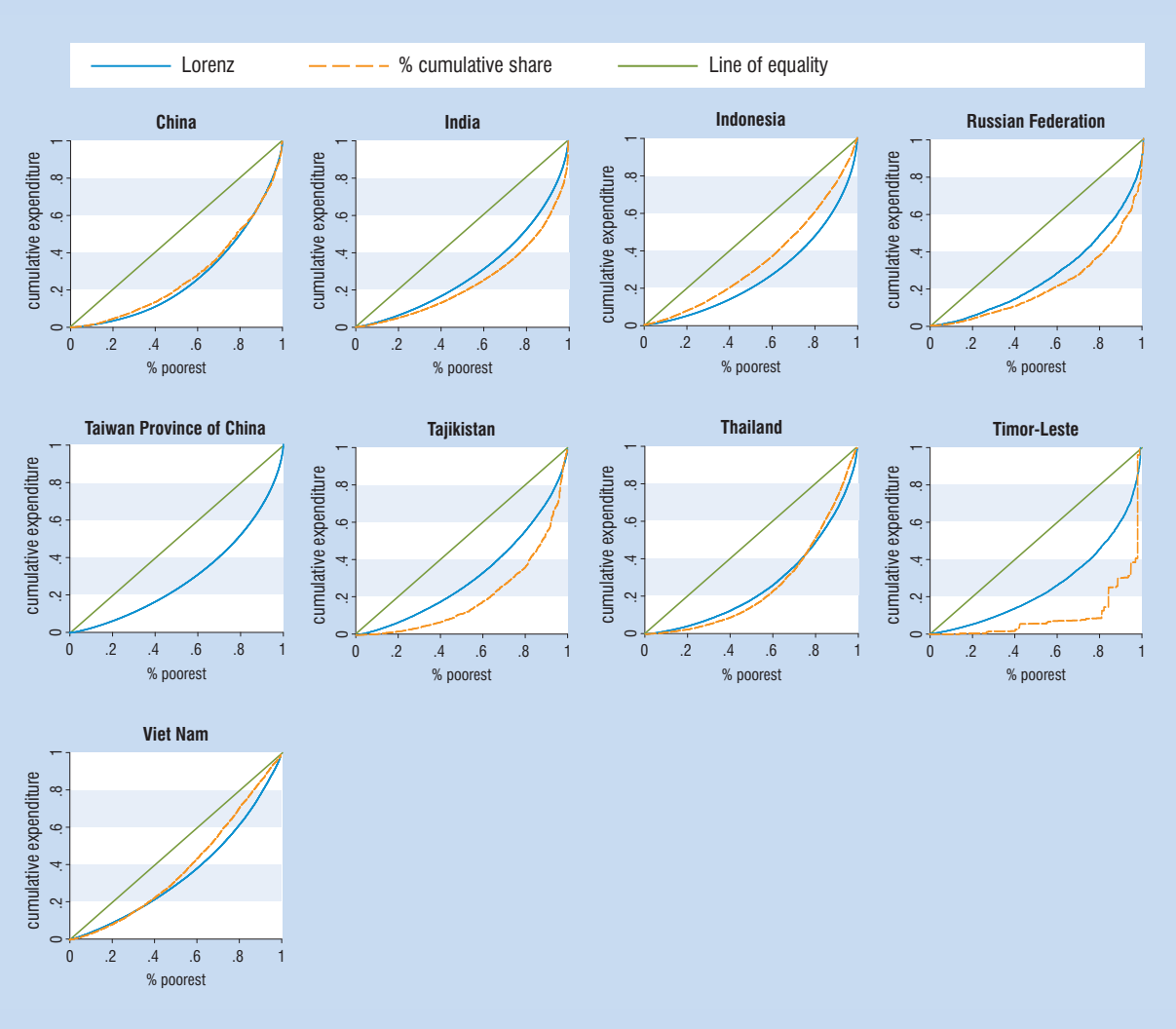


Table 42. Total expenditures on services by expenditure quintiles

a. Distribution of expenditures on all services (%)

Country/Economy	quintiles of per capita household expenditure					Concentration index
	q1	q2	q3	q4	q5	
China	0.01	0.96	8.69	26.19	64.15	0.216
India	3.31	6.66	11.23	19.58	59.21	0.552
Indonesia	3.76	7.40	11.66	20.18	57.00	0.521
Russian Federation	4.61	8.73	12.50	19.51	54.66	0.499
Taiwan Province of China	9.49	15.39	21.73	24.59	28.81	0.197
Tajikistan	5.08	8.34	13.10	20.95	52.53	0.457
Thailand	2.73	6.18	12.14	22.55	56.40	0.585
Timor-Leste	6.80	9.44	19.84	22.32	41.60	0.348
Viet Nam	6.89	10.67	14.43	21.96	46.04	0.452

b. Expenditures on all services as a share of household total consumption (%)

Country/Economy	quintiles of per capita household expenditure					Kakwani index
	q1	q2	q3	q4	q5	
China	9.40	5.72	5.87	7.04	7.97	0.489
India	10.63	13.23	15.81	18.92	23.85	0.149
Indonesia	8.26	8.90	9.24	10.26	11.22	0.053[x]
Russian Federation	8.69	8.39	8.01	8.49	9.98	0.060
Taiwan Province of China	27.87	30.08	30.40	30.20	26.53	0.207
Tajikistan	9.36	9.41	10.84	12.42	15.48	0.100
Thailand	4.61	6.66	9.33	11.95	14.04	0.165
Timor-Leste	1.48	1.84	1.23	1.37	1.33	-0.054[x]
Viet Nam	8.07	9.47	10.38	11.76	13.24	0.053[x]

Note: All Kakwani and concentration indices are statistically different from zero unless it is indicated with an "x" next to the coefficient.

Figure 21. Concentration curves for all services

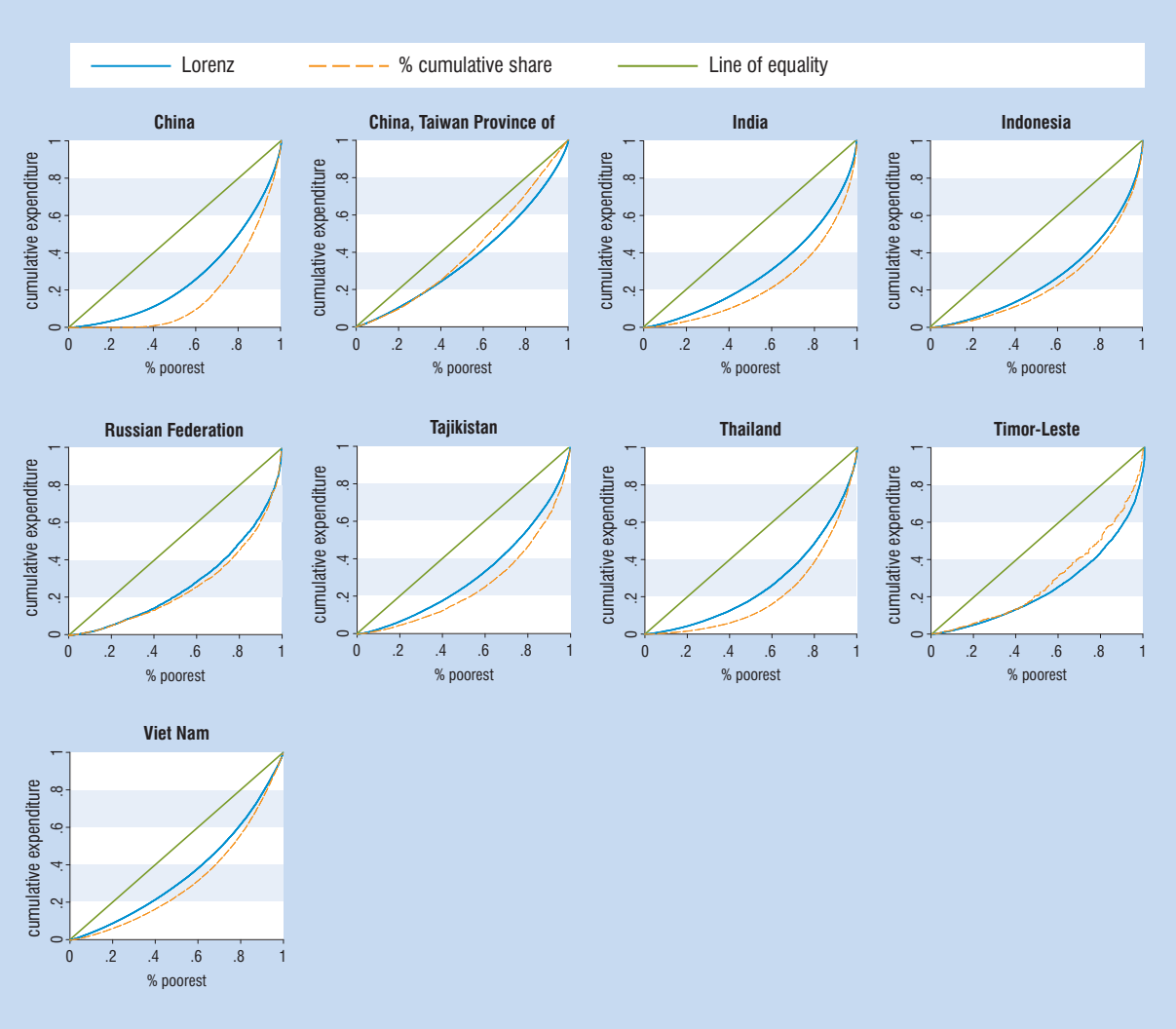


Table 43. Marginal effects on education expenditure shares: Tobit estimates

	China	India	Indonesia	Taiwan Province of China	Tajikistan	Thailand	Timor-Leste	Viet Nam
Rural household	0.019[a] [0.003]	-0.009[a] [0.001]	-0.020[a] [0.003]	-0.006[b] [0.003]	-0.017[a] [0.003]	0.001 [0.001]	0.034[a] [0.005]	0 [0.002]
Age of head of household	-0.002[a] [0.000]	-0.001[a] [0.000]	-0.001[b] [0.000]	0.001[a] [0.000]	-0.001[a] [0.000]	-0.000[a] [0.000]	0.000[b] [0.000]	-0.001[a] [0.000]
Female head of household	-0.005[b] [0.002]	-0.026[a] [0.003]	-0.001[b] [0.000]	-0.005[b] [0.003]	-0.001 [0.007]	-0.003[a] [0.001]	-0.020[b] [0.009]	-0.015[a] [0.002]
Married head of household	0.020[a] [0.004]	0.013[a] [0.003]	-0.021[a] [0.006]	0.006[b] [0.002]	-0.009 [0.007]	0.002 [0.002]	-0.017[b] [0.008]	0.006[a] [0.002]
Education	0.002[a] [0.000]	0.003[a] [0.000]	-0.001 [0.001]	-0.001 [0.001]	0.004[a] [0.001]	0.002[a] [0.000]	0.001[c] [0.001]	0.006[a] [0.000]
Log of per capita household expenditre	0.003[b] [0.001]	0.012[a] [0.000]	0.027[a] [0.002]	0.011[a] [0.003]	-0.011[b] [0.005]	0.012[a] [0.000]	0.009[a] [0.003]	0.007[a] [0.001]
Household size	0.015[a] [0.001]	0.010[a] [0.000]	0.015[a] [0.001]	0.002[a] [0.001]	0.006[a] [0.001]	0.007[a] [0.000]	0.005[a] [0.001]	0.015[a] [0.000]
Log likelihood	**7 534.6423**	**12 646.5120**	**887.7657**	**7 859.7250**	**2 051.3553**	**91 920.4020**	**106.0897**	**17 882.8220**
Sigma	**0.0860**	**0.0806**	**0.1324**	**0.0689**	**0.0823**	**0.0450**	**0.0757**	**0.0734**
Observations with share=0	**4 388.0000**	**16 560.0000**	**3 796.0000**	**0**	**1 053.0000**	**34 282.0000**	**1 630.0000**	**8 821.0000**
Observations with share>0	**10 379.0000**	**24 932.0000**	**5 860.0000**	**7 118.0000**	**2 767.0000**	**84 452.0000**	**853.0000**	**20 709.0000**

Table 44. Marginal effects on health expenditure shares: Tobit estimates

	China	India	Indonesia	Taiwan Province of China	Tajikistan	Thailand	Timor-Leste	Viet Nam
Rural household	0.006[a] [0.002]	0.076[a] [0.003]	0 [0.001]	0.032[a] [0.003]	-0.028[a] [0.008]	0.017[a] [0.001]	0.019a [0.008]	0.026a [0.001]
Age of head of household	0.000[a] [0.000]	-0.001[a] [0.000]	0.000[b] [0.000]	0.002a [0.000]	0.001[a] [0.000]	0.001[a] [0.000]	-0.000[b] [0.000]	0.001[a] [0.000]
Female head of household	0 [0.001]	-0.002 [0.007]	-0.004[c] [0.002]	-0.005[b] [0.003]	-0.018 [0.014]	0.002[a] [0.001]	0.007 [0.007]	-0.001 [0.001]
Married head of household	0.004[c] [0.003]	0.005 [0.006]	0.009[a] [0.002]	-0.015[a] [0.003]	0.016 [0.014]	-0.005[a] [0.002]	0.004 [0.005]	0.007[a] [0.002]
Education	0 [0.000]	-0.006[a] [0.000]	0 [0.000]	-0.007[a] [0.001]	0 [0.001]	-0.001[a] [0.000]	-0.001[b] [0.000]	-0.001[a] [0.000]
Log of per capita household expenditre	-0.001[c] [0.001]	0.089[a] [0.003]	0.009[a] [0.001]	-0.002 [0.004]	0.055[a] [0.006]	0.019[a] [0.001]	0.010[a] [0.004]	0.013[a] [0.001]
Household size	-0.001[c] [0.000]	0.006[a] [0.001]	0.002[a] [0.000]	0.003[a] [0.001]	0.008[a] [0.001]	0.003[a] [0.000]	0.002[b] [0.001]	-0.002[a] [0.000]
Log likelihood	**1 7671.5770**	**-2 702.3406**	**10 452.0590**	**9 705.8467**	**-828.02841**	**58 805.1600**	**437.6855**	**31 029.7660**
Sigma	**0.0567**	**0.1635**	**0.0519**	**0.1024**	**0.17610**	**0.0626**	**0.0513**	**0.0784**
Observations with share=0	**1 621.0000**	**13 050.0000**	**1 911.0000**	**0**	**2 172.00000**	**38 054.0000**	**1 633.0000**	**573.0000**
Observations with share>0	**13 146.0000**	**28 442.0000**	**7 715.0000**	**13 667.0000**	**1 648.00000**	**80 680.0000**	**850.0000**	**28 957.0000**

Source: Authors' estimates based on national household surveys.

Note: Dependent variable is the service share on total household expenditure. Standard errors are in squared brackets and "a" stands for significance at the 1 per cent level, "b" for statistical significance at the 10 per cent level, and "c" for statistical significance at the 10 per cent level.

Table 45. Marginal effects on telecommunication expenditure shares: Tobit estimates

	China	India	Indonesia	Taiwan Province of China	Tajikistan	Thailand	Timor-Leste	Viet Nam
Rural household	0 0	-0.019[a] [0.001]	...	-0.001 [0.001]	-0.027[a] [0.003]	-0.002[a] [0.001]	0.014[a] [0.002]	-0.002[a] [0.000]
Age of head of household	0.000[a] [0.000]	0.000[a] [0.000]	...	-0.000[a] [0.000]	0.000b [0.000]	0 [0.000]	0.000[a] [0.000]	0.000[a] [0.000]
Female head of household	-0.001 [0.001]	-0.012[a] [0.003]	...	0.001 [0.001]	-0.008[c] [0.004]	-0.001 [0.001]	-0.071[a] [0.002]	-0.002[a] [0.001]
Married head of household	0.002 [0.002]	0.003 [0.002]	...	0.002[a] [0.001]	0.001 [0.004]	-0.002 [0.001]	0.411[a] [0.002]	0.002[b] [0.001]
Education	0.001[a] [0.000]	0.003[a] [0.000]	...	0 [0.000]	0.002[a] [0.000]	0.001[a] [0.000]	0 [0.000]	0.001[a] [0.000]
Log of per capita household expenditre	0.017[a] [0.001]	0.031[a] [0.001]	...	0.002[a] [0.001]	0.011[a] [0.002]	0.041[a] ae20	0.042[a] [0.000]	0.015[a] [0.001]
Household size	0.004[a] [0.001]	0.002[a] [0.000]	...	0 [0.000]	0.001[a] [0.000]	0.005[a] [0.000]	0.003[a] [0.000]	0.002[a] [0.000]
Log likelihood	**4 664.9910**	**1 099.8350**	**...**	**32 091.1150**	**732.6328**	**65 476.3190**	**342.00460**	**20 673.4590**
Sigma	**0.0265**	**0.0523**	**...**	**0.0197**	**0.0344**	**0.0476**	**0.00003**	**0.0178**
Observations with share=0	**3 769.0000**	**25 192.0000**	**...**	**0**	**2 935.0000**	**44 765.0000**	**2 432.00000**	**18 477.0000**
Observations with share>0	**3 004.0000**	**16 300.0000**	**...**	**13 617.0000**	**885.0000**	**73 969.0000**	**51.00000**	**11 053.0000**

Table 46. Marginal effects on transport expenditure shares: Tobit estimates

	China	India	Indonesia	Taiwan Province of China	Tajikistan	Thailand	Timor-Leste	Viet Nam
Rural household	0.022[a] [0.002]	0.002[a] [0.001]	-0.003[a] [0.000]	-0.001 [0.000]	-0.025[a] [0.004]	0.021[a] [0.001]	0.000[b] [0.000]	0.005[a] [0.000]
Age of head of household	0 [0.000]	0 [0.000]	-0.000[a] [0.000]	0.000[a] [0.000]	-0.000[c] [0.000]	-0.000[a] [0.000]	0 [0.000]	-0.000[a] [0.000]
Female head of household	0 [0.001]	0.002[c] [0.001]	-0.001[c] [0.001]	-0.002[a] [0.000]	0.002 [0.006]	-0.011[a] [0.001]	0 [0.000]	0 [0.000]
Married head of household	-0.001 [0.002]	-0.001 [0.001]	0.002[a] [0.001]	0 [0.000]	0.005 [0.006]	0.017[a] [0.002]	0 [0.000]	0 [0.001]
Education	0.001[a] [0.000]	0.000[a] [0.000]	0 [0.000]	0.000[b] [0.000]	0 [0.000]	0.001[a] [0.000]	0.000[b] [0.000]	-0.000[a] [0.000]
Log of per capita household expenditre	0.009[a] [0.001]	0.003[a] [0.001]	-0.005a [0.000]	0 [0.000]	0.044[a] [0.004]	0.025[a] ae20	0.002[a] [0.000]	0.004[a] [0.000]
Household size	0.002[a] [0.000]	0 [0.000]	-0.000[a] [0.000]	-0.001[a] [0.000]	0.005[a] [0.001]	0.007[a] [0.000]	0.000[a] [0.000]	0.001[a] [0.000]
Log likelihood	**16 758.9260**	**64 491.1430**	**24 485.3240**	**31 221.2830**	**650.6808**	**-9 548.4601**	**3 350.7127**	**23 331.0390**
Sigma	**0.0419**	**0.0360**	**0.0159**	**0.0160**	**0.0779**	**0.0786**	**0.0043**	**0.0201**
Observations with share=0	**3 700.0000**	**3 357.0000**	**465.0000**	**0**	**2 162.0000**	**80 391.0000**	**1 462.0000**	**16 119.0000**
Observations with share>0	**11 067.0000**	**38 135 .0000**	**9 174.0000**	**12 160.0000**	**1 658.0000**	**38 343.0000**	**1 021.0000**	**13 411.0000**

Source: Authors' estimates based on national household surveys.

Note: Dependent variable is the service share on total household expenditure. Standard errors are in squared brackets and "a" stands for significance at the 1 per cent level, "b" for statistical significance at the 10 per cent level, and "c" for statistical significance at the 10 per cent level.

Table 47. Marginal effects on total services expenditure shares: Tobit estimates

	China	India	Indonesia	Taiwan Province of China	Tajikistan	Thailand	Timor-Leste	Viet Nam
Rural household	0 0	0.026[a] [0.002]	-0.020[a] [0.002]	0.018[a] [0.005]	-0.042[a] [0.005]	-0.018[a] [0.001]	0.008[b] [0.003]	0.026[a] [0.002]
Age of head of household	-0.000[b] [0.000]	-0.000[a] [0.000]	-0.000[a] [0.000]	0.001[a] [0.000]	-0.009 [0.010]	0.000[a] [0.000]	0.000[c] [0.000]	0.001[a] [0.000]
Female head of household	0 [0.002]	-0.020[a] [0.005]	0.002 [0.004]	-0.018[a] [0.004]	-0.001 [0.009]	-0.005[a] [0.001]	-0.013[c] [0.007]	-0.014[a] [0.002]
Married head of household	0.011[a] [0.004]	0.010[b] [0.005]	-0.015[a] [0.004]	-0.004 [0.003]	0.005[a] [0.001]	0.013[a] [0.002]	-0.007 [0.005]	0.012[a] [0.002]
Education	0.001[a] [0.000]	-0.001[a] [0.000]	0 [0.000]	-0.004[a] [0.001]	0.033[a] [0.005]	0.002[a] [0.000]	0.001 [0.000]	0.003[a] [0.000]
Log of per capita household expenditre	0.019[a] [0.003]	0.089[a] [0.002]	0.015[a] [0.002]	-0.002 [0.005]	0.008[a] [0.001]	0.051[a] ae20	0.011[a] [0.003]	0.024[a] [0.001]
Household size	0.011[a] [0.001]	0.006[a] [0.000]	0.006[a] [0.000]	0.010[a] [0.001]	-0.082[a] [0.023]	0.010[a] [0.000]	0.004[a] [0.001]	0.005[a] [0.000]
Log likelihood	**8 029.9853**	**18 933.0570**	**8 279.7116**	**5 436.4159**	**1 781.4311**	**90 696.1210**	**1 847.5940**	**26 609.4910**
Sigma	**0.0704**	**0.1318**	**0.1002**	**0.0901**	**0.1274**	**0.0783**	**0.0559**	**0.0934**
Observations with share=0	**147.0000**	**478.0000**	**109.0000**	**0**	**319.0000**	**4 751.0000**	**728.0000**	**200.0000**
Observations with share>0	**6 626.0000**	**41 014.0000**	**9 512.0000**	**6 504.0000**	**3 501.0000**	**113 983.0000**	**1 755.0000**	**29 330.0000**

Source: Authors' estimates based on national household surveys.

Note: Dependent variable is the service share on total household expenditure. Standard errors are in squared brackets and "a" stands for significance at the 1 per cent level, "b" for statistical significance at the 10 per cent level, and "c" for statistical significance at the 10 per cent level.

NOTES

[1] Alternatively one can assume identical and homothetic preferences, in which case there is no need for identical factor endowments. In all these cases, to obtain the social utility function one can simply add up the quantities consumed by each individual (of each good).

[2] The Pareto approach would stipulate that free trade is Pareto-superior if all individuals are better off under free-trade, that is, $u_i(c_i^F) \geq u_i(c_i^A)$ for all individuals i in the economy, where c_i is the consumption bundle of individual i, and superscripts F stands for free-trade and A for autarky. This is a very simple criterion, and it does not require any inter-individual utility comparisons. It is also transitive. However, as argued above, it is unlikely that trade will bring gains to everyone in an economy with heterogeneous individuals. The Bergson-Samuelson social welfare function *assumes* the existence of a social welfare function of the form $W=w(u_1, u_2, u_3, \ldots, u_i)$ and establishes that free trade is preferred to autarky if $W^F > W^A$. The problem with this approach is that there is not a unique definition of the social welfare function, so it is possible to rank two situations differently according to the social welfare function that one chooses.

[3] See Dixit and Norman (1986) or Kemp and Wan (1986).

[4] It is important to note that omitting the effect on the production side can obviously reverse welfare results. This would be the case if for example rich households have a larger share of services expenditure than poor households, but also a much larger share of their income linked to the services sector. An increase in the price of services will hurt rich households on the consumption side more than poor households, but will also benefit them more on the production side. Nevertheless, and keeping this caveat in mind, it is believed that the type of information obtained by focusing exclusively on the consumption side is useful. To assess the poverty implications of services reforms in different countries, it will be necessary to assess the patterns of services consumption of rich and poor households. This necessary step is the aim of this study.

[5] Data on financial services is much more difficult and homogeneous across survey to be included in the overview chapter. However in a companion paper (Porto, Porto, and Olarreaga 2009) some first steps toward an analysis of access to finance in developing countries is provided.

[6] In a companion paper the extent to which lack of access to these different services can explain the observed expenditure patterns in LAC is considered (see Porto et al., 2009). The broad conclusion is that lack of access can only explain a small share of the patterns found in this chapter. In the case of financial services, however, the question of access seems to be relatively more important (see Porto, Porto and Olarreaga, 2009).

[7] This is partly because of lack of access by the poor.

[8] Bolivia, Colombia, Ecuador, El Salvador, Mexico, Nicaragua, Panama, and Peru.

[9] Burundi, Benin, Burkina Faso, Cote d'Ivoire, Cameroon, Ethiopia, Ghana, Gambia, Guinea-Bissau, Kenya, Madagascar, Mali, Mozambique, Malawi, Niger, Nigeria, Rwanda, Senegal, Togo, United Republic of Tanzania, Uganda, South Africa and Zambia.

[10] China, Indonesia, India, the Russian Federation, Thailand, Tajikistan, Timor-Leste, Taiwan Province of China, and Viet Nam.

[11] An alternative that uses the information over the entire expenditure distribution is the Kakwani progressivity index, defined as twice the area between the Lorenz curve for services expenditure (conditional on the ranking of total household expenditure) and the Lorenz curve for total household expenditure (Kakwani, 1977). Therefore, it can be calculated as the difference between the Concentration index of services expenditure and the Gini coefficient of total expenditure.

[12] Note that poverty here is a relative concept within a country. Households in the bottom quintile of one country with a very high GDP per capita can potentially be richer than households in the top quintile of another country with a very low GDP per capita.

[13] The source of country characteristics data are the World Bank's World Development Indicators. For each variable we took the average for the period 1999-2006.

[14] The sectors considered in the services trade restrictiveness index are financial services, telecommunications, retail distribution, transportation, and selected professional services. Thus, they do not fully correspond to the sectors included in our surveys of household expenditure.

[15] Otherwise there is no reason to restrict trade as foreign services would come at higher prices, and consumers will not purchase them. This may oversimplify the demand structure for services where product heterogeneity and preferences exhibiting desire for variety may be important.

[16] Note that none of these correlations are statistically different from zero and are undertaken for only 14 observations.

[17] There is wide economic literature related to incidence analysis. Recent contributions include Bourguignon and Pereira da Silva (2003), and Van de Walle (2003), among others.

[18] There are numerous arguments for using expenditure rather than income as the variable to indicate well-being. (see Deaton and Zaidi (2002) for general arguments).

[19] This result comes from the Jakobsson and Fellman theorem (see Lambert, 2001).

[20] The Kakwani Index is usually known as the Kakwani Progressivity Index. In the traditional incidence analysis literature, a public programme is said to be *progressive* if the benefit it generates (measured as a proportion of total expenditure per capita) diminishes as household total expenditure per capita increases. Throughout this chapter, where the interest lies on the distribution of household (instead of public) expenditures, the terms progressive and regressive is not used in order to avoid confusion.

[21] The Kakwani Indices can be seen as an alternative to RESBP* developed in section 2. The advantage of Kakwani Indices is that it takes the information along the entire distribution of expenditure instead of calculating averages for each income quintile as in the calculation of RESBP* which then ignores the degree of inequality or bias within each quintile. The correlation between the Kakwani Index and RESBP* is -0.61 in our sample, which indicates that as expected large values of the Kakwani Index are associated with small values for RESBP*. The correlation is the strongest in LAC with a value of -0.93 which indicates that intra-quintile heterogeneity may be less important than in other regions. Within sectors the highest correlations are found for health, education and transport signaling less within quintile heterogeneity than in telecommunications or overall services expenditure. A simple OLS regression of RESBP* on the Kakwani Index yields a coefficient equal to -1.02 and a standard error of 0.10 with an R^2 of 0.37.

[22] Throughout, this chapter refers to low, moderate and high concentration and Kakwani Indices to establish a ranking within the set of services under analysis. There is no particular definition of low, moderate and high, as they are used relatively to the values in other sectors.

[23] For more information see: www.cedlas.org

[24] Exceptions are Colombia and Panama, where Kakwani Indices were not significant (based on bootstrap).

[25] Except Ecuador, where it is negative but not significant (by bootstrap).

[26] All Kakwani Indices are statistically different from zero.

[27] Average national shares of fixed and cell phones on household total telecommunication expenditure are: 67 per cent in Bolivia, 96 per cent in Colombia, 79 per cent in Ecuador, 80 per cent in Mexico, 92 per cent in Panama, and 88 per cent in Peru.

[28] Marginal effects are calculated at the mean of the independent variables.

[29] This is the case in El Salvador and Mexico, when analyzing gas services, and Bolivia, Ecuador, and Peru when studying expenditures on electricity.

[30] Note that some countries, e.g., South Africa, do not have a formal/agreed upon definition of "urban" and "rural", and that as with other variables the definition of "rural" and "urban" varies by country/survey.

AN OVERVIEW OF ACCESS TO FINANCE AND POVERTY IN THE DEVELOPING WORLD

VI

1. INTRODUCTION

In this chapter, some of the available data on access to finance and poverty in developing countries is explored. The analysis emphasizes the concept of access to financial services – the capacity of people to use financial services without obstacles. While there is a positive relationship between the depth of the financial sector and economic growth, greater access to financial services for poor people could also contribute to poverty alleviation and to the improvement in the distribution of income.

Unlike expenditures, data on finance are much harder to obtain on a consistent basis. Beck, Demirguc-Kunt and Martínez Peria (2005; 2007) describe a set of consistent and comparable cross-country indicators on the penetration and outreach of banking systems. This chapter provides a complement of the analysis in Beck et al. with a description of the Microdata for Financial Studies (the MFS), compiled by Gasparini, Gutierrez, Tornarolli and Porto (2005). This, with the objective of presenting a brief description of financial and credit variables for some developing countries.

2. A FIRST LOOK ON MICRO-DATA OF FINANCIAL VARIABLES

Beck, Demirguc-Kunt and Martines Peria (2005; 2007) paint a broad image of the link between finance and development. This cross-country data, however, fail to capture and to take advantage of the heterogeneity within each country. The following analysis uses the microdata for financial studies (MFS), a set of relatively homogeneous household surveys for 43 countries in America, Asia, Eastern Europe, Latin America and the Caribbean. In the MFS, the original sources of information are the household surveys, which were to some extent standardized by Gasparini et al. (2005). In each country and in each year the same variables are defined containing roughly the same concepts.

2.1. A few characteristics of the financial variables of the database of MFS

The section of financial information covered by household surveys varies widely in coverage and size across countries. To deal with this, MFS defined a set of variables that are specific enough to have economic sense and broad enough to be available for a sufficient number of countries. The variables are classified into five categories:

(1) Savings: accounts (individuals or household enterprises) in financial institutions; income of financial assets;

(2) Lending: loans and amount of money applied for loans by individuals or household enterprises; loans and amount of money obtained by individuals or household enterprises; sources (banks, relatives, and the like) and purposes (food and education, and so forth) of the loans; requirement of collaterals for the loans;

(3) Purchase on credit: purchase on credit during the last 12 months;

(4) Payout of services: remittances and amount of remittances received or sent; use of financial institutions to receive or send remittances;

(5) Ownership variables: ownership of the dwelling where the household resides, other real estate assets, and enterprises; current values of the dwelling where the household resides, other real assets, and enterprises; heritage and amount inherited.

2.2. Analysis of financial data

A brief description of the most representative set of financial variables which were standardized by MFS is presented. As was previously stated, information is very heterogeneous across countries and it is very difficult to make generalizations and comparisons. Table 1 reports a list of variables which were answered in more than 17 surveys. These are: i) access to financial account; ii) annual income from assets; iii) applied for loan; iv) obtained loan; v) amount of loan; vi) remittances received; vii) remittances sent; viii) homeowner; ix) other real estate assets; x) own enterprise/s; and xi) annual income from renting land. Table 2 reports the available information for Africa (panel a), Latin America (panel b), Asia (panel c), Europe and Central Asia (panel d).[1]

Having an account with a financial institution is a measure of access and use of banking or financial services. Summary statistics are presented in table 2. In MFS, almost every household has an account with a financial institution in Pakistan, Kyrgyzstan and in Suriname; the opposite happens in Ethiopia, Nicaragua, Bulgaria and the Republic of Moldova. In the remaining countries, average access ranges from 1.7 per cent in Mauritania to 36.8 per cent in Ghana. Differences in access across quintiles of the income

distribution are also examined. As expected, access to finance is much higher at the upper quintiles. For example, in Guatemala, Paraguay and Haiti, between 28 per cent and 46 per cent of households at the top quintile have an account with a financial institution while lower descending values correspond to the rest of the quintiles.

Information about annual income of financial assets (interests, dividends, and royalties) is available in almost every survey. These data reveal some features of savings behaviour. Income from financial assets accounts for less than 10 per cent of total household income in countries like Mexico, Peru, Kyrgyzstan, and Ukraine. In the majority of countries, including the Plurinational State of Bolivia, Brazil, Colombia, El Salvador, Haiti, Panama, Paraguay, Uruguay, Bangladesh, the Republic of Moldova and Romania, the share of income from financial assets ranges from 15 per cent to 35 per cent. The highest shares are in Mauritania, Zambia, Bolivarian Republic of Venezuela and Armenia (between 40 per cent and 65 per cent). In some cases, the share of income from financial assets grows across quintiles (Uganda, Argentina, Plurinational State of Bolivia, Panama, Paraguay, and Uruguay). In some other countries, these shares instead decline across quintiles (Zambia, Brazil, Jamaica, Bolivarian Republic of Venezuela, Bangladesh, and Pakistan).

Information on loan application is very scarce. In the 11 surveys with data containing this information, less than 10 per cent of the households applied for a loan in Madagascar, Mauritania, Paraguay, and Bulgaria. At the same time, less than 10 per cent of the households actually received a loan in Cote D'Ivoire, Gambia, Kenya, Jamaica, Mexico, Paraguay and Bulgaria; between 15 per cent and 35 per cent received a loan in Ghana, Ecuador, Zambia, Suriname, Moldova and Ukraine; and more than 80 per cent received a loan in Madagascar, Uganda, Guatemala, Pakistan and Kyrgyzstan (table 2).

The share of the income obtained from the loan and total household income (excluding the loan) varies greatly across countries. These shares are lower than 10 per cent in Cote D'Ivoire, Gambia, Ghana, Madagascar, Uganda, Peru, Pakistan, Kyrgyzstan, Romania and Ukraine. In contrast, loans as a percentage of total household income are more than 100 per cent in Zambia, Armenia, and Moldova. Intermediate shares, of between 15 per cent and 30 per cent, are observed in Mauritania, Ecuador, Guatemala and Bulgaria (table 2). In general, the share of loan income declines across quintiles.

Unlike loan data, information on "payment of services'' (which gives some insight into the likely use of financial instruments) is widespread across household surveys. Almost every survey asks about remittances sent or received, specifying the amount. Burkina Faso, Cote D'Ivoire, Ghana, Madagascar, Uganda, Ecuador, Jamaica, Nicaragua, Peru, Bangladesh, Viet Nam and Armenia are examples in which between 25 per cent and 45 per cent of households have received remittances. Remittances are a very important source of income in Gambia, Plurinational State of Bolivia, and Bulgaria (table 2). Considering the income distribution, remittances income as a share of total income, decreases across quintiles in Cote D'Ivoire, Mauritania, Mexico, Pakistan and Bulgaria, and conversely increases across quintiles in Ethiopia, Uganda, Guatemala, Haiti, Honduras, Peru, Bangladesh, and Moldova.

Considering "remittances sent", it is observed that between 10 per cent and 50 per cent of households sent remittances in Burkina Faso, Gambia, Ghana, Kenya, Madagascar, Mauritania, Uganda, Ecuador, Jamaica, Armenia, Kyrgyzstan and Moldova. Sending remittances is widespread in Cote D'Ivoire (50 per cent) and Bulgaria (75 per cent). In most cases, sending remittances increases with income.

In ending, a brief description of measures of collateral as an indirect measure of the potential for a sound financial sector is provided. On average, more than 80 per cent of the population owns the dwelling where the household reside in Asia and Europe and Central Asia. For the rest of the countries, values range from 34 per cent (Ghana) to 82 per cent (Burkina Faso), with average values of around 70 per cent in Gambia, Kenya, Madagascar, Mauritania, Uganda, Argentina, Brazil, Ecuador, Guatemala, Haiti, Honduras, Nicaragua, Paraguay, Peru, Suriname, Uruguay, and Bolivarian Republic of Venezuela (table 2). Lastly, ownership of other real estate assets and enterprise(s) ownership are much less prevalent than homeownership.

NOTES

[1] It should be stressed that, because the coverage of financial variables is very different across household surveys, there are several missing cells in table 6.

Table 1. Available variables by continent

	Africa	Americas	Asia	Europe and Central Asia	Total
Financial account	4	8	3	5	20
Annual income from assets	5	18	4	6	33
Loan applied	4	4	1	2	11
Loan obtained	7	10	3	6	26
Loan amount	8	5	4	6	23
Remittances received	10	14	4	7	35
Remittances sent	9	5	3	6	23
House dwelling owner	10	19	4	8	41
Other real estate assets	10	7	4	8	29
Own enterprise/s	7	4	5	6	22
Annual income from renting land	8	17	4	8	37

Table 2a. Variable's average by country for Africa

	Uganda	Côte d'Ivoire	Ghana	Zambia	Madagascar	Mauritania	Gambia	Ethiopia	Burkina	Kenya
Financial account	...	...	0.368	0.242	...	0.017	...	0.011	...	...
Annual income from assets	0.115	...	...	0.415	...	0.602	...	0.125	...	...
Loan applied	0.183	0.998	...	...	0.052	0.019	...	...	...	...
Loan obtained	0.887	0.039	0.351	0.174	1.000	...	0.019	...	...	0.039
Loan amount	0.017	0.002	0.058	2.451	0.020	0.274	0.009	...	...	...
Remittances received	0.313	0.322	0.399	0.169	0.258	0.173	0.980	0.011	0.371	...
Remittances sent	0.387	0.629	0.429	1.000	0.347	0.117	0.275	...	0.125	0.147
House dwelling owner	0.796	0.497	0.339	0.671	0.697	0.755	0.792	...	0.829	0.757
Other real estate assets	0.732	0.537	0.264	0.049	0.513	...	0.373	...	0.910	...
Own enterprise/s	0.903	1.000	0.854		0.673	...	0.424	0.790	...	...
Annual income from renting land	0.176	0.181	0.047	1.996	...	0.383	...	0.141	...	...

Table 2b. Variable's average by country for Americas

	Peru	Jamaica	Nicaragua	Paraguay	Guatemala	Bolivia (Plurinational State of)	Ecuador	Haiti	Mexico	Suriname
Financial account	...	0.064	0.012	0.141	0.195	...	...	0.097	...	1.000
Annual income from assets	0.092	0.145	0.036	0.182	...	0.190	...	0.225	0.024	...
Loan applied	...	...	...	0.037	0.132	...	...	...	...	...
Loan obtained	0.137	0.048	...	0.037	0.877	0.116	0.240	...	0.013	0.280
Loan amount	0.004	...	...	...	0.157	...	0.168	...	...	...
Remittances received	0.377	0.322	0.435	0.187	0.137	1.000	0.321	0.219	0.048	0.224
Remittances sent	0.556	0.186	0.021	...	...	...	0.105	...	...	...
House dwelling owner	0.731	0.559	0.776	0.753	0.715	0.659	0.746	0.710	0.645	0.701
Other real estate assets	0.335	0.838	0.177	...	...	...	...	...	...	0.202
Own enterprise/s	0.707	...	0.396	...	...	...	...	...	...	...
Annual income from renting land	0.172	0.375	0.246	0.242	...	0.211	...	0.165	0.030	...

Table 2b. (cont) Variable's average by country for Americas

	El Salvador	Homduras	Republic Dominicana	Uruguay	Brasil	Venezuela (Bolivarian Republic of)	Argentina	Chile	Colombia	Panama
Financial account	...	...	...	...	...	...	...	...	...	0.302
Annual income from assets	0.182	...	0.384	0.239	0.188	0.500	0.427	...	0.327	...
Loan applied	...	...	...	...	...	...	...	...	...	...
Loan obtained	...	...	...	...	...	...	...	...	...	...
Loan amount	...	...	...	...	...	...	...	...	...	...
Remittances received	0.122	0.080	0.099	0.007	...	...	...	...	...	...
Remittances sent	...	...	...	...	...	...	...	...	...	...
House dwelling owner	0.675	0.704	0.665	0.695	0.696	0.773	0.703	0.617	...	...
Other real estate assets	...	0.041	...	...	...	...	...	0.127	...	...
Own enterprise/s	...	...	...	...	...	...	...	...	...	...
Annual income from renting land	0.224	0.020	0.395	0.262	0.267	0.403	...	...	0.034	...

Table 2c. Variable's average by country for Asia

	Pakistan	Bangladesh	Viet Nam	Indonesia
Financial account	1.000	...	0.141	...
Annual income from assets	0.118	0.209	...	...
Loan applied	...	...	...	...
Loan obtained	1.000	...	0.491	...
Loan amount	0.054	...	...	...
Remittances received	0.175	0.264	0.268	...
Remittances sent	0.018	0.035		...
House dwelling owner	0.915	0.813	0.936	0.842
Other real estate assets	0.838	0.320	0.033	0.413
Own enterprise/s	0.476	...	...	0.313
Annual income from renting land	0.230	0.673	...	...

Table 2d. Variable's average by country for Europe and Central Asia

	Kyrgyzstan	Moldova	Romania	Armenia	Bulgaria	Albania	Ukraine
Financial account	1.000	0.003	0.177	...	0.002	...	...
Annual income from assets	0.033	0.220	0.318	0.640	0.995	...	0.076
Loan applied	0.052	...	0.002	...	...	...	...
Loan obtained	1.000	0.229	0.132	0.471	0.041	...	0.373
Loan amount	0.004	1.282	0.004	3.445	0.171	...	0.017
Remittances received	...	0.103	0.088 -	0.375	0.872	0.242	...
Remittances sent	0.474	0.129	0.081	0.159	0.850	0.073	...
House dwelling owner	0.919	0.875	0.960	0.917	0.889	0.926	0.847
Other real estate assets	0.957	0.749	0.536	0.414	0.282	0.438	...
Own enterprise/s	1.000	0.025	...	0.153	...	0.563	0.008
Annual income from renting land	0.032	0.517	0.278	0.640	0.403	0.129	0.023

DISTRIBUTIONAL INCIDENCE OF ACCESS TO SERVICES IN LATIN AMERICA

VII

The objective of this chapter is to provide information regarding the distributional incidence of access to services in Latin America, and in particular how it can help explain the relatively higher shares of services expenditure by the rich observed by Olarreaga et al. (2009). There is an examination on whether there is a higher concentration of services expenditure in rich household that can be explained by a lack of access to services by poor households. Using concentration curves that look at the concentration in the access to different services, a conclusion is reached that the distribution of access to services is not an important determinant of the relatively higher share of services expenditure by the rich, except in some services sub-sectors such as telecommunications. In most of the other sub-sectors, even though a pro-rich pattern in access to services is observed, it remains relatively weak and seems to mainly be explained by “access” to high quality services.

1. INTRODUCTION

When studying the distributional incidence of expenditure, the question of access to consumption is important, in particular when analysing the expenditure for basic services such as water and electricity. To illustrate this, assume that service coverage varies by geographic area, being higher in rich areas (that is, areas inhabited by richer households). A pro-rich distribution of expenditure and shares that increase with household total expenditure per capita will be observed because poor households living in poor regions have no, or limited, access to the service. Thus, a necessary complement to the analysis of the expenditure distribution and share patterns in Olarreaga et al. (2009) is to analyse how access to services is distributed along income levels.[1] Access patterns are hidden behind expenditure patterns. Therefore the understanding of who access different services should help explain the distribution of services expenditure.[2]

It should be noted that for some services, such as primary education, health insurance coverage or mobile telephone, it is not entirely appropriate to talk about access since there usually are no access restrictions other than prices. Despite this, and for simplicity, "access" shall be referred to as meaning that the service is consumed. Possibly, the three main reasons to explain why some households decide not to access those services are: (1) they are too poor to afford them (prices are too high compared to their income or to other prices); (2) they face higher opportunity costs; or (3) they have low preference for those services.

The analysis is restricted to Latin America due to data restrictions not allowing for a systematic undertaking of this type of study using surveys of other regions. Results suggest that the concentration of access to services explains little of the high concentration and pro-rich bias observed in services expenditure. Even though most services show some pro-rich bias in the access to services, (suggesting that rich households tend to have a higher level of access to services than poor households) this bias remains relatively small and cannot explain some of the strong pro-rich biases observed in services expenditure. The exception is perhaps in telecommunications where a strong pro-rich bias in access is evident, which could help explain the strong pro-rich bias observed for telecommunications expenditure.

In most of the other services sub-sectors, even though there is some pro-rich bias, it is not sufficiently significant enough to explain in a meaningful way the pro-rich bias observed in services expenditure. There is, however, evidence that the bias in access to high quality services (such as private education, or private health insurance) is more unequal, and therefore access to quality, rather than simple access may be more of an issue. But here, lack of access could be explained by high prices that the poor are unable to afford, rather than to a lack of infrastructure.

The rest of this chapter is organized as follows. Section 2 provides an analysis of the distributional incidence of access for the eight Latin American countries studied in section 4 of Olarreaga et al. (2009). Section 3 expands the analysis to other countries in Latin America for which data is available. Section 4 concludes.

2. DISTRIBUTIONAL INCIDENCE OF ACCESS TO SERVICES IN LATIN AMERICA

The analysis of access is performed for the same sectors as was the case in Olarreaga et al. (2009): education; health; telecommunications; transport; water; electricity; and gas. In addition, home and internet connections are also looked at and within these sub-sectors a further differentiation is made along important dimensions that were not undertaken earlier. For example, in the case of education, a differentiation will be made between primary and secondary education, as well as private and public education. The methodology closely follows the one developed in section 3 (Olarreaga et al. 2009), and basically consists of the calculation of concentration curves for access to different services. It is important to note that contrary to the analysis on services expenditure shares in Olarreaga et al. (2009), where concentration curves are calculated in terms of access, it will be nonsensical to compare them to Lorenz curves of total expenditure or income. Thus, there is no equivalent to the Kakwani indices that were calculated in Olarreaga et al. (2009). A simple comparison of the concentration curves to the perfect equality line will be made, implying that access to services is the same across the entire income distribution.

Access to Education

Net enrolment rates are focussed on in order to study access to primary and secondary schools. Table 1 presents the distribution of students (panel a) and net enrolment rates (panel b) for primary education by expenditure quintiles. Table 2 presents the same information for secondary education. Corresponding concentration curves are shown in figures 1 and 2.

Enrolment rates at the primary school level are very high in Latin America, ranging from 89.6 per cent in El Salvador to 98 per cent in Mexico. Though increasing with per capita consumption, enrolment rates are high even in the poorest quintile (between 78 per cent and 96 per cent). For the upper quintiles, enrolment rates are almost perfect. Figure 1 shows the corresponding concentration curves, which almost overlap with the perfect equality line.

As expected, enrolment rates are lower at the secondary school level, ranging from 33.3 per cent in El Salvador to 76.4 per cent in Peru. Moreover, differences in enrolment rates between the poorest and the richest quintile are considerable (between 35 and 72 percentage points). This is illustrated in figure 2 by concentration curves to the right of the perfect equality line.

It should be noted that the distribution of access to primary and secondary education do not exhibit concentration levels that can amply explain the observed pro-rich distribution of expenditures on education described in section 4 of Olarreaga et al. (2009). Therefore, it was necessary to consider another dimension of access to education – access to high quality education. It is likely that children from the richest quintiles have better access to higher quality education. Quality gap among schools could be due to differences in teaching, class size, facilities, and budgets, among other factors. These characteristics usually differ between public and private schools.[3]

Tables 3 and 4 report the proportion of enrolled students attending public primary and secondary schools, respectively. In Latin America most children attend public schools: at the primary level from 73 per cent to 92.1 per cent; and at the secondary level from 69.5 per cent to 88.7 per cent. While almost all children from the poorest quintile attend public school, most children from the 20 per cent richest households attend private school. Indeed, the concentration curves located to the left of the perfect equality line in figures 3 and 4 indicate a pro-poor concentration in the access to public education at the primary and secondary level.

In summation, there is a clear pro-rich concentration of access to private primary and secondary school, in addition to a pro-rich concentration of access to secondary education. This fact, help explain the observed pro-rich concentration of household expenditures on education. Of course, access to colleges and universities may well contribute to the explanation.

Access to Health Services

There is a similar pro-rich distribution characterizing health expenditures as was observed for education services. This distribution could be due to both, the fact that access is concentrated on the upper quintiles, and that access to the quality of health services differs at either end of quintile.

Two alternative indicators are used to measure access to health services. The first indicator shows whether the household head is covered by a health insurance (table and figure 5), while the second indicator shows whether any household member received any professional medical attention when required over a twelve month period (table and figure 6).

As table 5 shows, access to health insurance appears to be very limited in Latin America, with a low of 17.2 per cent in Nicaragua, 28.6 per cent in El Salvador, 29.1 per cent in Peru, and 35.4 per cent in Ecuador. Health insurance coverage is somewhat higher in Panama at 58.9 per cent and in Colombia at 67.7 per cent.

Health insurance coverage is strongly concentrated within the upper quintiles. Depending on the country only 3.7 per cent to 53.8 per cent of heads of households from the poorest quintile are insured, while 32.6 percent to 83.9 percent of heads of households from the richest quintile are insured.

On the other hand access to medical care is much less concentrated, with most curves close to the perfect equality line (figure 6). Moreover, the difference in the share of households having received professional medical attention when required is similar at both the bottom and top quintiles in all countries, except perhaps in Peru. As reported in tables 5, concentration coefficients for access to medical services range from 1.3 to 9.6, while for health insurance coverage range from 9.3 to 41.9 as shown in table 6. Also, as is evident in figures 5 and 6, concentration curves corresponding

to health insurance coverage are much further from the perfect equality line than those corresponding to access to medical services.

At first glance, this seems to suggest that access to health services is not really a problem in Latin America. However access to private health insurance and therefore high quality private medical services is much more concentrated. Thus, as in the case of education, taking into account differences in the quality of health services accessed by poorer and richer households may help explain the observed expenditure patterns.

Access to Fixed and Mobile Telephones

Access to fixed-line telephone services (fixed phone) is rather limited in Latin America. As shown in table 7, the percentage of households with access to a fixed phone ranges from 14.2 per cent in Nicaragua to a maximum of 54.6 per cent in Colombia. Moreover, the distribution of telephone access is extremely concentrated on the upper quintiles. For example, only 1 per cent of households have a fixed phone among Peru's bottom quintile compared to almost 70 per cent of households from the richest quintile. Thus, the corresponding concentration curves are located far to the right of the perfect equality line, as can be seen in figure 7.

This high pro-rich concentration in the distribution of access also clarifies the high pro-rich concentration of expenditures on fixed phones (discussed in section 4).

The distribution of access to mobile phone services (mobile phones) is described in table 8 and figure 8. Access to mobile phones varies between 17.5 per cent in Colombia to 68.2 per cent in Ecuador. Considering median values of coverage across countries, approximately 36 per cent of households have fixed phones and mobile phones. As previously pointed out, Colombia has the highest fixed phone access (54.6 per cent), but also has the lowest mobile phone coverage (17.5 per cent). Although this suggests some kind of substitution in the consumption of the two services, the case of Colombia seems to be the exception. The remaining Latin American countries have wider fixed phone coverage as well as wider mobile phone coverage (Spearman´s rank correlation equals 64 per cent).

Although access to mobile phones is concentrated on the upper quintiles, the use of mobile phones is more common among poor households than their access to fixed phones.

Access to Home Internet Connection

In addition to fixed phones and mobile phones, total household telecommunication expenditures include other services such as postal services and internet. While surveys lack information on postal services use, there is available data on home internet connection. Table 9 and figure 9 describe the distribution of internet access along the per capita household consumption distribution.

Access to home internet is very rare throughout Latin America. Mexico has the highest coverage at 8.4 per cent, followed by Colombia at 5.3 per cent, Panama at 5.0 per cent, and Peru at 4.7 per cent. As expected, internet access is extremely pro-rich concentrated, with virtually no households from the poorer quintiles with home internet connection.

Access to Transport Services (Public and Private)

As mentioned earlier, available information on the use of transport services does not exist for most Latin American countries. Therefore, access is substituted by an indicator of positive household expenditure on transport services, both private and public. Under this definition, the lack of access to transport services means that a family does not report positive expenditures on any means of transport, presumably because it does not use any.

As table 10 shows, depending on the country, between 65.2 per cent and 90.9 per cent of households use either public or private transport services. The distribution of access exhibits a slight pro-rich concentration (see figure 10), but still access varies markedly by quintiles. For example, in Peru, Colombia and Ecuador, at least 50 per cent of families from the poorest quintile do not pay for the use of transport services, while more than 80 per cent of the families from the richest quintile do pay for transport services.

Access to Water

Two alternative indicators of access to water services are used. According to the first indicator, a household has access to water if it has a source of (presumably) drinkable water in its terrain or dwelling. According to the second indicator, a household has access to water if it is connected to a water network. Clearly, if a household has access to water based on the latter definition, then it also has access to water based on the former. Tables 11 and 12 describe the distribution of access to water across consumption quintiles

based on both indicators. Figures 11 and 12 illustrate the corresponding concentration curves.

Depending on the country, between 71.1 per cent and 96.1 per cent of households have access to a source of drinkable water from terrains or dwellings. Also depending on the country, the proportion of households connected to a water network ranges from 64.6 per cent to 90.3 per cent. In both cases, the distribution of access is slightly pro-rich, with low to moderate concentration indices. In spite of this, access to a source of drinkable water is very limited for poor households in some countries. In Peru, for example, almost 60 per cent of households from the first quintile, and 40 per cent from the second quintile, do not have access to drinkable water.

It can be concluded from this analysis that the somewhat low concentration of access to water does not seem enough to account for the observed moderate pro-rich distribution of household expenditures on water. Hence, the latter must be explained by variations in prices faced and amounts consumed by households from different segments of the expenditure distribution.

Access to Electricity

Coverage of electricity networks is almost perfect in some of the countries under analysis. This is the case for Mexico, Ecuador, and Colombia, where 98.4 per cent, 97.4 per cent, and 95.7 per cent of households have electricity, respectively. Furthermore, coverage is very high even among poor households from these three countries, with at least 90 per cent from the first quintile having access to electricity services (see table 13 and figure 13).

For the remainder of the countries, access to electricity is still very limited for poor households. For example, households from the poorest quintile connected to an electricity network in Bolivia (Plurinational State of) and Nicaragua, only have 33.6 per cent and 38.3 per cent coverage, respectively. In fact, these two countries account for the highest concentration of household expenditures on electricity.

Access to Natural Gas

In keeping with the other basic services, it would be of interest to study the distribution of access to natural gas networks, but in most of the Latin American countries under analysis households primarily have access to bottled liquefied petroleum gas (LPG). Ecuador, El Salvador, Nicaragua, Panama, and Peru do not have any natural gas networks. Even though natural gas networks are available in Bolivia (Plurinational State of) and Brazil the residential coverage is very low (below 2 per cent of households) due to climatic reasons.[4]

3. EXTENSION TO OTHER LATIN AMERICAN COUNTRIES

This section extends the analysis of the distributional incidence of access to services to all Latin American countries. Tables 14 to 26 present the relevant information. The same access patterns described above are observed. Therefore, a detailed discussion of these tables would not actually contribute to a better understanding.

4. CONCLUSIONS

The objective of this chapter was to undertake a distributional incidence analysis of access to services in Latin America to distinguish whether lack of access explained the pro-rich bias observed in services expenditure found in the study Olarreaga et al. (2009).

It was found that even though a small pro-rich bias in access to services exists in most Latin American countries; this is generally too small to explain the large pro-rich bias observed for services expenditure. The exception is perhaps telecommunications where there a significant pro-rich bias in fixed phone and mobile phone access as well as internet access exists, which can also help to explain the also relatively large pro-rich bias in expenditure. In the case of most other services, the pro-rich bias in access to services is too small to provide plausible explanation of the patterns observed in Olarreaga et al. (2009).

Interestingly, it was found that even though a compelling pro-rich bias in access to most services was not evident, the bias becomes greater when the focus was on high-quality services such as private education, or private medical care. Thus, the associated problems of access to services by the poor have more to do with affordability of the service, rather than constraints imposed by physical infrastructure and delivery modes.

Table 1. Access to primary schools

a. Distribution of primary school students by quintiles (%)

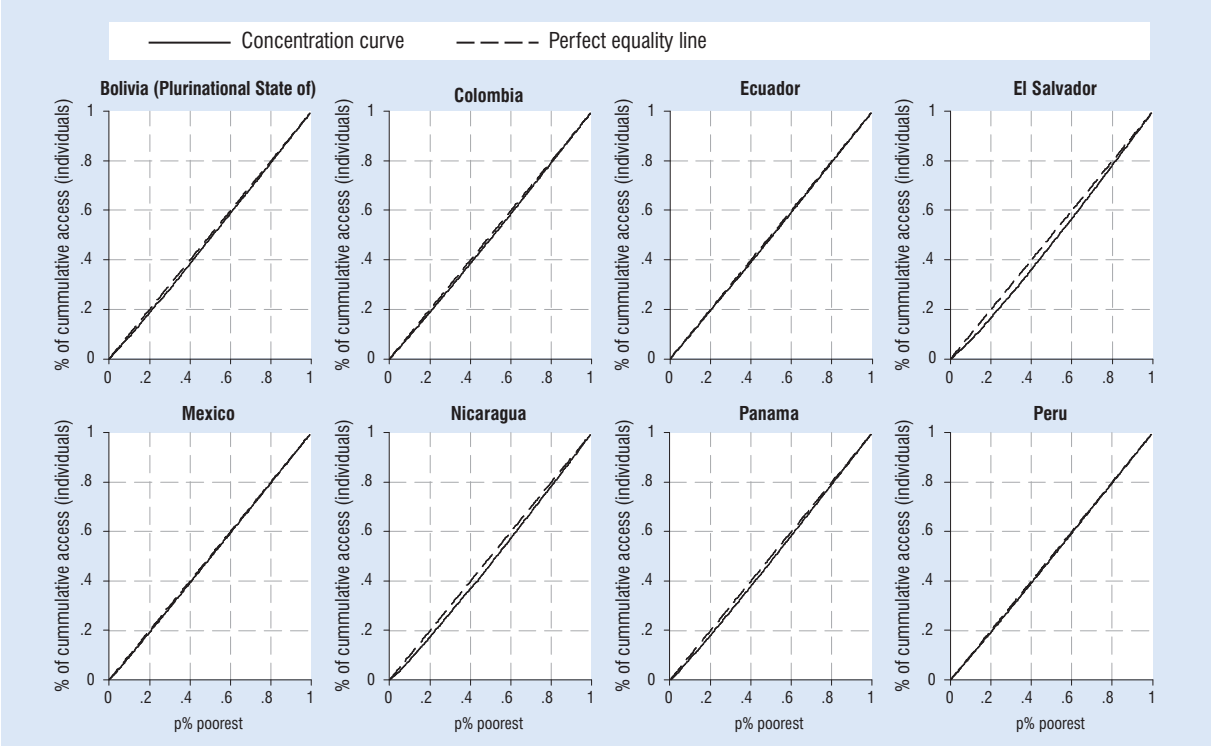
Country	quintiles of per capita household expenditure					Total	Concentration index
	1	2	3	4	5		
Bolivia (Plurinational State of)	30.8	24.8	20.5	14.6	9.4	100.0	2.1
Colombia	33.9	25.6	18.8	13.6	8.1	100.0	1.9
Ecuador	36.9	23.8	17.1	12.8	9.4	100.0	1.0
El Salvador	26.4	25.3	21.5	15.7	11.1	100.0	5.3
Mexico	35.8	25.0	18.8	12.3	8.1	100.0	1.0
Nicaragua	31.3	23.5	22.0	15.0	8.2	100.0	4.2
Panama	38.3	26.7	17.4	10.5	7.1	100.0	2.8
Peru	34.1	24.5	18.7	13.8	8.8	100.0	1.0

b. Primary school net enrollment rates by quintiles (%)

Country	quintiles of per capita household expenditure					Total
	1	2	3	4	5	
Bolivia (Plurinational State of)	90.1	97.1	97.1	98.6	98.1	95.1
Colombia	91.5	95.8	98.3	98.5	99.3	95.4
Ecuador	95.0	98.7	98.7	99.8	99.2	97.5
El Salvador	78.0	91.5	94.8	97.1	98.1	89.6
Mexico	96.0	99.0	99.1	99.2	99.5	98.0
Nicaragua	83.2	90.4	95.9	96.7	99.2	90.6
Panama	90.5	97.5	99.3	98.6	100.0	95.3
Peru	95.6	98.5	98.9	99.6	99.3	97.8

Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Figure 1. Concentration curves for access to primary schools



Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Table 2. Access to secondary schools

a. Distribution of secondary school students by quintiles (%)

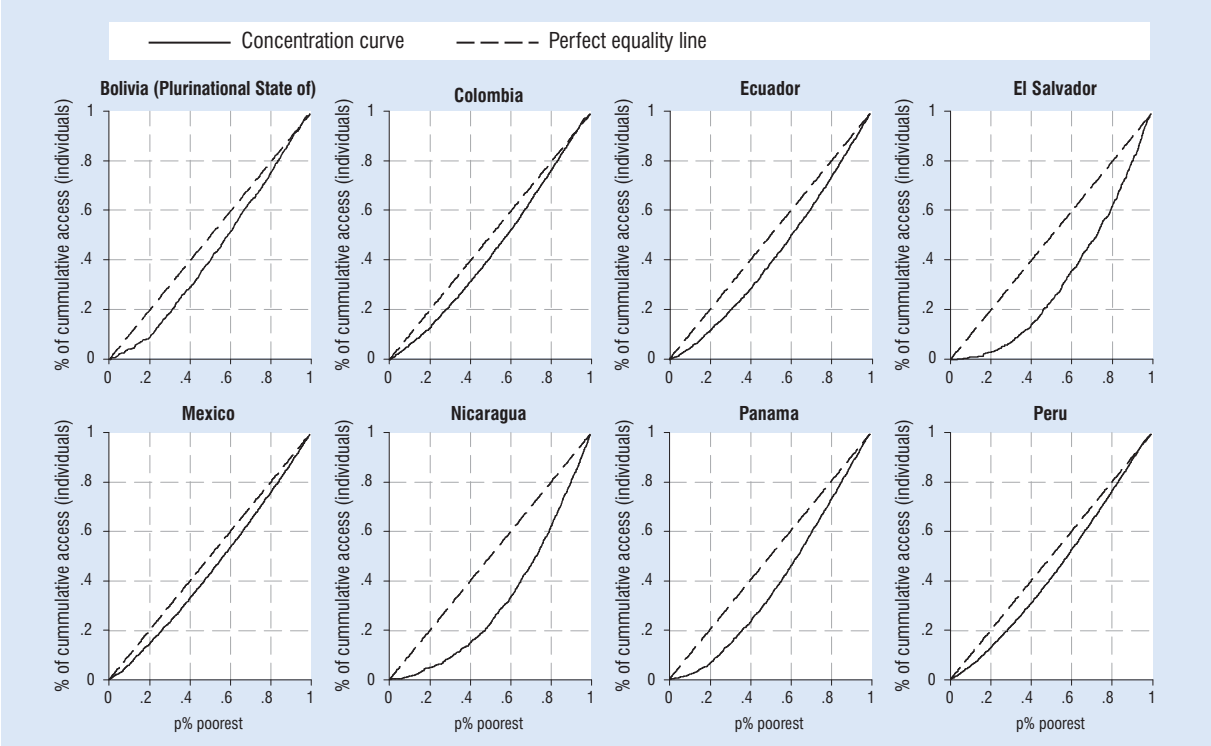
Country	quintiles of per capita household expenditure					Total	Concentration index
	1	2	3	4	5		
Bolivia (Plurinational State of)	9.8	25.1	27.7	18.9	18.5	100.0	15.1
Colombia	24.1	23.1	21.9	18.0	12.9	100.0	12.7
Ecuador	22.6	23.6	20.5	18.2	15.0	100.0	15.8
El Salvador	5.6	18.3	25.2	25.3	25.6	100.0	36.5
Mexico	24.6	23.4	22.3	17.2	12.5	100.0	9.9
Nicaragua	10.0	19.5	22.9	26.1	21.5	100.0	35.8
Panama	19.7	26.5	23.8	18.0	12.0	100.0	22.4
Peru	18.5	23.2	23.8	19.2	15.4	100.0	12.8

b. Secondary school net enrollment rates by quintiles (%)

Country	quintiles of per capita household expenditure					Total
	1	2	3	4	5	
Bolivia (Plurinational State of)	31.3	69.6	79.0	78.8	80.9	67.0
Colombia	53.7	72.4	84.2	87.8	88.7	72.6
Ecuador	46.4	68.6	81.8	88.8	93.5	69.0
El Salvador	6.8	26.2	39.3	53.4	69.8	33.3
Mexico	58.8	74.3	82.0	86.5	93.7	74.7
Nicaragua	13.2	33.8	54.2	74.4	85.4	42.4
Panama	36.4	71.1	88.7	93.2	91.7	66.4
Peru	53.4	73.1	86.1	93.1	94.7	76.4

Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Figure 2. Concentration curves for access to secondary schools



Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Table 3. Access to public primary schools

a. Distribution of primary school students attending public schools by quintiles (%)

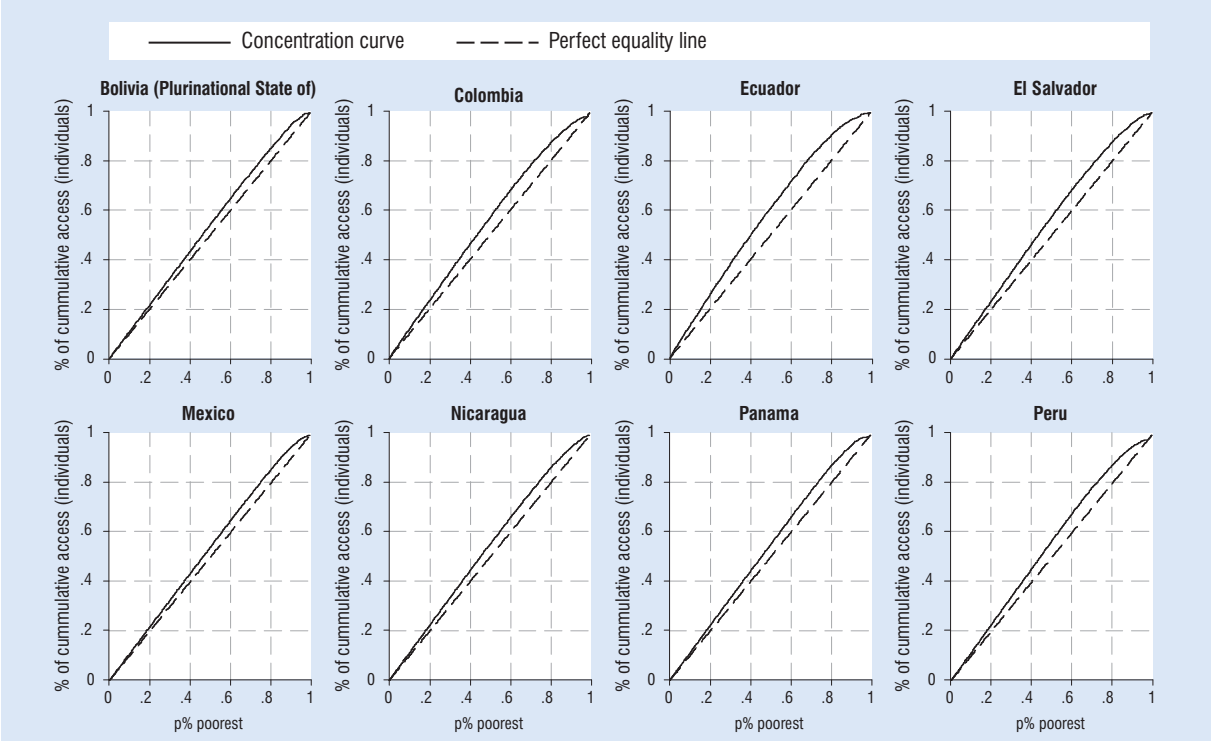
Country	quintiles of per capita household expenditure					Total	Concentration index
	1	2	3	4	5		
Bolivia (Plurinational State of)	33.4	26.7	21.3	13.8	4.8	100.0	-6.6
Colombia	39.3	28.3	18.3	10.7	3.5	100.0	-10.7
Ecuador	46.0	26.0	16.4	8.8	2.8	100.0	-15.9
El Salvador	30.7	28.7	22.1	13.2	5.2	100.0	-11.0
Mexico	38.8	26.8	19.4	11.0	3.9	100.0	-6.7
Nicaragua	34.6	25.5	22.9	12.9	4.2	100.0	-8.0
Panama	42.2	29.1	17.8	8.5	2.4	100.0	-8.4
Peru	38.0	27.9	19.1	11.4	3.6	100.0	-10.1

b. Proportion of primary school students attending public schools by quintiles (%)

Country	quintiles of per capita household expenditure					Total
	1	2	3	4	5	
Bolivia (Plurinational State of)	99.1	98.1	94.8	86.3	46.9	91.3
Colombia	97.5	92.8	81.9	65.9	35.6	84.0
Ecuador	91.6	79.7	69.6	49.7	21.8	73.0
El Salvador	98.2	96.0	86.9	71.2	39.9	84.5
Mexico	99.8	98.7	95.2	82.7	44.6	92.1
Nicaragua	99.6	97.4	92.8	76.2	46.2	89.7
Panama	99.6	97.9	91.8	72.6	30.1	90.0
Peru	99.0	98.1	88.4	70.7	36.0	87.3

Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Figure 3. Concentration curves for access to public primary schools



Source: Authors' Scalculations based on SEDLAC (CEDLAS and The World Bank).

Table 4. Access to public primary schools

a. Distribution of primary school students attending public schools by quintiles (%)

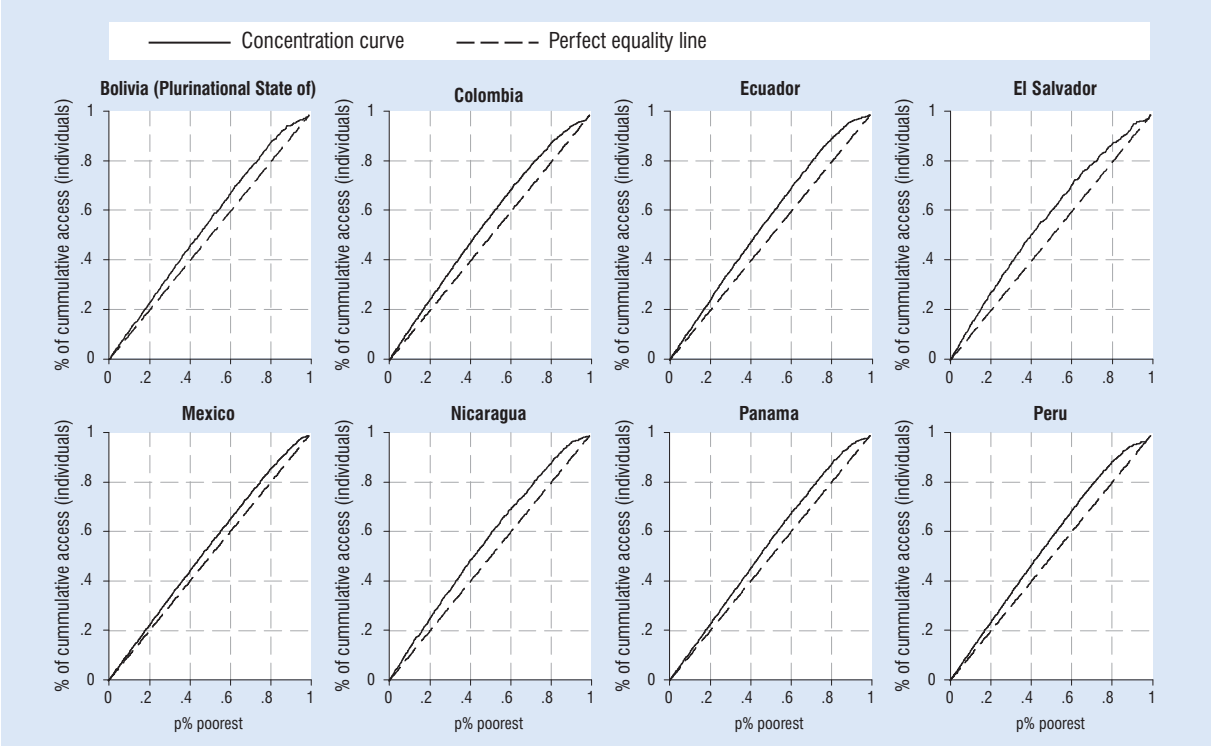
Country	quintiles of per capita household expenditure					Total	Concentration index
	1	2	3	4	5		
Bolivia (Plurinational State of)	11.5	28.7	30.1	19.2	10.4	100.0	-10.2
Colombia	29.3	26.2	22.7	15.3	6.5	100.0	-12.2
Ecuador	27.5	27.1	22.0	16.9	6.5	100.0	-13.1
El Salvador	7.9	23.3	27.9	23.9	17.0	100.0	-15.3
Mexico	27.1	25.5	22.9	16.4	8.0	100.0	-7.3
Nicaragua	13.1	23.3	25.3	24.7	13.6	100.0	-13.0
Panama	22.4	29.7	25.4	16.9	5.6	100.0	-10.0
Peru	23.2	26.8	25.8	17.0	7.2	100.0	-11.8

b. Proportion of primary school students attending public schools by quintiles (%)

Country	quintiles of per capita household expenditure					Total
	1	2	3	4	5	
Bolivia (Plurinational State of)	100.0	97.9	93.4	87.2	48.9	85.8
Colombia	96.1	90.6	82.7	67.7	40.3	79.6
Ecuador	86.1	81.3	75.7	65.7	30.6	70.8
El Salvador	97.3	90.0	77.0	65.2	45.9	69.5
Mexico	98.4	96.5	91.1	84.4	56.7	88.7
Nicaragua	95.3	86.1	81.0	69.9	45.5	72.8
Panama	98.0	97.7	92.1	80.8	40.1	86.5
Peru	98.5	96.5	91.4	78.6	40.1	83.9

Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Figure 4. Concentration curves for access to public secondary schools



Source: Aauthors' calculations based on SEDLAC (CEDLAS and The World Bank).

Table 5. Access to health insurance coverage

a. Distribution of households covered by health insurance by quintiles (%)

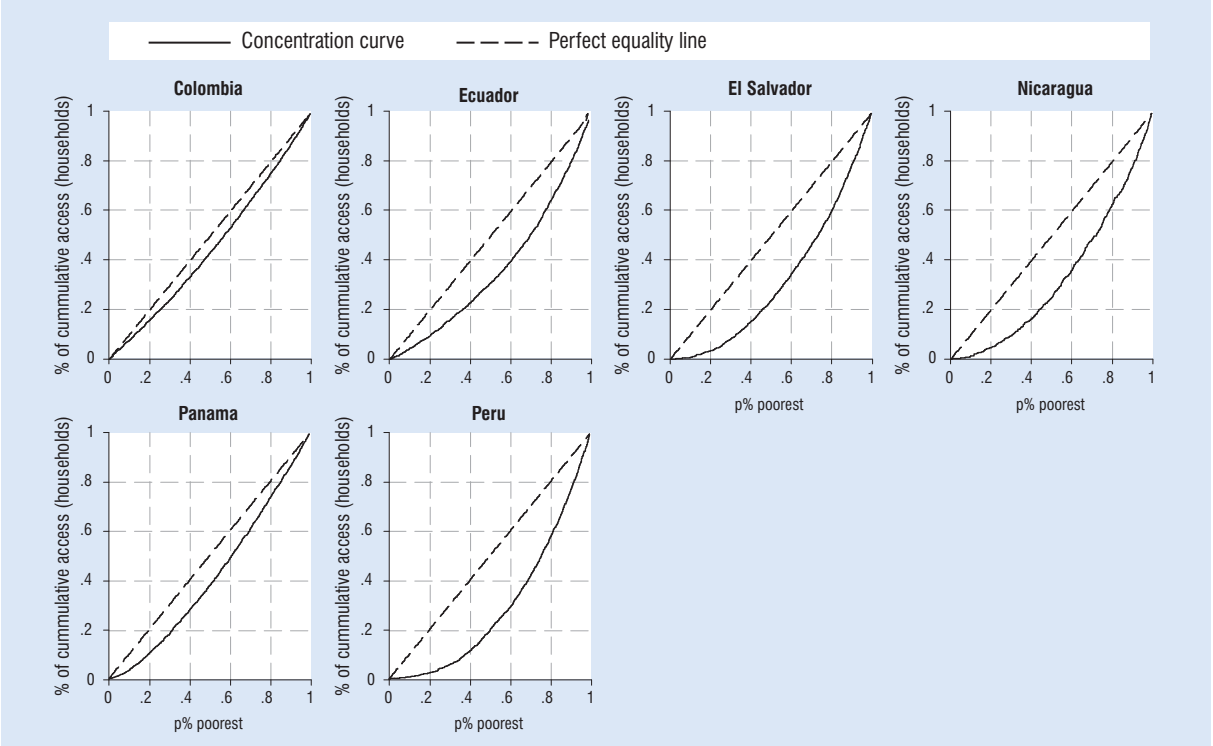
Country	quintiles of per capita household expenditure					Total	Concentration index
	1	2	3	4	5		
Bolivia (Plurinational State of)	NA	NA	NA	NA	NA	NA	NA
Colombia	15.9	17.6	19.8	22.0	24.8	100.0	9.3
Ecuador	9.6	13.1	17.0	24.6	35.6	100.0	26.7
El Salvador	3.3	12.0	19.2	25.5	40.1	100.0	36.5
Mexico	NA	NA	NA	NA	NA	NA	NA
Nicaragua	4.7	11.6	19.8	26.3	37.6	100.0	34.2
Panama	10.3	17.5	20.7	24.7	26.8	100.0	17.1
Peru	2.5	8.7	17.5	28.2	43.0	100.0	41.9

b. Proportion of households covered by health insurance by quintiles (%)

Country	quintiles of per capita household expenditure					Total
	1	2	3	4	5	
Bolivia (Plurinational State of)	NA	NA	NA	NA	NA	NA
Colombia	53.8	59.7	67.1	74.7	83.9	67.8
Ecuador	17.1	23.2	30.1	43.6	63.0	35.4
El Salvador	4.7	17.1	27.4	36.4	57.3	28.6
Mexico	NA	NA	NA	NA	NA	NA
Nicaragua	4.1	9.9	16.9	22.6	32.6	17.2
Panama	30.2	51.6	61.3	72.8	78.8	58.9
Peru	3.7	12.7	25.4	41.0	62.5	29.1

Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Figure 5. Concentration curves for access to health insurance coverage



Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Table 6. Access to professional medical care

a. Distribution of households that received professional medical care when needed by quintiles (%)

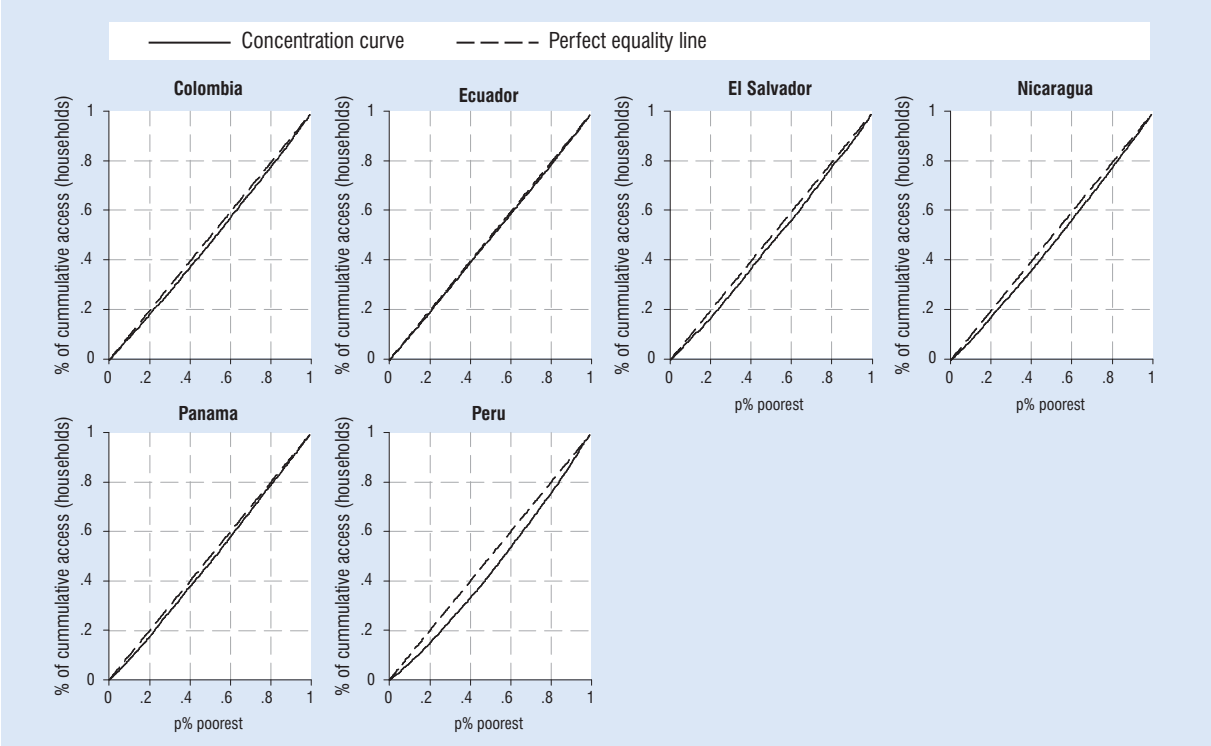
Country	quintiles of per capita household expenditure					Total	Concentration index
	1	2	3	4	5		
Bolivia (Plurinational State of)	NA	NA	NA	NA	NA	NA	NA
Colombia	19.4	20.5	21.2	21.0	17.8	100.0	3.6
Ecuador	20.2	20.7	19.5	19.7	19.9	100.0	1.3
El Salvador	19.8	23.1	19.4	20.5	17.2	100.0	4.9
Mexico	NA	NA	NA	NA	NA	NA	NA
Nicaragua	18.9	19.3	21.8	20.3	19.7	100.0	5.0
Panama	18.7	21.1	20.8	20.0	19.5	100.0	3.5
Peru	15.8	18.9	21.2	21.3	22.8	100.0	9.6

b. Proportion of households that received professional medical care when needed by quintiles (%)

Country	quintiles of per capita household expenditure					Total
	1	2	3	4	5	
Bolivia (Plurinational State of)	NA	NA	NA	NA	NA	NA
Colombia	71.9	74.1	78.5	79.8	86.1	77.7
Ecuador	72.8	76.1	74.1	74.5	79.5	75.3
El Salvador	55.7	65.4	63.1	69.1	72.4	64.5
Mexico	NA	NA	NA	NA	NA	NA
Nicaragua	72.3	77.8	85.7	86.8	91.5	82.4
Panama	73.9	85.2	85.1	88.5	88.9	84.1
Peru	36.7	44.1	50.4	52.6	60.0	48.4

Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Figure 6. Concentration curves for access to professional medical care



Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Table 7. Access to fixed telephone

a. Distribution of households with fixed telephone by quintiles (%)

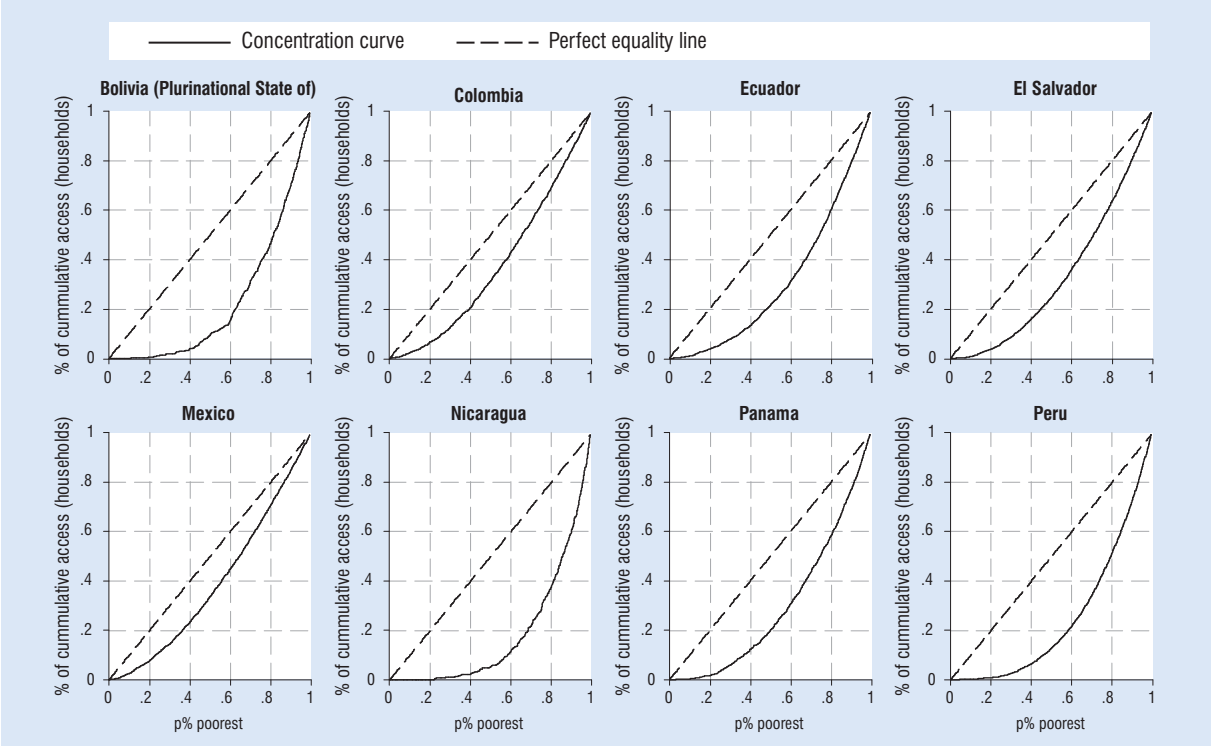
Country	quintiles of per capita household expenditure					Total	Concentration index
	1	2	3	4	5		
Bolivia (Plurinational State of)	0.3	3.4	10.8	31.4	54.0	100.0	55.4
Colombia	6.4	14.1	22.1	26.2	31.2	100.0	25.5
Ecuador	3.7	9.4	17.5	28.8	40.6	100.0	38.7
El Salvador	3.6	12.2	19.9	27.5	36.8	100.0	34.2
Mexico	7.8	15.5	21.5	25.7	29.5	100.0	22.5
Nicaragua	0.0	2.3	9.2	25.3	63.2	100.0	63.3
Panama	1.7	10.4	18.3	27.5	42.1	100.0	41.0
Peru	0.9	5.6	14.8	29.4	49.4	100.0	50.4

b. Proportion of households with fixed telephone by quintiles (%)

Country	quintiles of per capita household expenditure					Total
	1	2	3	4	5	
Bolivia (Plurinational State of)	9.3	3.0	9.4	27.2	47.0	17.4
Colombia	17.6	38.4	60.4	71.4	85.2	54.6
Ecuador	7.2	18.2	33.7	55.5	78.2	38.6
El Salvador	7.3	24.8	40.3	55.9	74.6	40.6
Mexico	19.9	39.9	55.2	66.1	75.7	51.4
Nicaragua	0.0	1.7	6.5	18.0	45.0	14.2
Panama	2.8	17.1	30.2	45.4	69.4	33.0
Peru	1.2	7.8	20.6	40.9	68.7	27.8

Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Figure 7. Concentration curves for access to fixed phone



Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Table 8. Access to mobile telephone

a. Distribution of households with mobile telephone by quintiles (%)

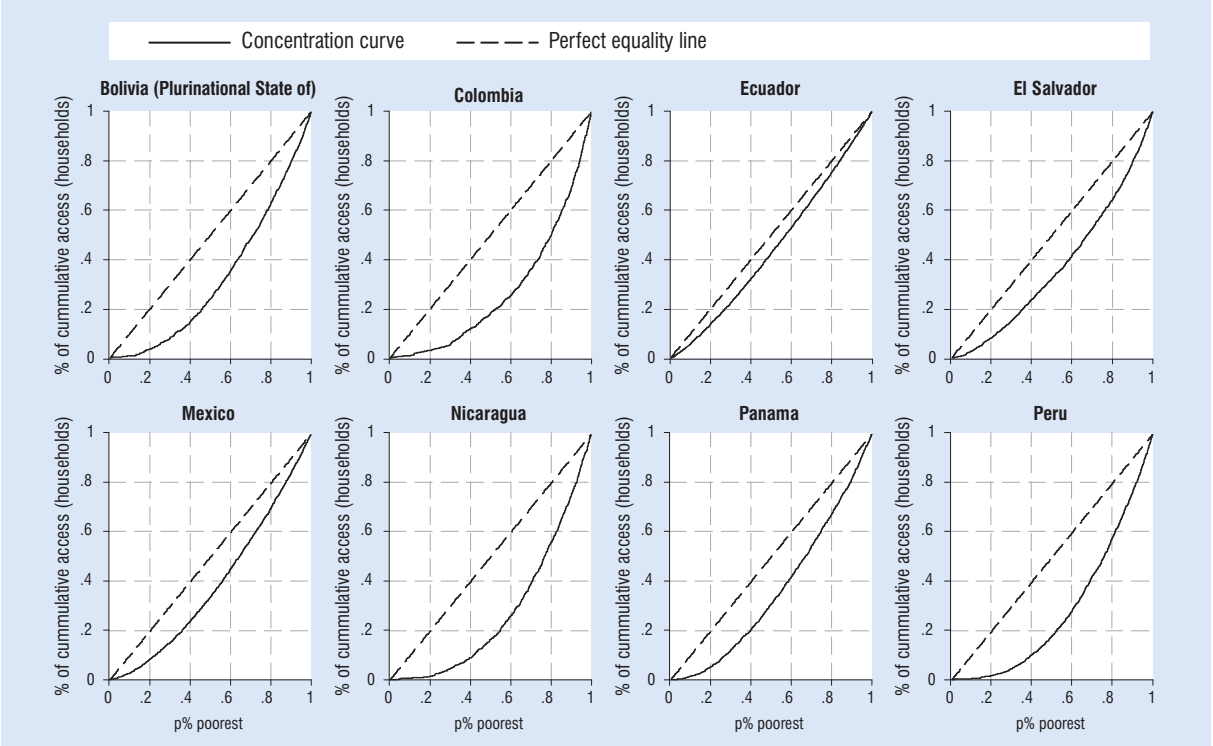
Country	quintiles of per capita household expenditure					Total	Concentration index
	1	2	3	4	5		
Bolivia (Plurinational State of)	3.5	11.2	20.6	27.3	37.4	100.0	35.1
Colombia	2.9	8.9	13.6	24.2	50.5	100.0	46.8
Ecuador	13.8	18.4	20.7	22.4	24.7	100.0	10.9
El Salvador	8.2	15.6	18.0	22.5	35.6	100.0	26.3
Mexico	8.4	15.6	21.1	24.5	30.3	100.0	22.1
Nicaragua	1.3	7.7	17.1	29.8	44.1	100.0	45.0
Panama	5.2	15.2	21.5	25.5	32.6	100.0	27.3
Peru	1.7	8.6	18.0	29.7	42.0	100.0	42.7

b. Proportion of households with mobile telephone by quintiles (%)

Country	quintiles of per capita household expenditure					Total
	1	2	3	4	5	
Bolivia (Plurinational State of)	6.5	20.9	38.5	50.8	69.5	37.2
Colombia	2.5	7.8	11.9	21.1	44.2	17.5
Ecuador	47.2	62.6	70.7	76.2	84.3	68.2
El Salvador	14.3	27.1	31.3	39.2	62.0	34.8
Mexico	20.7	38.6	52.1	60.4	74.6	49.3
Nicaragua	1.5	8.9	19.9	34.5	50.9	23.1
Panama	11.0	32.1	45.3	53.6	68.5	42.1
Peru	2.3	12.1	25.3	41.7	59.0	28.1

Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Figure 8. Concentration curves for access to cell phone



Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Table 9. Access to home internet connection

a. Distribution of households with internet connection by quintiles (%)

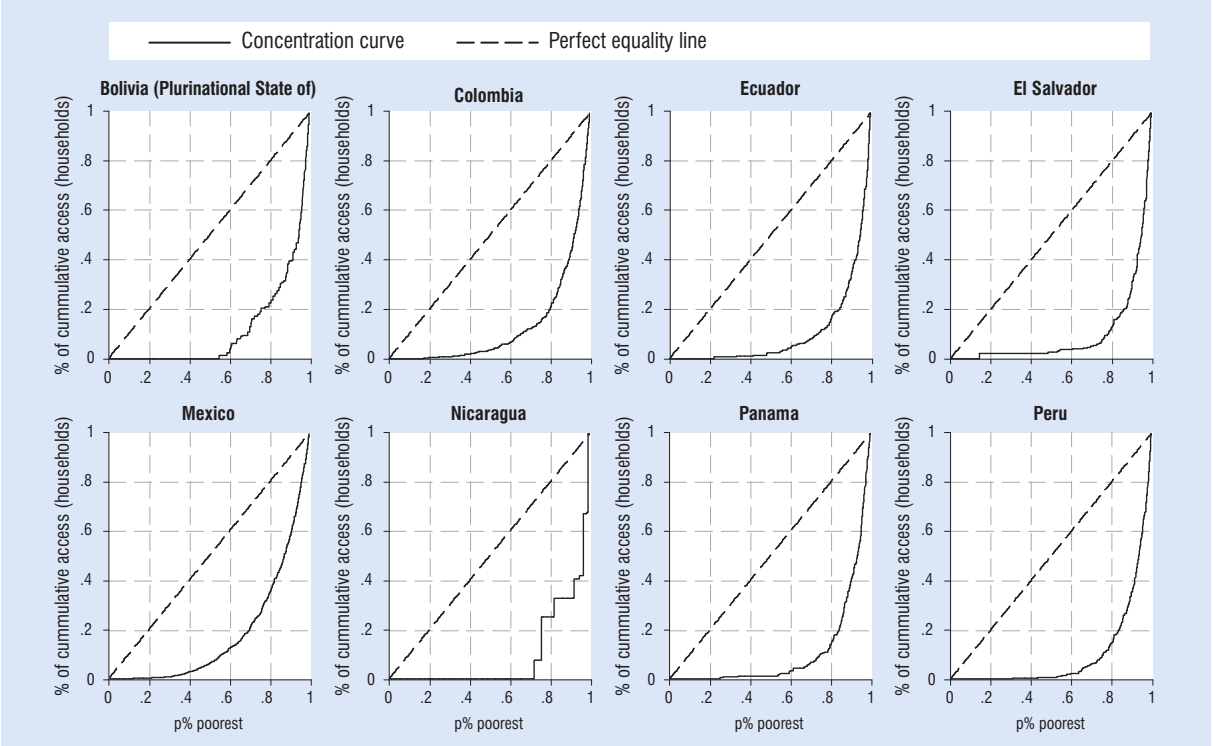
Country	quintiles of per capita household expenditure					Total	Concentration index
	1	2	3	4	5		
Bolivia (Plurinational State of)	0	1.0	2.3	18.8	78.9	100.0	77.2
Colombia	0.6	1.1	4.6	13.3	80.4	100.0	74.2
Ecuador	0	1.0	3.2	10.5	85.3	100.0	80.0
El Salvador	1.9	0	1.8	8.1	88.2	100.0	81.0
Mexico	0.3	2.7	9.4	22.2	65.4	100.0	64.4
Nicaragua	0	0	0	25.1	74.9	100.0	81.4
Panama	0	1.2	1.8	10.8	86.3	100.0	79.1
Peru	0	0	1.8	12.3	85.5	100.0	80.7

b. Proportion of households with internet connection by quintiles (%)

Country	quintiles of per capita household expenditure					Total
	1	2	3	4	5	
Bolivia (Plurinational State of)	0	0	0.4	2.9	12.4	3.1
Colombia	0.2	0.3	1.2	3.6	21.5	5.3
Ecuador	0	0.1	0.5	1.5	12.2	2.9
El Salvador	0.2	0	0.2	0.9	9.5	2.1
Mexico	0.1	1.1	4.0	9.3	27.5	8.4
Nicaragua	0	0	0	0.2	0.6	0.1
Panama	0	0.3	0.5	2.7	21.6	5.0
Peru	0	0	0.4	2.9	20.1	4.7

Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Figure 9. Concentration curves for access to home internet connection



Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Table 10. Access to public and private means of transport

a. Distribution of households that use any means of transport by quintiles (%)

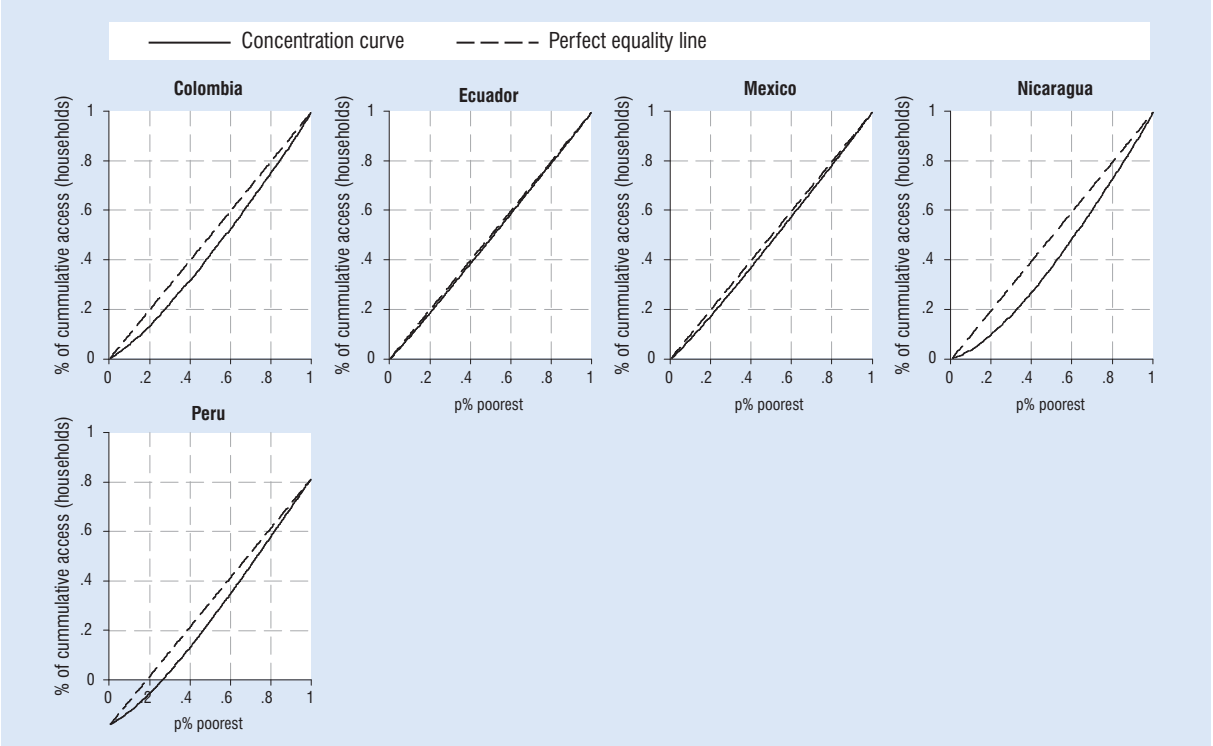
Country	quintiles of per capita household expenditure					Total	Concentration index
	1	2	3	4	5		
Bolivia (Plurinational State of)	NA	NA	NA	NA	NA	NA	NA
Colombia	13.4	18.3	21.0	22.8	24.5	100.0	11.2
Ecuador	18.7	20.0	20.2	20.5	20.7	100.0	1.9
El Salvador	NA	NA	NA	NA	NA	NA	NA
Mexico	17.5	19.8	20.6	20.7	21.4	100.0	3.8
Nicaragua	10.3	16.9	22.1	23.9	26.8	100.0	17.1
Panama	NA	NA	NA	NA	NA	NA	NA
Peru	13.0	18.6	21.7	23.2	23.5	100.0	10.6

b. Proportion of households that use any means of transport by quintiles (%)

Country	quintiles of per capita household expenditure					Total
	1	2	3	4	5	
Bolivia (Plurinational State of)	NA	NA	NA	NA	NA	NA
Colombia	45.4	62.3	71.3	77.3	83.2	67.9
Ecuador	85.3	90.7	91.9	93.0	93.9	90.9
El Salvador	NA	NA	NA	NA	NA	NA
Mexico	76.9	87.2	90.9	91.3	94.3	88.1
Nicaragua	33.5	54.9	72.3	78.0	87.4	65.2
Panama	NA	NA	NA	NA	NA	NA
Peru	52.5	75.0	87.4	93.4	94.5	80.6

Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Figure 10. Concentration curves for access to public and private means of transport



Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Table 11. Access to a drinkable water source in terrain or dwelling

a. Distribution of households with drinkable water by quintiles (%)

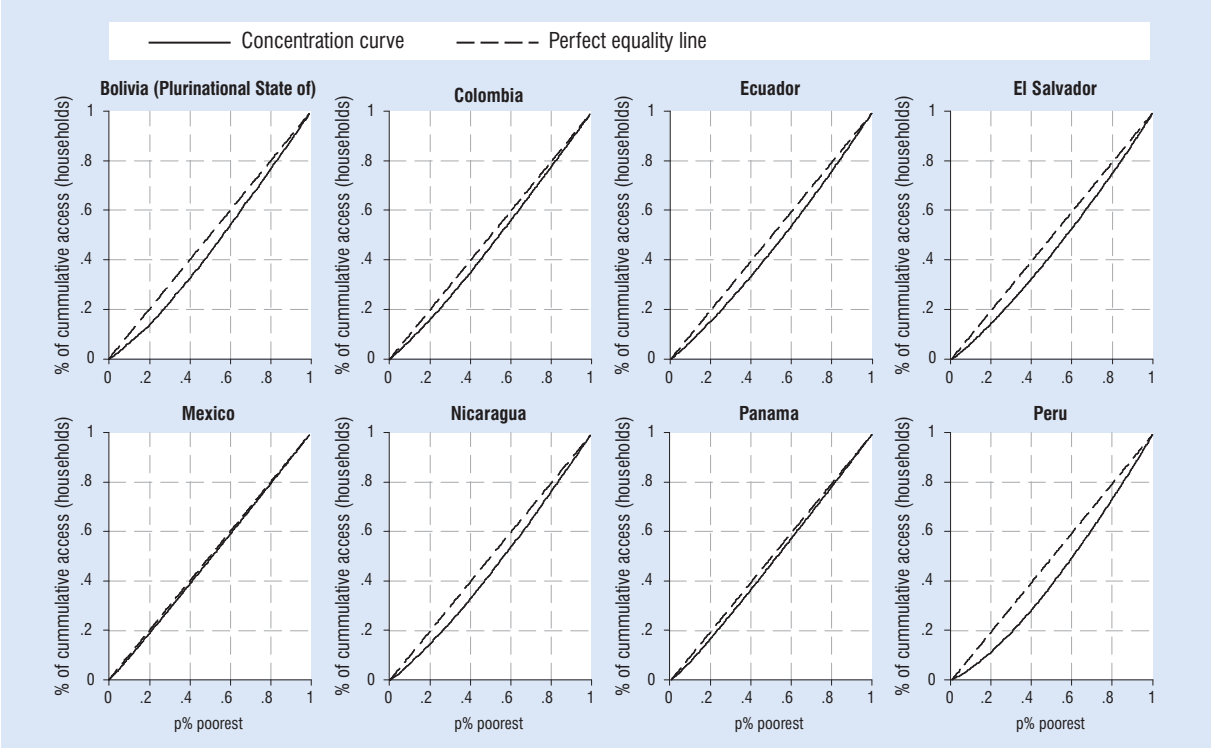
Country	quintiles of per capita household expenditure					Total	Concentration index
	1	2	3	4	5		
Bolivia (Plurinational State of)	13.4	19.0	21.4	22.7	23.4	100.0	9.8
Colombia	16.1	18.9	21.1	21.7	22.2	100.0	6.1
Ecuador	15.4	18.4	20.4	22.1	23.7	100.0	8.4
El Salvador	14.4	18.0	20.2	22.5	24.9	100.0	10.0
Mexico	18.8	19.9	20.2	20.4	20.6	100.0	1.8
Nicaragua	14.8	18.2	21.0	22.4	23.6	100.0	9.2
Panama	17.2	19.9	20.6	20.9	21.3	100.0	3.9
Peru	11.7	17.1	21.3	23.8	26.2	100.0	14.9

b. Proportion of households with drinkable water by quintiles (%)

Country	quintiles of per capita household expenditure					Total
	1	2	3	4	5	
Bolivia (Plurinational State of)	54.0	76.3	86.2	91.3	94.2	80.4
Colombia	69.0	81.1	90.6	93.0	94.9	85.7
Ecuador	62.9	74.7	83.0	90.0	96.3	81.4
El Salvador	53.4	65.8	73.3	80.7	88.6	72.5
Mexico	90.5	95.7	97.2	98.1	99.2	96.1
Nicaragua	60.0	73.9	85.0	90.8	95.6	81.1
Panama	78.8	91.4	94.6	96.0	97.5	91.7
Peru	41.5	60.7	75.6	84.8	93.1	71.1

Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Figure 11. Concentration curves for access to a drinkable water source in terrain or dwelling



Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Table 12. Access to a water network

a. Distribution of households connected to a water network by quintiles (%)

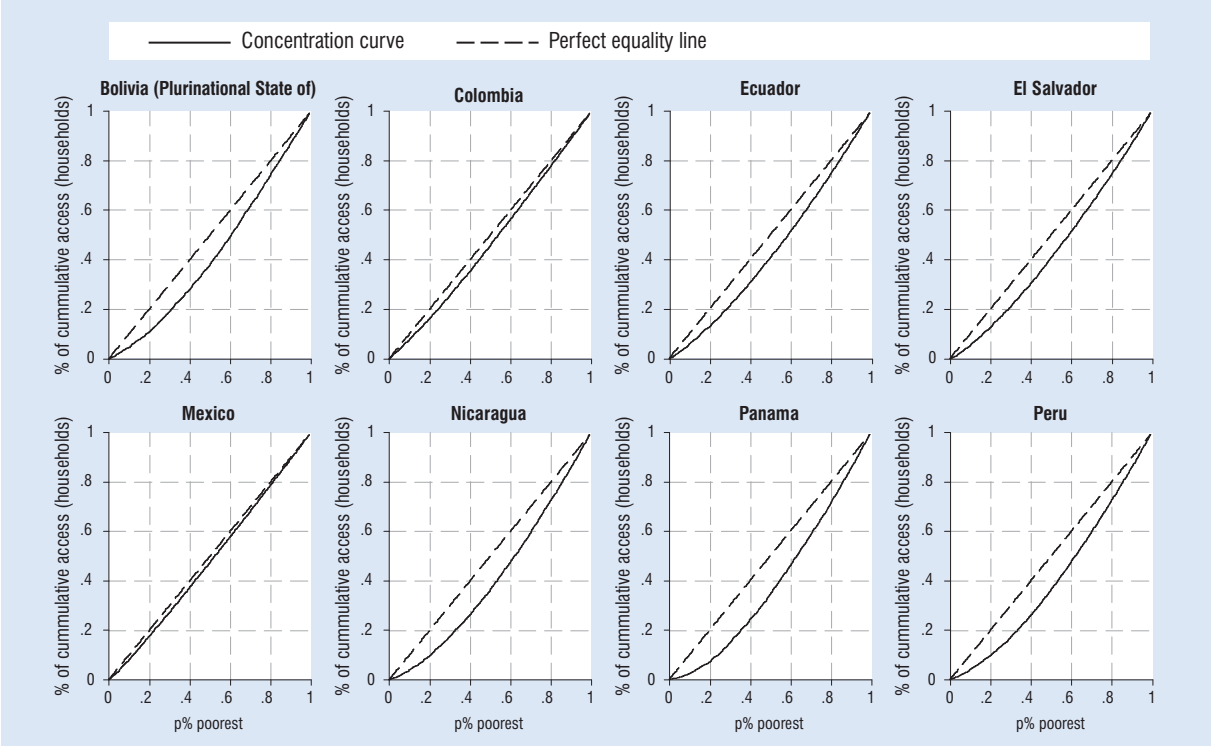
Country	quintiles of per capita household expenditure					Total	Concentration index
	1	2	3	4	5		
Bolivia (Plurinational State of)	10.7	17.3	21.1	25.0	25.9	100.0	15.8
Colombia	16.3	18.9	21.0	21.6	22.2	100.0	6.0
Ecuador	12.9	17.6	20.7	23.3	25.6	100.0	12.9
El Salvador	11.1	16.1	21.0	23.9	27.9	100.0	13.2
Mexico	17.6	19.7	20.5	20.9	21.4	100.0	3.8
Nicaragua	9.5	16.7	21.3	24.9	27.6	100.0	18.6
Panama	7.1	16.9	21.9	25.0	29.1	100.0	21.6
Peru	9.7	16.2	21.5	24.9	27.7	100.0	18.7

b. Proportion of households connected to a water network by quintiles (%)

Country	quintiles of per capita household expenditure					Total
	1	2	3	4	5	
Bolivia (Plurinational State of)	37.0	59.8	73.2	86.5	89.7	69.3
Colombia	70.6	82.1	91.3	93.5	96.4	86.8
Ecuador	47.3	64.5	75.9	85.3	94.0	73.4
El Salvador	42.8	59.4	70.9	79.0	88.1	69.2
Mexico	79.6	88.8	92.6	94.3	96.5	90.3
Nicaragua	30.7	53.8	68.9	80.5	89.2	64.6
Panama	22.5	53.9	69.7	79.5	92.3	63.6
Peru	32.1	53.3	70.9	82.0	91.3	65.9

Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Figure 12. Concentration curves for access to a water network



Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Table 13. Access to an electricity network

a. Distribution of households connected to an electricity network by quintiles (%)

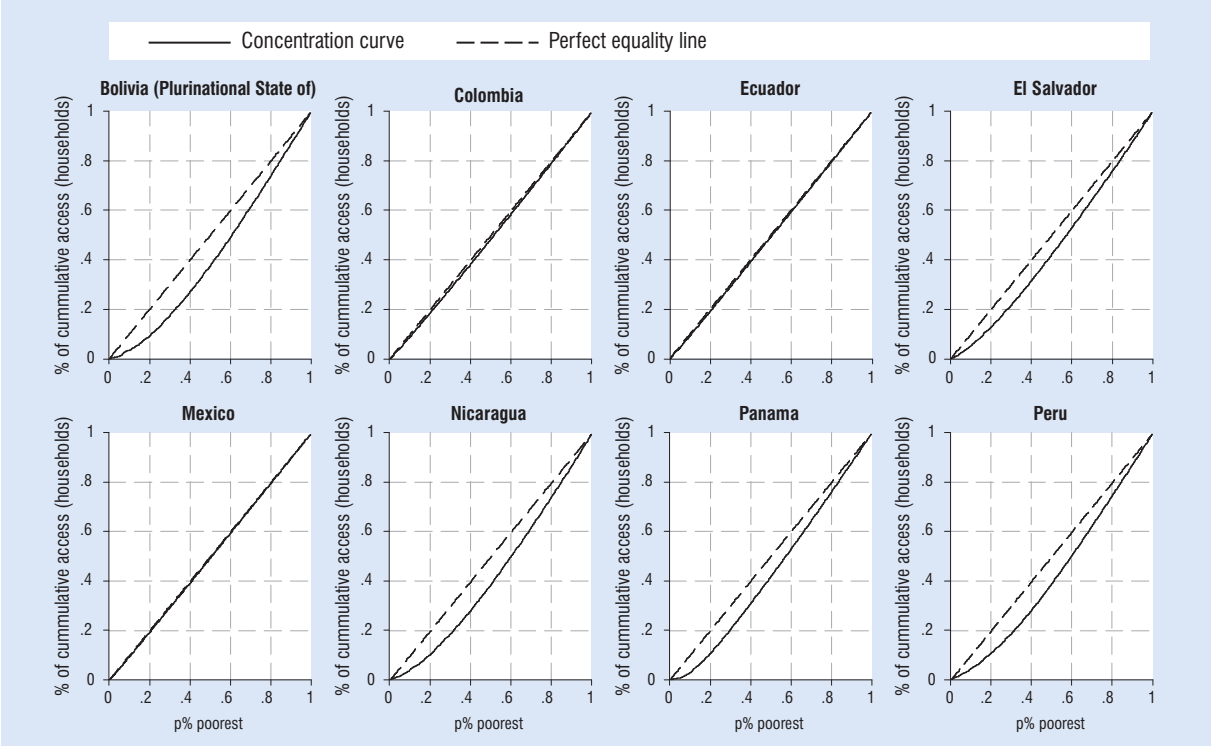
Country	quintiles of per capita household expenditure					Total	Concentration index
	1	2	3	4	5		
Bolivia (Plurinational State of)	9.1	17.9	21.9	25.0	26.1	100.0	17.1
Colombia	18.7	19.6	20.3	20.6	20.7	100.0	2.2
Ecuador	19.1	20.1	20.1	20.3	20.4	100.0	1.2
El Salvador	12.8	18.8	21.5	22.8	24.1	100.0	11.2
Mexico	19.5	19.9	20.2	20.2	20.3	100.0	0.8
Nicaragua	10.4	17.9	21.9	23.9	25.9	100.0	15.5
Panama	10.7	20.3	21.9	23.1	23.9	100.0	12.5
Peru	11.0	17.4	22.1	24.3	25.2	100.0	14.8

b. Proportion of households connected to an electricity network by quintiles (%)

Country	quintiles of per capita household expenditure					Total
	1	2	3	4	5	
Bolivia (Plurinational State of)	33.6	66.0	81.9	91.9	96.3	73.8
Colombia	89.4	93.7	97.3	98.6	99.2	95.7
Ecuador	92.9	97.9	97.9	98.8	99.5	97.4
El Salvador	51.0	74.5	85.3	90.7	95.7	79.4
Mexico	95.7	97.9	99.4	99.2	99.6	98.4
Nicaragua	38.3	66.1	80.9	88.2	95.3	73.8
Panama	43.7	83.2	89.7	94.7	97.8	81.8
Peru	42.3	67.0	85.2	93.6	97.0	77.0

Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Figure 13. Concentration curves for access to an electricity network



Source: Authors' calculations based on SEDLAC (CEDLAS and The World Bank).

Table 14. Primary school net enrolment rates

Country	quintiles of per capita household income (%)					Total
	1	2	3	4	5	
Argentina	99.1	98.9	99.9	99.4	99.8	99.2
Bolivia (Plurinational State of)	92.6	95.0	95.6	97.9	98.6	95.1
Brazil	96.4	97.2	98.3	99.5	99.5	97.6
Chile	98.4	99.2	98.8	99.7	99.5	99.0
Colombia	92.0	95.3	97.8	99.1	99.0	95.5
Costa Rica	97.7	98.7	99.4	99.3	100.0	98.7
Dominican Republic	96.6	97.5	97.9	99.1	98.6	97.6
Ecuador	95.5	97.5	99.1	99.3	99.2	97.5
El Salvador	83.6	89.2	92.5	95.7	97.4	89.6
Guatemala	84.7	90.2	93.1	94.0	98.8	90.2
Honduras	88.9	94.0	95.2	97.3	96.2	93.3
Mexico	96.1	99.0	98.9	99.1	99.0	98.0
Nicaragua	85.2	90.8	93.8	94.4	98.3	90.6
Panama	92.2	95.3	98.1	99.2	99.5	95.3
Paraguay	92.2	95.8	97.8	97.6	99.7	95.6
Peru	95.9	98.3	98.5	99.1	99.9	97.8
Uruguay	99.4	99.7	99.8	100.0	100.0	99.6
Venezuela	95.3	97.4	98.3	98.8	99.2	97.2

Source: Authors' own calculations based on SEDLAC (CEDLAS and The World Bank).

Table 15. Secondary school net enrolment rates

Country	quintiles of per capita household income (%)					Total
	1	2	3	4	5	
Argentina	70.1	83.4	90.0	95.0	96.0	81.1
Bolivia (Plurinational State of)	42.0	66.6	76.5	83.1	72.8	67.0
Brazil	30.4	47.1	59.4	73.8	87.5	53.5
Chile	73.0	80.8	86.3	88.9	92.6	81.8
Colombia	56.1	70.2	80.1	88.0	92.1	72.7
Costa Rica	44.1	59.8	61.3	75.9	91.3	61.2
Dominican Republic	33.2	48.2	57.1	65.6	80.1	52.4
Ecuador	52.9	65.1	73.3	84.0	91.6	69.1
El Salvador	14.9	24.9	41.0	50.2	61.9	33.4
Guatemala	18.5	30.8	43.5	56.9	76.9	40.2
Honduras	23.1	40.9	55.4	67.1	77.8	49.3
Mexico	63.9	73.7	75.0	83.1	90.3	74.6
Nicaragua	16.4	36.4	46.1	63.6	87.4	42.4
Panama	43.1	67.9	82.6	83.1	93.4	66.4
Paraguay	49.3	66.3	71.8	83.8	85.7	67.3
Peru	56.3	71.8	84.3	91.3	94.4	76.4
Uruguay	61.5	78.6	87.4	92.8	96.2	75.7
Venezuela	63.6	70.3	73.9	78.1	82.7	72.0

Source: Authors' own calculations based on SEDLAC (CEDLAS and The World Bank).

Table 16. Percentage of primary school students attending public schools

Country	quintiles of per capita household income (%)					Total
	1	2	3	4	5	
Argentina	92.3	74.5	57.0	43.1	25.9	74.6
Bolivia (Plurinational State of)	98.6	97.1	93.9	89.4	50.5	91.3
Brazil	97.0	91.6	84.7	69.2	35.5	84.3
Chile	99.1	98.6	97.5	94.0	65.9	94.2
Colombia	96.4	92.9	85.0	65.8	35.4	83.8
Costa Rica	99.2	97.4	95.2	87.9	55.3	92.3
Dominican Republic	92.8	80.9	72.7	60.0	33.9	76.2
Ecuador	89.9	80.4	68.1	53.2	29.2	73.0
El Salvador	96.4	93.1	82.4	72.2	47.6	84.4
Guatemala	96.4	93.3	87.2	72.7	41.2	85.6
Honduras	NA	NA	NA	NA	NA	NA
Mexico	99.7	b8.1	94.8	87.9	47.0	92.1
Nicaragua	98.2	96.0	89.2	81.9	56.3	89.6
Panama	98.8	97.3	88.8	76.2	39.8	90.0
Paraguay	94.7	89.1	82.2	69.0	39.0	82.4
Peru	98.5	96.7	88.9	71.3	39.5	87.3
Uruguay	98.0	90.8	77.5	55.1	25.8	86.0
Venezuela	NA	NA	NA	NA	NA	NA

Source: Authors' own calculations based on SEDLAC (CEDLAS and The World Bank).

Table 17. Percentage of secondary school students attending public schools

Country	quintiles of per capita household income (%)					Total
	1	2	3	4	5	
Argentina	88.3	77.6	63.2	48.3	33.2	71.2
Bolivia (Plurinational State of)	97.7	96.1	91.9	84.6	52.3	85.8
Brazil	95.3	92.5	88.9	78.7	37.6	78.8
Chile	99.0	98.4	97.3	93.3	64.1	93.0
Colombia	95.8	89.7	83.8	66.4	37.4	79.6
Costa Rica	96.4	96.8	94.2	85.5	59.6	88.5
Dominican Republic	90.6	79.7	74.2	59.5	33.3	67.6
Ecuador	81.8	83.4	77.3	63.3	31.0	70.8
El Salvador	90.8	77.2	72.7	66.7	47.2	69.4
Guatemala	75.3	61.5	58.9	47.2	21.8	50.7
Honduras	NA	NA	NA	NA	NA	NA
Mexico	98.2	94.5	91.2	87.0	58.1	88.7
Nicaragua	87.7	82.5	85.7	69.6	46.7	72.9
Panama	95.8	96.0	88.4	84.2	42.1	86.5
Paraguay	95.6	84.1	82.8	74.0	48.7	79.1
Peru	98.1	95.3	89.0	77.9	42.9	83.9
Uruguay	99.0	95.0	87.0	65.7	28.7	84.3
Venezuela	NA	NA	NA	NA	NA	NA

Source: Authors' own calculations based on SEDLAC (CEDLAS and The World Bank).

Table 18. Percentage of secondary school students attending public schools

Country	quintiles of per capita household income (%)					Total
	1	2	3	4	5	
Argentina	28.5	61.0	77.3	85.0	93.8	69.0
Bolivia (Plurinational State of)	NA	NA	NA	NA	NA	NA
Brazil	NA	NA	NA	NA	NA	NA
Chile	NA	96.8	95.7	94.5	92.6	95.2
Colombia	NA	77.3	65.9	78.9	88.2	68.1
Costa Rica	NA	79.3	83.4	84.5	87.2	81.6
Dominican Republic	NA	85.0	NA	NA	NA	NA
Ecuador	NA	21.3	31.4	44.5	66.3	35.3
El Salvador	NA	93.8	27.4	37.6	58.9	28.9
Guatemala	NA	17.7	28.7	35.8	48.6	27.4
Honduras	NA	69.0	NA	NA	NA	NA
Mexico	NA	NA	NA	NA	NA	NA
Nicaragua	NA	9.1	17.8	22.1	32.6	17.2
Panama	24.6	50.5	66.0	71.1	82.1	59.0
Paraguay	3.2	11.2	22.6	35.8	55.2	25.6
Peru	3.5	12.5	26.0	39.6	63.7	29.1
Uruguay	36.3	62.7	78.1	90.9	97.9	73.5
Venezuela	NA	NA	NA	NA	NA	NA

Source: Authors' own calculations based on SEDLAC (CEDLAS and The World Bank).

Table 19. Percentage of households that received any kind of professional medical care when needed

Country	quintiles of per capita household income (%)					Total
	1	2	3	4	5	
Argentina	NA	NA	NA	NA	NA	NA
Bolivia (Plurinational State of)	NA	NA	NA	NA	NA	NA
Brazil	NA	NA	NA	NA	NA	NA
Chile	71.3	72.2	73.2	72.5	73.5	72.5
Colombia	71.6	73.9	78.3	81.4	84.6	77.7
Costa Rica	NA	NA	NA	NA	NA	NA
Dominican Republic	NA	NA	NA	NA	NA	NA
Ecuador	70.5	75.9	74.9	75.7	78.9	75.1
El Salvador	60.7	64.2	67.1	63.2	69.2	64.5
Guatemala	29.6	29.0	24.3	23.1	16.0	24.7
Honduras	NA	NA	NA	NA	NA	NA
Mexico	NA	NA	NA	NA	NA	NA
Nicaragua	71.9	79.9	85.7	86.1	90.9	82.4
Panama	76.0	83.3	83.8	86.9	91.7	84.1
Paraguay	NA	NA	NA	NA	NA	NA
Peru	39.2	45.1	49.4	52.2	57.8	48.4
Uruguay	84.6	83.1	84.9	83.3	79.4	83.3
Venezuela	NA	NA	NA	NA	NA	NA

Source: Authors' own calculations based on SEDLAC (CEDLAS and The World Bank).

Table 20. Percentage of households with fixed telephone

Country	quintiles of per capita household income (%)					Total
	1	2	3	4	5	
Argentina	NA	NA	NA	NA	NA	NA
Bolivia (Plurinational State of)	1.3	6.3	12.2	21.2	46.1	17.4
Brazil	15.4	32.8	43.8	60.6	82.4	47.0
Chile	21.7	36.2	48.4	59.5	74.3	48.0
Colombia	21.3	37.2	56.8	73.0	85.5	54.8
Costa Rica	42.8	60.9	67.4	73.5	83.2	65.6
Dominican Republic	6.8	16.7	22.0	36.3	57.4	27.8
Ecuador	7.7	20.6	35.6	52.3	75.6	38.4
El Salvador	14.0	23.6	40.4	52.4	73.8	40.9
Guatemala	1.4	5.3	11.7	22.9	53.2	18.9
Honduras	3.9	10.7	20.8	30.6	53.7	24.0
Mexico	24.7	39.3	51.3	66.2	76.9	51.7
Nicaragua	1.4	1.7	7.7	18.9	41.1	14.2
Panama	10.4	16.8	29.5	43.4	65.1	33.0
Paraguay	3.0	5.8	11.6	27.1	45.9	18.7
Peru	1.6	8.5	21.6	41.1	66.4	27.8
Uruguay	37.3	62.0	75.3	84.6	93.0	70.5
Venezuela	0.6	1.0	1.0	1.0	0.9	0.9

Source: Authors' own calculations based on SEDLAC (CEDLAS and The World Bank).

Table 21. Percentage of households with mobile telephone

Country	quintiles of per capita household income (%)					Total
	1	2	3	4	5	
Argentina	NA	NA	NA	NA	NA	NA
Bolivia (Plurinational State of)	1.3	6.3	12.2	21.2	46.1	17.4
Brazil	15.4	32.8	43.8	60.6	82.4	47.0
Chile	21.7	36.2	48.4	59.5	74.3	48.0
Colombia	21.3	37.2	56.8	73.0	85.5	54.8
Costa Rica	42.8	60.9	67.4	73.5	83.2	65.6
Dominican Republic	6.8	16.7	22.0	36.3	57.4	27.8
Ecuador	7.7	20.6	35.6	52.3	75.6	38.4
El Salvador	14.0	23.6	40.4	52.4	73.8	40.9
Guatemala	1.4	5.3	11.7	22.9	53.2	18.9
Honduras	3.9	10.7	20.8	30.6	53.7	24.0
Mexico	24.7	39.3	51.3	66.2	76.9	51.7
Nicaragua	1.4	1.7	7.7	18.9	41.1	14.2
Panama	10.4	16.8	29.5	43.4	65.1	33.0
Paraguay	3.0	5.8	11.6	27.1	45.9	18.7
Peru	1.6	8.5	21.6	41.1	66.4	27.8
Uruguay	37.3	62.0	75.3	84.6	93.0	70.5
Venezuela	0.6	1.0	1.0	1.0	0.9	0.9

Source: Authors' own calculations based on SEDLAC (CEDLAS and The World Bank).

Table 22. Percentage of households with internet connection

Country	quintiles of per capita household income (%)					Total
	1	2	3	4	5	
Argentina	NA	NA	NA	NA	NA	NA
Bolivia (Plurinational State of)	9.9	24.5	42.0	47.5	62.1	37.2
Brazil	43.3	59.8	60.8	71.6	85.7	64.2
Chile	79.6	80.5	81.4	86.2	91.7	83.9
Colombia	3.1	5.6	11.9	21.3	46.0	17.6
Costa Rica	17.7	33.3	49.5	63.9	82.3	49.4
Dominican Republic	46.1	50.4	57.9	66.7	78.4	59.9
Ecuador	40.6	63.7	72.1	78.7	84.4	67.9
El Salvador	19.7	28.5	29.8	39.0	58.0	35.0
Guatemala	23.0	44.2	57.2	67.4	82.1	54.8
Honduras	1.9	6.3	8.7	12.4	11.9	8.3
Mexico	19.9	37.6	50.4	64.3	77.5	49.9
Nicaragua	3.6	9.5	20.4	31.9	49.9	23.1
Panama	14.7	33.0	42.9	53.5	66.9	42.2
Paraguay	23.0	35.0	52.7	61.9	72.2	49.0
Peru	2.7	12.6	26.3	40.6	58.3	28.1
Uruguay	39.0	46.5	50.0	54.1	66.1	51.1
Venezuela	16.2	21.4	25.9	31.3	34.0	25.8

Source: Authors' own calculations based on SEDLAC (CEDLAS and The World Bank).

Table 23. Percentage of households that use any private or public means of transport

Country	quintiles of per capita household income (%)					Total
	1	2	3	4	5	
Argentina	NA	NA	NA	NA	NA	NA
Bolivia (Plurinational State of)	NA	NA	NA	NA	NA	NA
Brazil	NA	NA	NA	NA	NA	NA
Chile	NA	NA	NA	NA	NA	NA
Colombia	45.3	59.3	71.9	76.7	87.5	68.1
Costa Rica	NA	NA	NA	NA	NA	NA
Dominican Republic	NA	NA	NA	NA	NA	NA
Ecuador	83.5	91.3	92.1	93.3	93.5	90.7
El Salvador	4.4	13.7	20.4	28.0	41.0	17.3
Guatemala	55.4	67.8	78.9	83.4	90.5	75.2
Honduras	NA	NA	NA	NA	NA	NA
Mexico	76.1	86.9	91.5	94.1	95.9	88.9
Nicaragua	42.2	58.6	67.5	75.5	81.8	65.1
Panama	11.1	10.8	11.7	12.0	8.6	10.8
Paraguay	NA	NA	NA	NA	NA	NA
Peru	55.1	76.1	85.5	92.3	93.9	80.6
Uruguay	NA	NA	NA	NA	NA	NA
Venezuela	NA	NA	NA	NA	NA	NA

Source: Authors' own calculations based on SEDLAC (CEDLAS and The World Bank).

Table 24. Percentage of households with access to a drinkable water source in their terrains or dwellings

Country	quintiles of per capita household income (%)					Total
	1	2	3	4	5	
Argentina	96.0	99.2	99.4	99.9	100.0	98.9
Bolivia (Plurinational State of)	55.7	76.6	85.6	90.8	93.0	80.4
Brazil	80.6	92.6	94.9	97.1	99.4	93.1
Chile	93.6	95.7	96.8	97.8	98.6	96.5
Colombia	71.0	81.6	89.5	92.0	94.6	85.7
Costa Rica	95.6	99.0	99.1	99.3	99.6	98.5
Dominican Republic	NA	NA	NA	NA	NA	NA
Ecuador	60.2	75.9	84.4	90.9	95.1	81.3
El Salvador	55.7	66.0	72.9	78.3	89.3	72.6
Guatemala	76.9	87.9	90.7	94.7	95.7	89.2
Honduras	67.9	77.7	86.9	90.5	95.4	83.7
Mexico	89.4	96.2	97.3	98.8	99.0	96.1
Nicaragua	60.2	77.2	83.4	91.3	93.0	81.0
Panama	82.1	89.9	94.6	95.5	96.3	91.7
Paraguay	85.9	94.5	94.6	97.4	98.9	94.3
Peru	42.9	62.8	74.4	83.0	92.5	71.1
Uruguay	81.8	91.4	95.5	97.4	98.7	93.0
Venezuela	80.0	86.2	91.4	94.6	96.9	89.8

Source: Authors' own calculations based on SEDLAC (CEDLAS and The World Bank).

Table 25. Percentage of households with access to a water network

Country	quintiles of per capita household income (%)					Total
	1	2	3	4	5	
Argentina	79.5	82.9	87.3	90.3	93.8	86.8
Bolivia (Plurinational State of)	36.8	62.0	74.5	83.9	88.9	69.2
Brazil	69.3	80.9	84.3	86.9	92.5	82.9
Chile	89.5	92.2	93.8	95.5	96.6	93.5
Colombia	72.7	82.6	90.4	92.6	95.8	86.8
Costa Rica	86.7	93.1	94.8	97.0	98.0	93.9
Dominican Republic	54.6	65.9	71.9	78.9	88.1	71.9
Ecuador	45.9	66.6	76.7	85.5	92.0	73.3
El Salvador	46.9	60.1	69.8	76.3	88.7	69.3
Guatemala	60.5	70.6	76.2	84.1	90.3	76.4
Honduras	67.5	76.8	86.3	89.9	94.8	83.1
Mexico	79.1	88.7	92.6	95.3	96.1	90.4
Nicaragua	33.7	55.9	68.8	80.7	83.8	64.6
Panama	33.3	49.0	69.5	77.0	89.3	63.6
Paraguay	43.8	59.9	63.6	71.9	77.3	63.3
Peru	33.8	56.0	69.7	80.0	90.2	65.9
Uruguay	77.9	85.4	89.9	92.6	95.2	88.2
Venezuela	59.3	65.2	74.0	80.8	87.3	73.3

Source: Authors' own calculations based on SEDLAC (CEDLAS and The World Bank).

Table 26. Percentage of households with access to an electricity network

Country	quintiles of per capita household income (%)					Total
	1	2	3	4	5	
Argentina	79.5	82.9	87.3	90.3	93.8	86.8
Bolivia (Plurinational State of)	36.8	62.0	74.5	83.9	88.9	69.2
Brazil	69.3	80.9	84.3	86.9	92.5	82.9
Chile	89.5	92.2	93.8	95.5	96.6	93.5
Colombia	72.7	82.6	90.4	92.6	95.8	86.8
Costa Rica	86.7	93.1	94.8	97.0	98.0	93.9
Dominican Republic	54.6	65.9	71.9	78.9	88.1	71.9
Ecuador	45.9	66.6	76.7	85.5	92.0	73.3
El Salvador	46.9	60.1	69.8	76.3	88.7	69.3
Guatemala	60.5	70.6	76.2	84.1	90.3	76.4
Honduras	67.5	76.8	86.3	89.9	94.8	83.1
Mexico	79.1	88.7	92.6	95.3	96.1	90.4
Nicaragua	33.7	55.9	68.8	80.7	83.8	64.6
Panama	33.3	49.0	69.5	77.0	89.3	63.6
Paraguay	43.8	59.9	63.6	71.9	77.3	63.3
Peru	33.8	56.0	69.7	80.0	90.2	65.9
Uruguay	77.9	85.4	89.9	92.6	95.2	88.2
Venezuela	59.3	65.2	74.0	80.8	87.3	73.3

Source: Authors' own calculations based on SEDLAC (CEDLAS and The World Bank).

NOTES

[1] In the traditional incidence literature, the way in which access to the benefits from a given programme are distributed in the population is referred to as focalization.

[2] It should be noted that unlike information regarding household expenditures, data on access is derived from questions that tend to be more homogeneous than the ones on expenditure therefore allowing for more reliable cross-country comparisons.

[3] There is wide ranging literature and evidence on this topic. See for instance Card and Krueger (1992) and Kingdon (1996), among others.

[4] A distributional incidence analysis of the access to gas networks for the Argentinean case can be found in Marchionni, et al. (2008).

TRADE IN SERVICES AND POVERTY: SERVICES, FARM EXPORT PARTICIPATION AND POVERTY IN MALAWI AND UGANDA

VIII

This chapter examines the link between trade, services access and poverty by first exploring the link between poverty and export cropping in Africa and then the link between the provision and access to various services (with varying degrees of tradability) and export cropping. Evidence is provided supporting the idea that poverty is lower among households and farms engaged in export cropping. Using data from Malawi and Uganda, a strong negative correlation is found between the extent of cash export cropping and poverty. Evidence is also provided of the role various services have on cash cropping and agricultural productivity. In Uganda, it was found that transportation services and marketing services for exports (intermediaries) facilitate the adoption of export crops. In the case of Malawi, transportation services were found to be not as important as in Uganda, however, marketing services and credit are. This chapter highlights the complementarities between the role of services, services reforms, and trade in poverty reduction, in particular as they relate to Africa. The exercises illustrate that the potential gains from trade arising from the production of export crops destined to international markets depends to a large extent on the availability of services such as transportation and marketing. Services reforms that reduce trade costs and encourage marketing activities in rural areas may be useful to facilitate exports and reduce poverty.

1. INTRODUCTION

Given the overwhelming role of agriculture in Sub-Saharan Africa (for the poor and the non-poor alike), poverty reduction strategies have been oriented to increase agriculture productivity among the poor. Beginning in the mid 1980s, most Sub-Saharan countries have engaged in structural reforms of the agricultural sector. This development strategy, suggested and fostered by the World Bank (World Bank, 1994) and other development agencies, has focused on the gradual deregulation of export crop markets as a key instrument for poverty alleviation (Peters, 1997; Takane, 2005; HIID, 1994). Export crop liberalization was regarded as the single best channel to accelerate the growth of smallholder agriculture and through this, the entire rural economy (Donovan, 1993). The removal of long-standing legal and institutional constraints was supposed to induce small farmers to switch away from food crops and to find better income opportunities by growing high return crops. Moreover, as long as export crops tended to be more labour-intensive, the reforms were expected to increase the demand for hired labour as well (Masanjala, 2005). Furthermore, the prospect of higher income was supposed to alleviate household's food security.

However, market liberalization has been a very limited mechanism for broad-based poverty alleviation (Orr, 2000). The number of poor farmers switching to export crops has been far from massive. Even though the proportion of smallholders in the production of export crops increased (Takane, 2005), the share of land dedicated to grow export crops remained very low. In addition, poor households have been incapable of profiting from the cash crops as much as the wealthier households (World Bank, 2002). This has generated a genuine policy necessity to understand why poor farmers have failed in taking advantage of available economic opportunities.

The objective of this chapter is to explore the role of services for export crops as facilitators of export market participation and poverty reduction. To gauge this, Malawi and Uganda Malawi were chosen as case studies. Entry into commodity export markets (tobacco, cotton, coffee, tea, vanilla, pineapple, fish, and exotic fruit) usually requires special attributes of the households such as skills, knowledge, credit, start-up capital, and labour supply. In the presence of imperfect markets, wide margins in the differential returns of export agriculture and subsistence agriculture may arise in equilibrium among otherwise similar households. Faced with higher tobacco prices, for instance, some farmers may be unable to enter the market if they do not have appropriate access to credit or wealth to cover start-up costs (in seeds, fertilizers, and so forth). Similarly, faced with higher coffee prices, farmers may be unable to expand current coffee production if family labour supply is limited and rural labour markets are thin. In addition, lack of services, such as road infrastructure, transportation, health facilities, land, and market availability can impede market participation and lead to increases in poverty.

This theme is explored with two case studies of Malawi and Uganda. The first task requires a link description between market participation and poverty. Section 2, utilizes data from the Uganda National Household Survey and the Malawi Integrated Household Survey, to estimate the overall relationship between market involvement and poverty in the two countries are closely examined. In the case of Malawi, income gains from export agriculture to provide supplementary evidence supporting the notion that higher export participation is associated with lower poverty.

Sections 3 and 4, considers the role of services. Section 3, performs a simple regression analysis to establish relevant correlations between various services and export market participation in the target countries, focusing on both individual as well as aggregate (village-level) explanatory variables. The type of services covered in the analysis includes infrastructure, transportations, health, education, credit, and market access (both for outputs and for inputs). These correlations are intended to reveal the role of various services in facilitating export market participation and in alleviating poverty. The correlations, together with the prevalence of poverty and the lack of services revealed in the data, suggest the need for services reforms to benefit the poor.

In Section 4, a closer examination of two specific types of services is carried out – one for Malawi and another one for Uganda. In the case of Uganda, the role of marketing services (that is, market access via increased competition among intermediaries and transportation) in the adoption of coffee, tea, cotton and fruits among smallholders is explored. In the Malawi case, the role of the services provided by the tobacco clubs (such as market access, input access, credit, transportation services) in increasing tobacco sales and yields as well as tobacco adoption among

tobacco farmers is investigated.

In this chapter, the link between trade, services and poverty comes from the combination of exportable crops (coffee, tea, cotton, tobacco) with various services, including transportation, market access for outputs and inputs, credit, and insurance. The value of this chapter is the role of these services in the context of a profound process of reforms affecting export agriculture. Concretely, these two African countries strongly liberalized their agricultural exports (in Malawi, smallholders were not allowed to farm tobacco at all before 1994; in Uganda, the overall agricultural sector was heavily distorted). In consequence, this chapter illustrate how services at the grassroots, complement export agricultural liberalization to reduce poverty in Africa.

2. EXPORT PARTICIPATION, INCOME GAINS AND POVERTY

This section describes how poverty is related to export market participation in Malawi and Uganda, and characterizes income gains in commodity exports. The maintained hypothesis is that households can escape from poverty by devoting resources to high-yield export related crops instead of to food crops for home consumption. This has been the basis of the deregulation process of export crop markets carried out by many Sub-Saharan countries, where subsistence agriculture is widespread. In switching their production to market oriented crops, poor farmers would be able to get higher proceeds from the sales of export crops, allowing them to buy the subsistence food no longer produced by themselves, and to dispose of additional cash. It is believed that the fact that farmers cannot enjoy those income gains from export agriculture is an indication of the lack of services needed to successfully participate in export markets.

To support this hypothesis it is necessary to first show that a link between poverty and the production of exportable crops exists. After proving this existence, quantification will be made of the gains (in monetary terms) of producing the latter types of crops.

The analysis is based on household survey data for, Malawi and Uganda. In the case of Malawi, the Malawi Integrated Household Survey (IHS) of 2004/05 is utilized. This is a comprehensive, national, household survey with two questionnaires: a household questionnaire, and a community questionnaire. In the case of Uganda, we utilize The Uganda National Household Survey (UNHS) of 1999/2000 is utilized. There are also two sets of data in the UNHS, household data and community data.

In both countries, the household questionnaires cover characteristics such as education, health, housing, agriculture, consumption and income, among other topics. Sample statistics of key variables are displayed in table 1. The proportion of males in the sample is the same for both countries at 49 per cent; the average household size is slightly over 4.5 individuals in Malawi while in Uganda is between 5 to 6 members; around two-thirds of the households have a male head in both countries; in Malawi the percentage of adults between 18 and 45 years old is 37 per cent and in Uganda 30 per cent (this is counterbalanced with a smaller percentage of sample population of 12 and 18 year olds in Malawi). In Malawi, over 60 per cent of the household heads can read and write in Chichewa (the national language), and about 30 per cent in English.

The national poverty rate in Malawi was 53 per cent using the head count ratio, which is the proportion of people below the poverty line, while it was of 35 per cent in Uganda (Appleton, 1999).

The module on agriculture of both countries is very detailed and comprises land use, production, sales, home-consumption, and input use amongst others, from an extensive list of food and cash crops. The composition of these two groups of crops is not the same in the two countries. In Malawi, for instance, the main cash crops are tobacco, groundnuts and cotton.[1] The main cash crops in Uganda are cotton, coffee, tea, pineapples and exotic fruit. Throughout the chapter, the terms commodity exports, export crops, high-yield crops, commercialized crops, or cash crops, referring to these recently described sets of crops are used interchangeably. On the other hand, the terms food crops for own-consumption, or subsistence agriculture, refer to crops such as maize, cassava, potatoes, matooke, beans, millet, sorghum, and some others grown by the household for own usage. Table 2 presents key summary statistics from the agriculture module. Average total land holding is 5.6 acres in Malawi and 2.6 acres in Uganda. The distribution of land between food and cash crops is very similar in both countries. The main farming activity is food production for own-consumption, accounting for 92 per cent of the land holdings of a typical farmer. The remaining 8 per cent of land is

devoted to commercialization activities (cash crops). In Malawi, the main cash crop, in terms of land allocation, is tobacco, with a 5 per cent land share, followed by groundnuts and cotton. In Uganda, the main cash crops are cotton, coffee, tea, pineapple and other exotic fruit to a lesser extent.

The community questionnaires collect information that is common to all households in a given area, defined here as the village or urban location surrounding the enumerator area. It contains information on access to basic services and infrastructure. Table 3 shows some summary statistics. In Malawi, nearly 30 per cent of the communities have a daily market, and also 30 per cent have a weekly larger market; the main type of roads are maintained dirt roads, and, on average, the distance to an asphalt road is 2 kilometres. This picture is not completely mirrored in Uganda, where 76 per cent of the enumerator areas of a district have markets for food products; the average distance to asphalt roads is 26 kilometres, suggesting that transportation costs are more important hindrance to commercialization than in Malawi; only 12 per cent of

Table 1. Summary statistics: Household characteristics (%)

	Malawi		Uganda	
	Average	Standard deviation	Average	Standard deviation
Household characteristics				
Household size	4.61	2.35	5.67	3.05
Sex of head (1=male)	0.77	0.42	0.74	0.44
Proportionof males	0.49	0.23	0.49	0.22
Proportion age 0-12	0.36	0.17	0.41	0.18
Proportion age 12-18	0.11	0.16	0.13	0.16
Proportion age 18-45	0.37	0.27	0.30	0.23
Proportion age 46+	0.16	0.27	0.16	0.26
Head literacy (Chichewa)	0.62	0.48	...	...
Head literacy (English)	0.30	0.46	...	...
Income and poverty				
Poverty rate: individuals (%)	52.60	...	0.35	0.48
Poverty rate: households (%)	44.30	...	...	...
Remittances	...	...	0.48	0.50
Non-farm income	...	...	0.35	0.48
Number of observations				
Rural	9 840.00		6 554.00	

Note: Authors' calculations based on Malawi integrated household survey (2004/2005) and Uganda national household survey (1999/2000).

Table 2. Summary statistics: Agriculture characteristics (%)

	Malawi		Uganda	
	Average	Standard deviation	Average	Standard deviation
Agriculture				
Total land holdings (acre)	5.6	154.0	2.6	3.5
Land Shares				
Food crops	92.1	16.9	92.8	18.0
Cash crops	7.9	16.7	7.2	17.1

Note: Authors' calculations based on Malawi integrated household survey (2004/2005) and Uganda national household survey (1999/2000).

the villages have access to use or rental of tractors and 26 per cent have access to oxen services. Summary statistics for other key variables are reported in table 2 as well.

For the purposes of this chapter, it is claimed that services affect poverty via export market participation (among other possible channels). To motivate this analysis, the simple association between poverty, on the one hand, and measures of export market participation, on the other are explored. An intuitive overview of the hypothesis is provided by using non-parametric techniques (Fan, 1992; Pagan and Ullah, 1999). The poverty indicator of the household is regressed on a measure of export market participation, that is, the share of land allocated to various export crops. In rural Africa, farmers can produce food crops, that are typically self-consumed or bartered locally, and cash crops, that are typically exported. It follows that the production of cash, export crops is a good indicator of export participation. The criteria to define a crop as an export crop vary across countries. In Malawi, major cash crops are tobacco (the main export of the country), cotton and groundnuts. Hybrid maize is also an important source of cash income. In Uganda, export crops include coffee, tea, cotton, pineapple and other exotic fruit. Matooke (a type of banana) and other crops such as millet or maize are also traded and sold (although mostly domestically).

The results for Malawi are displayed in figure 1. The solid line represents the relationship between poverty and the share of land allocated to tobacco. The long-dashed line (after broadening the definition of cash crops) corresponds to the share of land devoted to tobacco plus groundnuts. The short-and-long-dashed line corresponds to tobacco, groundnuts and cotton. Using these three definitions, support is found to the claim that higher participation in export cropping and agriculture commercialization is associated with lower poverty. Indeed, the graph shows a strong negative correlation between these variables, particularly for households with low levels of participation. This means that those households not engaged in any export agriculture are likely to be poorer, on average, than those households that are increasingly participating in export crops. It should be noted that this relationship eventually flattens out, indicating that further specialization in export crops is not necessarily associated with lower poverty (although it can still be associated with higher income and expenditure). Overall, there is a strong negative correlation between

Table 3. Summary statistics: Community characteristics (%)

	Malawi	
	Average	Standard deviation
Services		
Health clinic	32.0	46.0
Cooperative	23.0	42.0
Credit club	26.0	44.0
Bus stop	43.0	49.0
Post office	14.0	35.0
Public telephone	23.0	42.0
Irrigation scheme	15.0	36.0
Markets		
Daily market	29.0	45.0
Large weekly market	31.0	46.0
Permanent ADMARC market	16.0	37.0
Roads		
Asphalt road	15.0	36.0
Graded graveled road	23.0	42.0
Dirt road (maintained)	42.0	49.0
Dirt track	20.0	40.0
Distance to asphalt road (in Km)	1.9	0.2

	Uganda	
	Average	Standard deviation
Services		
Public hospital	27	20
Private hospital	32	23
Access to credit	68	30
Access to oxen	26	36
Access to tractors	12	18
Access to water	53	21
Access to primary school	49	21
Land constrains	15	20
Input market constraints	16	12
Disease constrains	22	18
Land fertility constrains	8	9
Markets		
Available of food markets	76	24
Roads		
Distance to asphalt road (in Km)	26	21

Note: Authors' calculations based on Malawi integrated household survey (2004/2005) and Uganda national household survey (1999/2000).

poverty and export crop participation. The relationship between poverty and a locally commercialized crop such as hybrid maize is much weaker.

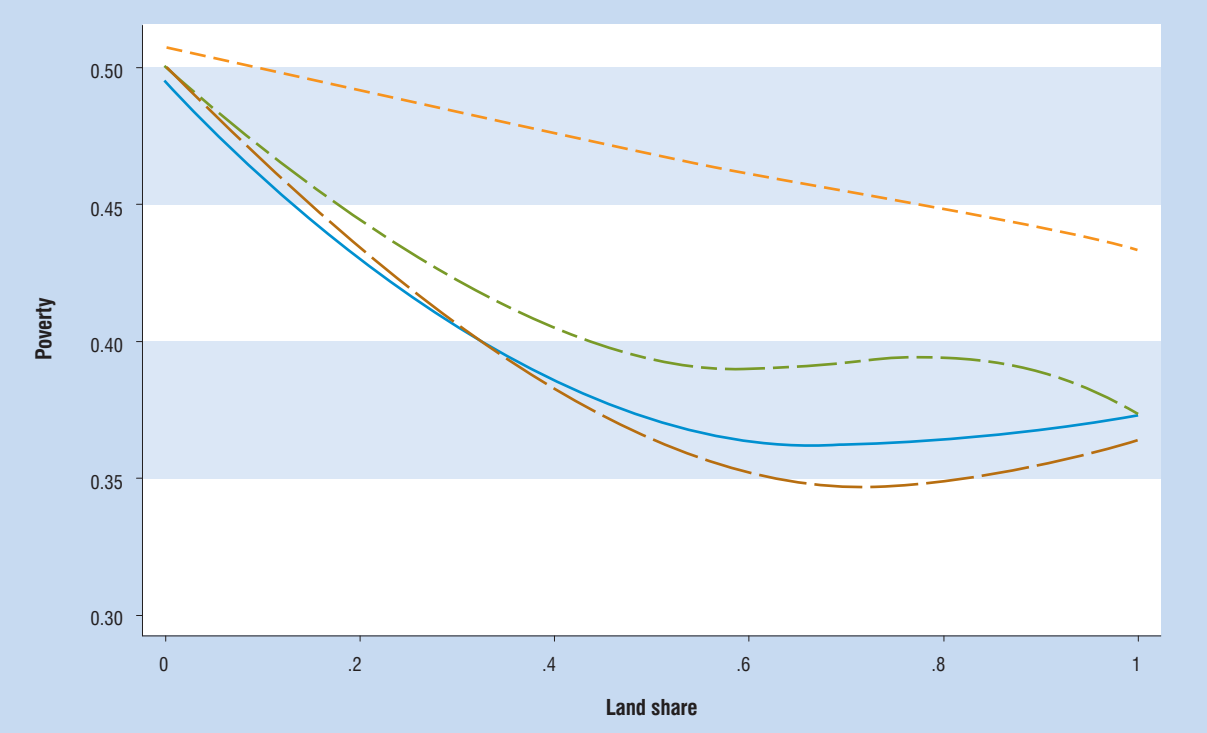
The case of Uganda, exhibited in figure 2, confirms the hypothesis. The solid line represents the relationship between the poverty indicator of the household and the share of land devoted to Uganda's major export crops (coffee, tea, cotton, pineapple and fruit). Similar to Malawi, higher participation in export cropping and agriculture commercialization leads to lower poverty was also found in Uganda. This conclusion persists after broadening the definition of cash crops to include matooke and maize (the long-dashed curve). However, when the list of crops is further extended to include food crops such as millet, sorghum, beans, groundnuts, sweet potatoes, and cassava, the negative association between poverty and agriculture commercialization vanishes (the short dashed curve). A possible explanation of this last result is that the list of crops included in this definition is too comprehensive and thus there are no significant differences in the average poverty rates at different levels of land shares.

Income gains in commodity exports

Figures 1 and 2 illustrate (unconditional) correlations between market participation and poverty but imply potential income gains from the adoption of commercialized export crops. To see this in greater detail, Malawi income gains are estimated.

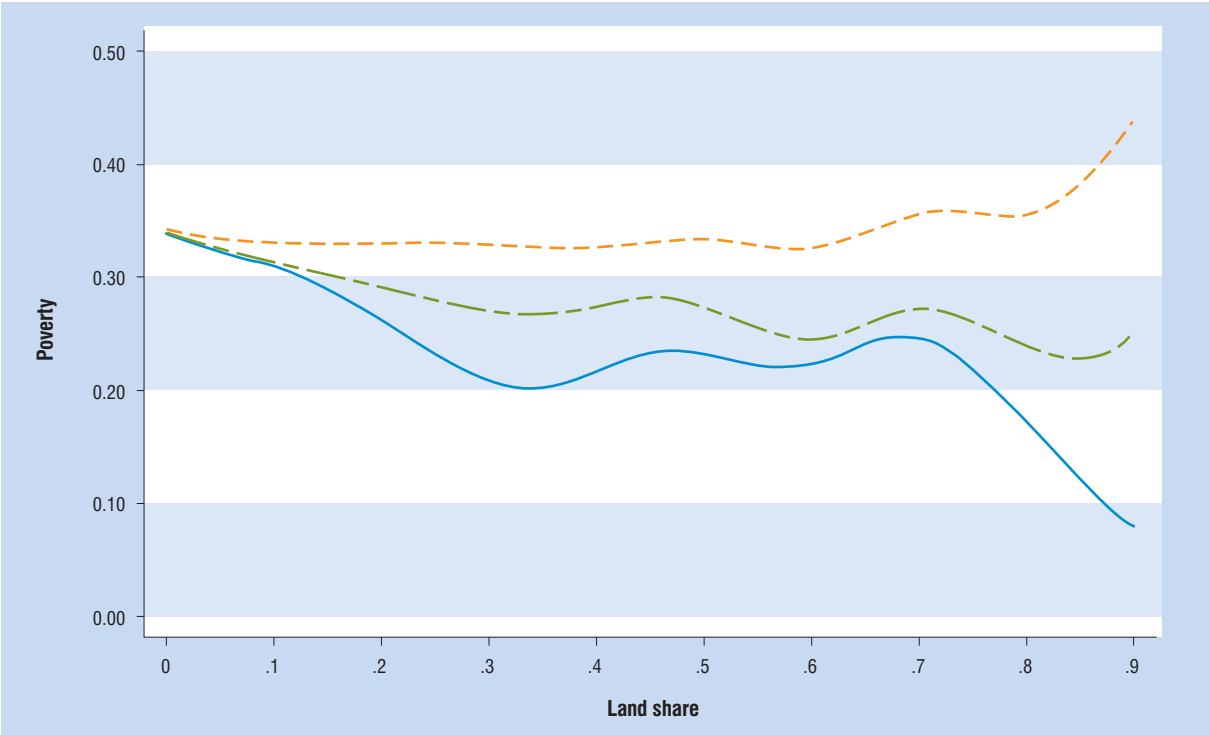
The estimate is based on the income differential from export cropping when compared to the production of own-consumption goods using matching methods. Therefore, some measure of the return to the different agricultural activities is required. The IHS data contains information on the value of outputs and inputs used for different crops, as well as on the land allocation. Thus, the measure of returns is the per acre yield net of inputs. By netting out inputs, the measure of return reflects profits are more certain. Also, when dividing by land allocation, a comparable unit of measure across crops is possible. The overall idea of the matching method is to compare two sets of households, one that produces for subsistence and the other that produces for the market. The key insight is that these sets of households must be relatively

Figure 1. Poverty and market participation in Malawi



Note: The graph reports the non-parametric regression of poverty on export crop participation (share of land allocated). The estimates are obtained with a Fan (1992), locally linear non-parametric regression. The solid line corresponds to the share of land allocated to tobacco; the long-dashed line to tobacco plus groundnuts; the short-and-long-dashed line refers to tobacco, cotton and groundnuts; and the short-dashed line corresponds to hybrid maize share of land.

Figure 2. Poverty and market participation in Uganda



Note: The graph reports the non-parametric regression of poverty on export crop participation (share of land allocated). The estimates are obtained with a Fan (1992), locally linear non-parametric regression. The solid line corresponds to the share of land allocated to coffee, tea, cotton, pineapples and fruits; the long-dashed-dot line adds maize and matooke; and the short-dashed line adds millet, sorghum, beans, groundnuts, sweet potatoes, and cassava.

similar in terms of observable characteristics. Thus, the method consists of locating two sets of comparable households, computing the net income from agricultural production, and estimating the income differences (details are found in appendix 1).

Four exercises are conducted and the estimated results of which are presented in table 4. The first exercise is interested in the income gain that arises when switching from subsistence to tobacco production. The (net) income gain per acre is, on average, 21,545 Malawi Kwachas (MK). To have a better sense of what this gain represents, it is equivalent to slightly above the average per capita expenditure and around 18.3 per cent of total expenditure (so that a typical household could increase expenditures by almost one-fifth by switching to tobacco).

The second exercise includes groundnuts into the definition of export crops. The results remain basically unchanged. The income differential when compared to subsistence farming is somewhat higher, reaching around 107.8 per cent of the per capita expenditure and 19.4 per cent of the total expenditure of an average household in Malawi.

The third exercise substitutes cotton instead of groundnuts into the definition of export crops. The income differential in comparison with subsistence farming is lower than that for tobacco growers alone. This is consistent with the finding in figure 1. The gain is slightly over 16,800 MK which, representing nearly 80 per cent of the average per capita expenditure, and 14.3 per cent of total expenditure.

The last exercise involves comparing the net per acre yields of tobacco growers against hybrid maize growers. Hybrid maize growers switching to tobacco are expected to increase their yields by 18,000 MK on average.[2] This corresponds to 85.4 per cent and 15.4 per cent of the average per capita and total expenditure respectively.

The results show that there is a margin to improve poor farmers' welfare in promoting a change from subsistence to export oriented agriculture. It should be noted that the actual gains could in fact be higher than those in table 4 as they are per acre and, for instance,

Table 4. Export cropping and income gains (per acre)

	Gain (in MK)	% of expenditure	
		Total	Per capita
Tobacco vs. subsistence	21 545.0 (5 346.0)	102.0	18.3
Tobacco & groundnuts vs. subsistence	22 770.0 (4 902.0)	107.8	19.4
Tobacco & cotton vs. subsistence	16 826.0 (3 307.0)	79.6	14.3
Tobacco vs. hybrid maize	18 040.0 (6 491.0)	85.4	15.4

Note: Income gains were calculated with a propensity score matching kernel estimator. Standard errors in parenthesis were estimated with bootstrap methods. A farmer is considered to be a tobacco grower if 50 per cent or more of his total available land is allocated to tobacco, and similarly for tobacco plus groundnuts, tobacco plus cotton, subsistence and hybrid maize growers.

a farmer could actually increase the production of export crops by more than one acre.

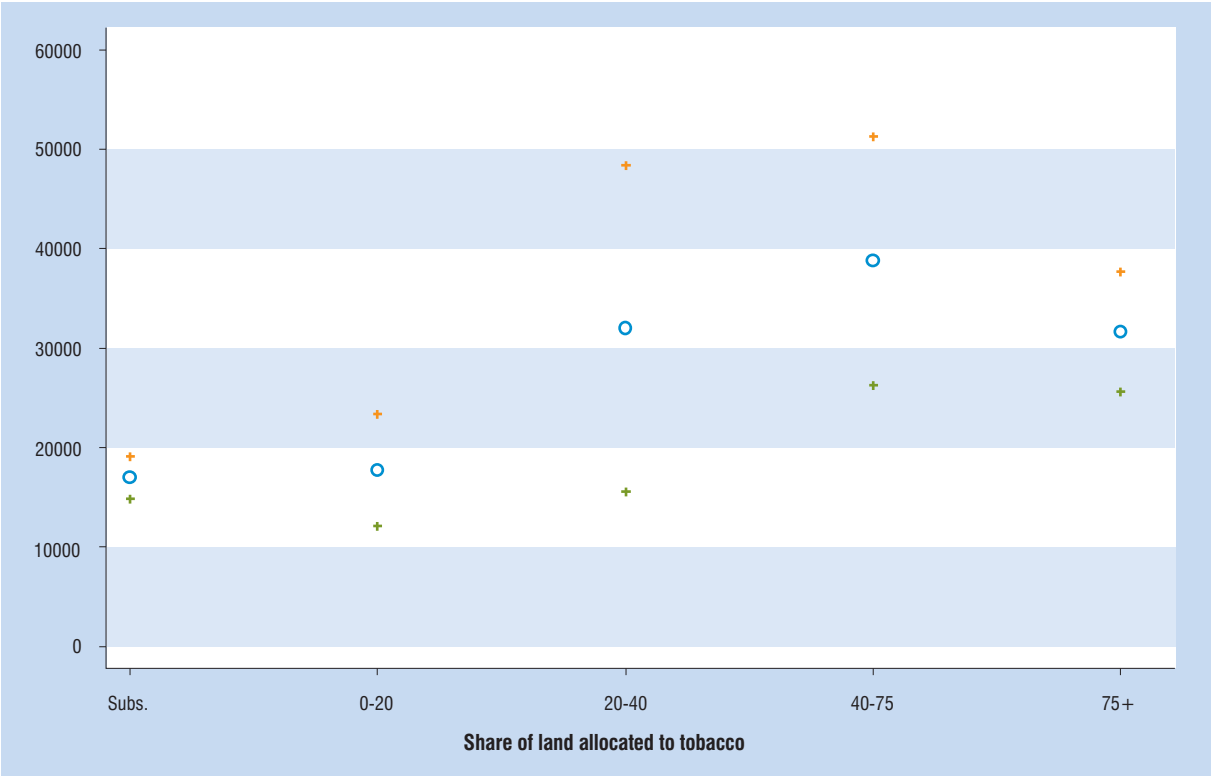
A somewhat different matching exercise is performed that will allow for a better understanding of how the gains from subsistence to export cropping can be accrued. The conceptual difference in this exercise is related to the arbitrariness in the definition of a tobacco grower. The simple matching methods used in the previous 4 exercises (whereby farmers were classified as export producers or subsistence producers' – or treated as controls in the literature terminology) are extended allowing for more than one category of treatment. In particular, an estimate of the average income gains of different types of export growers depending on their degree of specialization (in comparison with subsistence farmers) is sought.

To proceed, households are divided by the share of land allocated to tobacco, and build five categories: subsistence farmers (tobacco share of land equal to zero); tobacco growers with a share of land of more than zero but less than 20 per cent; from 20 per cent to 40 per cent; from 40 per cent to 75 per cent; and from 75 per cent to 100 per cent. Subsequently, comparable households are found in these different categories and an estimate is made of the average income differential (technical details are found in appendix 1).

The results of the estimated average outcomes, after sub classifying on the balancing score to adjust for covariate differences across categories, are presented in figure 3. Yields per acre are found to increase as farmers become more specialized in tobacco. It should be pointed out that there is no difference in the outcome if a household switches to tobacco on only a small fraction of its available land. This may be because the scale is not sufficient to fully exploit the gains when both planting and selling the produce. The yields per acre start to increase when a farmer devotes more than 20 per cent of his land (in terms of land area, this represents, on average, roughly 1.5 acres of a typical tobacco grower).[3] For the 40 per cent to 75 per cent category, the expected yield is higher than for any of the previous three categories. Furthermore, the difference in outcomes with the purely subsistence and the 0 per cent to 20 per cent groups is statistically significant. It should also be noted that the gain in yield per acre is in line with the one estimated in table 4. The outcome is also higher for the group of most specialized farmers, than for the group of subsistence farmers and the least specialized tobacco growers. The main conclusion here still remains the same: there is room for improvement on poor farmers' welfare and these gains are increasing with participation in tobacco production. It seems that some level of specialization is required in order to realise gains.

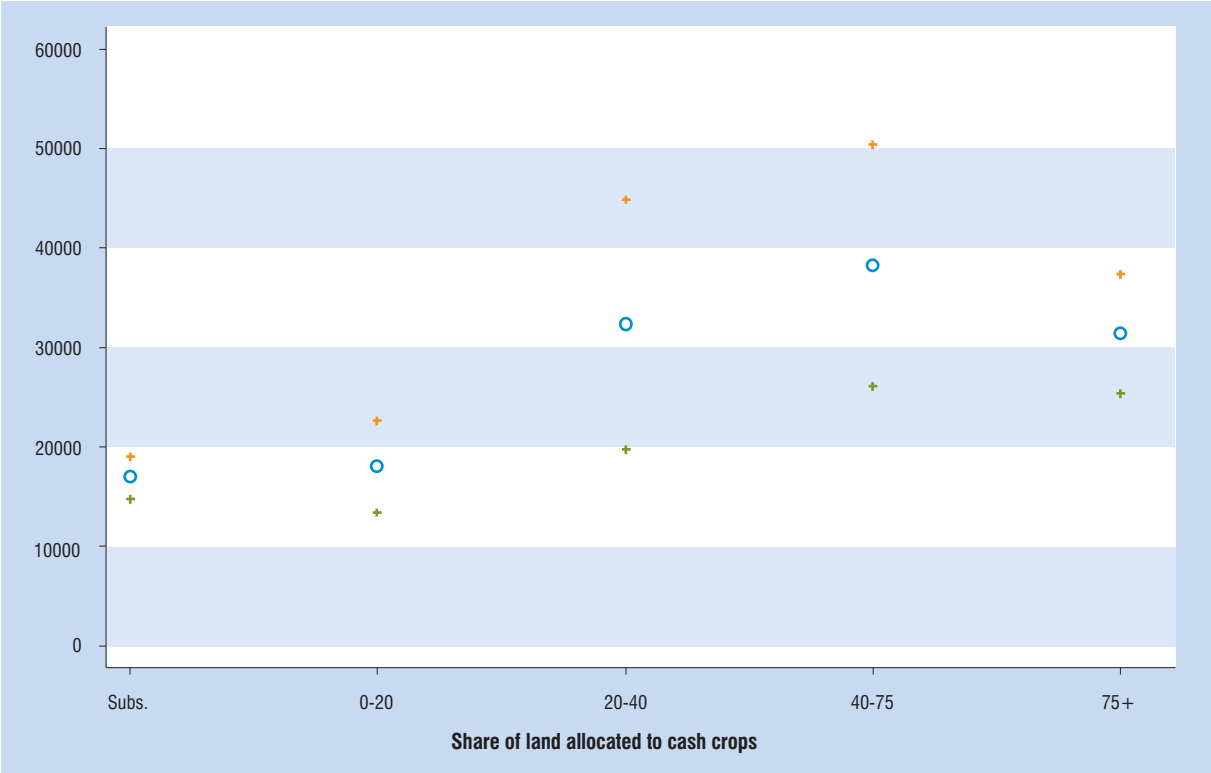
Lastly, the final exercise includes groundnuts into the definition of cash crops. Figure 4 depicts this exercise. The results remain unchanged and the magnitudes of the gains are more or less the same as those in figure 3. Overall, it seems that tobacco is the key crop associated with higher net yield and income gains in Malawi.[4]

Figure 3. Tobacco farming and income gains in Malawi (expected net yield per acre)



Note: The graph reports the average outcomes and 90 per cent confidence intervals for 5 sub-classifications of tobacco farming.

Figure 4. Cash crop farming and income gains in Malawi (expected yield per acre)



Note: The graph reports the average outcomes and 90 per cent confidence intervals for 5 sub-classifications of tobacco farming

3. MAIN DETERMINANTS OF AGRICULTURAL MARKET PARTICIPATION

Observing higher returns in export agriculture raises the question of why farmers do not switch activities into the more profitable ones. Even when part of the income differential surely compensates for special characteristics required to produce such export crops, another part may be due to large distortions in the economy. To unveil the reasons it is necessary to explore the main determinants of participation into export commodities. As such it is essential to identify key constraints to agriculture that may prevent farmers from entering high-return markets, thus locking them into poverty. To this end a regression model is set up that includes two sets of regressors: household controls and district controls,. The model takes the following form:

Where is the share of land allocated to export crops by household in community.

Since UNHS and the IHS are not identical, the list of explanatory variables is not the same for Uganda and Malawi. For instance, in Malawi's regressions it is possible to include, among the covariates different services provided by tobacco clubs that do not have an exact parallel in Uganda's regressions. Likewise, the questionnaire of Uganda includes relevant variables at both the household and village levels that are not found in the Malawi survey. However, the bulk of controls remain the same in both cases. Hence, even when the results for each country are not strictly comparable due to these slight differences in the control list, they pretty much capture the same forces governing the participation in agriculture commercialization.

In the case of Malawi, only tobacco is included in the definition of export crops. Six models are considered: Model 1 only includes essential household demographic variables such as household size, demographic composition, and educational attainments of the head. Model 2 includes district level characteristics. Model 3 is equal to Model 2 but adds district dummies to control for district fixed effects. Model 4 includes a dummy that equals 1 if the farmer belongs to a tobacco club. Model 5 includes an alternative definition of access to transportation along with variables to capture assets' possessions. Model 6 replaces the tobacco club dummy with dummies of different benefits the farmer obtains from the tobacco club (if he belongs to one).

Export agriculture in Uganda includes coffee, tea, cotton, pineapple and exotic fruit. Five models are explored in this case: Model 1 includes only essential household demographic variables like household size, demographic composition, and educational attainments. Model 2 adds land tenure. Model 3 includes the availability of food markets. Models 4 and 5 include health indicators, assets and non-agricultural income variables, and village controls. Model 4 includes monetary measures of assets (animals and equipment) and of non-farm income (remittances and non-farm income). Model 5 includes dummy indicators of whether the household has different assets or received/earns different types of non-agricultural income.

Individual determinants in Malawi

As a first step, the household level determinants of export crops farming are discussed. The results displayed in table 5 suggest that household characteristics do matter. For instance, if the head of the household is male, there is a positive effect on the share of land allocated to tobacco. Also the marital status of the head is important: the tobacco share of land is greater when the head is married.

Household size has a positive effect even though it is weak. This result goes in line with the hypothesis that larger households have a larger labour supply and thus face lower constrains to commercialization. On the other hand, it could be argued that larger households will try and secure food needs prior to venturing into commercialization. Nevertheless, the household structure needs to be taken into account as well. For example, in terms of labour supply and food security, a household with 8 members of which 6 members range between 1 and 8 year olds, is completely different than a household with 8 members of which all are over 18 years old.

The way to interpret the household age composition coefficients is the following. Each variable (*age 0-7*, *age 8-12*, etc.) represents the proportion of total members in that age bracket. In the regression, the omitted category is the proportion of members between 18 and 45 years old. Therefore, if the coefficient of, for example, *age 0-7* is negative (positive) this should be interpreted as raising the share of family members in the 0 to 7 age group, and at the same time decreasing

the share of family members in the 18 to 45 age group by the same amount. Leaving the rest of the shares constant, will decrease (increase) the share of land devoted to tobacco. The results are as expected. Substituting adults between 18 and 45 years old with younger or older members has a negative effect on the share of land. Two forces are at play and they go in the same direction. Having more children raises the food security concern and at the same time restricts the available labour force, therefore, limiting commercialization activities.

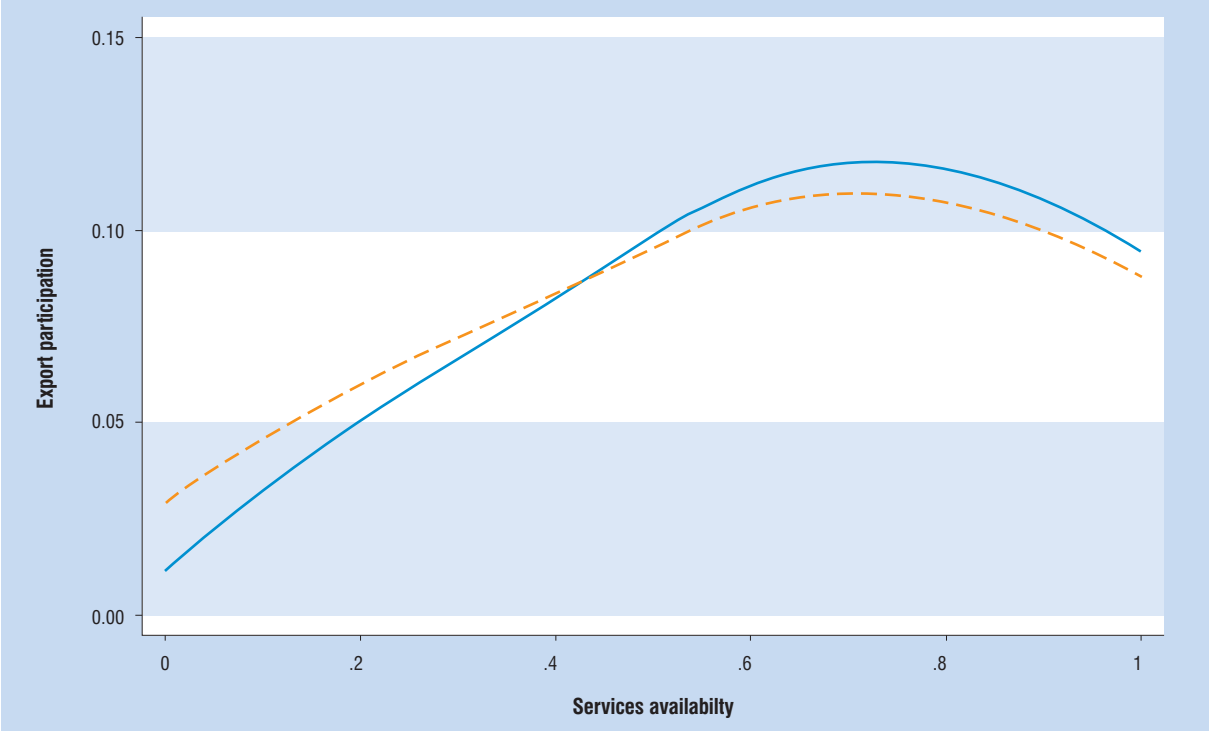
Another component of the household structure is the proportion of males. In this case, there seems to be no effect on export activities to a change in the proportion of males after controlling by household size and age composition. This may indicate that women are also engaged in the production of tobacco.

There is no clear association between commercialization and the education or literacy status of the head. In model 1, only those heads with completed primary or junior secondary education seem to have larger areas of planted tobacco than those without primary or secondary education. One possible explanation is that education is extremely low across the population, so that there is no sufficient variability to capture the effects of education.

It is surprising to find that the health status of the household (measured as the proportion of sick members) does not seem to affect the decision to participate in export activities. This is also true for the health status of the household head. This evidence does not support the notion that sick members, including the head, reduce effective labour, or that sick children compromise the effort of women in agriculture. The reason may be that these variables cannot distinguish between chronic and short-term sickness.

Possession of household assets such as beds, tables, chairs, fans, radios, amongst others, has a positive effect. The possession of agricultural tools also has a positive effect (hoe or sickle). The existence of food markets in a village is associated with higher export agriculture, which supports a recent hypothesis (de Janvry et al. 1991). If food markets are thin, households

Figure 5. Marketing services availability and export market participation Uganda



Note: The graph reports the non-parametric regression of export crop participation on measure of market availability. The solid line corresponds to the share of land allocated to export crops suchas coffee, cotton, tea, pineapples, and fruits. The broken line corresponds to the share of income derived from those crops. The estimates are obtained with a locally weighted linear regression with Gaussian kernel and bandwidth equal to 0.15".

Table 5. Determinants of participation in tobacco in Malawi: Land share (OLS results)

	(1)	(2)	(3)	(4)	(5)	(6)
Constant	-2.37[b] (1.00)	-3.18[b] (1.35)	6.63[b] (3.36)	5.57[b] (3.17)	-3.74[b] (2.04)	-4.09[b] (1.92)
Rural	3.23[a] (0.80)	1.25 (0.85)	3.39[a] (1.09)	3.04[a] (0.95)	2.29[b] (0.93)	2.04[b] (1.00)
Household size	0.33[a] (0.09)	0.27[a] (0.09)	0.11 (0.08)	0.02 (0.08)	-0.14[c] (0.08)	-0.14[c] (0.08)
Head male	2.03[a] (0.65)	1.82[a] (0.61)	1.91[a] (0.61)	1.89[a] (0.57)	1.50[a] (0.58)	1.48[b] (0.61)
Head married	1.24[b] (0.59)	1.34[b] (0.57)	1.09[b] (0.57)	0.93[c] (0.53)	0.74 (0.53)	0.76 (0.55)
Proportion males	0.19 (0.69)	-0.26 (0.66)	-0.32 (0.62)	-0.36 (0.58)	-0.61 (0.58)	-0.42 (0.60)
Proportion age 0-7	-0.11 (0.94)	-0.09 (0.95)	0.40 (0.91)	0.38 (0.88)	1.10 (0.91)	1.41 (0.93)
Proportion age 8-12	-2.47[b] (1.04)	-2.36[b] (1.03)	-1.45 (0.95)	-1.49 (0.93)	-1.07 (0.95)	-0.89 (0.94)
Proportion age 12-18	-1.46 (0.95)	-1.47 (0.94)	-1.20 (0.87)	-0.82 (0.88)	-0.68 (0.90)	-0.66 (0.88)
Proportionage 46+	-1.56[b] (0.68)	-1.85[a] (0.67)	-1.99[a] (0.66)	-2.02[a] (0.64)	-2.50[a] (0.65)	-2.42[a] (0.66)
Proportion sick	1.39[c] (0.79)	0.97 (0.75)	0.84 (0.69)	0.89 (0.67)	0.89 (0.66)	0.78 (0.67)
Head sick	-0.83[b] (0.39)	-0.65[c] (0.38)	-0.55 (0.37)	-0.56 (0.36)	-0.60[c] (0.36)	-0.56 (0.37)
Head literacy (Chichewa)	0.48 (0.38)	0.53 (0.37)	0.34 (0.35)	0.07 (0.33)	-0.09 (0.33)	-0.10 (0.33)
Head literacy (English)	-0.88 (0.54)	-0.48 (0.50)	0.01 (0.48)	-0.50 (0.44)	-0.60 (0.44)	-0.51 (0.44)
Head education: attends school	-1.66 (1.98)	-1.92 (2.25)	-1.19 (2.10)	-0.77 (2.11)	-0.46 (2.05)	-0.36 (2.06)
Head education: primary completed	1.30[c] (0.67)	0.99 (0.61)	-0.04 (0.59)	0.01 (0.57)	0.02 (0.57)	-0.05 (0.56)
Head education: secondary (jr.) completed	1.58[b] (0.74)	1.03 (0.74)	-0.06 (0.64)	0.39 (0.59)	0.33 (0.60)	0.32 (0.60)
Head education: secondary (sr.) completed	-0.88 (0.88)	-0.72 (0.92)	-1.30 (0.91)	-0.82 (0.84)	-0.89 (0.86)	-1.17 (0.86)
Head education: superior completed	1.85 (2.41)	2.99 (3.08)	2.19 (2.66)	2.54 (2.65)	1.36 (2.36)	1.32 (2.31)
Land area	...	...	...	...	0.00[b] (0.00)	0.00 (0.00)
Large weekly market	...	1.28[c] (0.74)	0.89 (0.55)	1.02[b] (0.52)	0.99[c] (0.52)	0.94[c] (0.53)
Permanent ADMARC market	...	-1.12 (0.80)	-0.39 (0.74)	-0.13 (0.72)	0.01 (0.72)	0.00 (0.73)
Cooperative	...	5.64[a] (0.91)	2.62[a] (0.82)	2.15[c] (0.77)	2.16[b] (0.76)	2.21[b] (0.76)
Credit club	...	2.63[a] (0.86)	1.51[a] (0.75)	1.42[b] (0.71)	1.39[b] (0.70)	1.23[c] (0.71)
Post office	...	-0.85 (0.87)	-1.72[b] (0.81)	-1.68[b] (0.78)	-1.90[b] (0.81)	-1.92[c] (0.82)
Public telephone	...	-1.40[b] (0.69)	-0.56 (0.72)	-0.25 (0.69)	-0.25 (0.68)	-0.32 (0.67)

Table 5 (cont.). Determinants of participation in tobacco in Malawi: Land share

	(1)	(2)	(3)	(4)	(5)	(6)
Health clinic	...	-0.48 (0.74)	0.37 (0.60)	0.28 (0.56)	0.41 (0.55)	0.43 (0.55)
Irrigation scheme	...	-0.84 (0.75)	-0.71 (0.75)	-1.06 (0.70)	-0.86 (0.72)	-0.76 (0.73)
Graded graveled road	...	2.83[c] (0.89)	0.69 (0.79)	0.73 (0.76)	0.45 (0.79)	0.46 (0.79)
Dirt road (maintained)	...	2.05[c] (0.77)	1.26 (0.66)	1.00 (0.62)	0.64 (0.63)	0.69 (0.64)
Dirt track	...	1.18 (0.89)	0.91 (0.79)	0.78 (0.75)	0.43 (0.80)	0.44 (0.80)
Distance to urban center	...	...	...	...	-0.00 (0.00)	-0.00 (0.00)
Distance to asphalt road	...	...	...	...	0.01 (0.02)	0.01 (0.02)
Remoteness	...	...	...	...	0.82 (1.34)	0.90 (1.37)
Household assets	...	...	...	...	0.43 (0.39)	0.43 (0.39)
Bicycle	...	...	...	...	1.24[a] (0.32)	1.30[a] (0.33)
Other mean of transp.	...	...	...	...	1.78 (2.04)	1.91 (2.00)
Oxcart	...	...	...	...	6.17[a] (1.33)	7.05[a] (1.33)
Wheelbarrow	...	...	...	...	1.31 (1.15)	1.24 (1.15)
Hoe	...	...	...	...	0.60 (0.97)	0.43 (0.95)
Sickle	...	...	...	...	1.13[a] (0.28)	1.11[a] (0.28)
Tobacco club member	...	...	...	17.46[a] (1.45)	16.23[a] (1.51)	
Club benefit: credit	...	...	...	...	...	8.93[a] (1.97)
Club benefit: inputs at lower price	...	...	...	...	...	-1.45 (2.71)
Club benefit: better tobacco prices	...	...	...	...	...	-0.20 (2.83)
Club benefit: extension service	...	...	...	...	...	0.96 (2.22)
Club benefit: quota access	...	...	...	...	...	6.23[a] (2.18)
Club benefit: transport to market	...	...	...	...	...	4.37[b] (2.18)
Observations	9 764.00	9 429.00	9 429.00	9 429.00	9 429.00	9 429.00
R-squared	0.03	0.08	0.19	0.24	0.24	0.25

Note: Standard errors in parenthesis. "a", "b", and "c" denote statistically significant at 1, 5, and 10 per cent, respectively. Models 3 to 6 also include district dummies, not reported in this table. The age category omitted is the one that correspond to 18 to 45 years old. The roads category omitted is asphalt.

will be reluctant to engage in commercialization and will face potentially high prices as a consequence of low food supplies. In this case, farmers will choose to focus on food production for home consumption. Instead, if food markets are available, households may face, in the end, a lower risk of engaging in export crops.

It should also be noted that the presence of the Agricultural Development and Marketing Corporation (ADMARC), which was originally a government marketing board has no effect. In a recent study (Nthara 2002), one of the findings was that ADMARC does not play a role as a buyer of agricultural produce. This is the case as producers obtain higher prices when selling to private traders and at local markets, also ADMARC buys farmers produce very late in the year and in some areas tends to run out of cash. Therefore, producers are forced to sell to other buyers when cash is in need.

Individual determinants in Uganda

Uganda's case confirms several of the same results found for Malawi (see table 6): households with a larger proportion of males are more likely to be engaged in export agriculture; households with a larger proportion of members in the 12 to 18, 18 to 45 and over 45 age categories are more likely to be engaged in commercialization; a clear association between commercialization and the education of the head is not evident; the health status of different family members does not seem to affect the decision to participate in export commercialization; and the existence of food markets in a village induces export agriculture.

However, there are some differences between the two countries. The gender and the marital status of the household head do not seem to matter for participation in export commercialization in Uganda while they have a positive effect in Malawi. It also appears that larger households are less engaged in agriculture commercialization (although this result is weak, and sometimes mixed (see models 1 to 3 for export participation). However, in the more complete model with assets and non-agriculture income, the coefficient of household size is negative. This result would favour the hypothesis that larger households will try and secure food needs before engaging in commercialization. The counter-hypothesis would argue that larger households are endowed with a larger supply of labour and thus face lower constraints to commercialization. Overall, food security and risk coping seems to dominate the labour supply effect in Uganda.

In addition, households endowed with a larger plot size are more likely to participate in export and extended commercialization (model 2). Two interpretations of this finding are: first, by having more land, households are able to allocate enough land to food and have additional land resources to devote to commercialization (food security and household resource interpretation); and second, allowing households to obtain cheaper credit to finance any investment that commercialization requires (land can work as collateral for loans and is thus an indication of household assets interpretation). It is also possible that farmers with higher land endowments are more willing to take more risk and be engaged in commercialization.

Regarding income from sources other than agriculture, it was found that receiving remittances has a slightly positive (but only marginally significant) relationship with agriculture commercialization. Instead, having non-agriculture income sources affects commercialization negatively. One interpretation of this finding is that non-agricultural activities crowd out resources (labour) that thus cannot be used for production for commercialization. Overall, households endowed with agricultural equipment (animals or other tools) are more likely to be involved in commercialization. The interpretation lies on the complementary of these capital goods with commercialization activities.[5]

Aggregate determinants in Malawi

Considering the aggregate (district level) determinants, an interesting finding is that credit plays a significant role in determining the share of land dedicated to grow export crops (table 5). The presence of a credit club in a village has a strong positive effect on commercialization activities. If a farmer is a member of a tobacco club and if he receives credit from the club the effect on the share of land allocated to tobacco is positive and quite large (model 6). This implies that in conjunction with having credit available meeting the requirements to obtain credit plays an important role. This finding supports the start-up investment hypothesis.

The presence of a cooperative in a village also has a positive effect on farming of export crops, although not as effective as the effects of belonging to a tobacco

Table 6. Determinants of participation in export crops in Uganda: Land share (OLS results)

	(1)	(2)	(3)	(4)	(5)
Household size	0.003[a] 3.060	0.002[b] 2.240	0.002[b] 2.310	-0.003 -1.480	-0.002 -1.020
Sex head (male)	0.012[c] 1.700	0.013[c] 1.750	0.004r 0.670	0.007 0.970	0.006 0.840
Married head	0.008[c] 1.940	0.009[b] 2.040	0.006 1.500	0.006 1.510	0.005 1.400
Proportion of males	0.030[a] 2.800	0.029[a] 2.730	0.027[b] 2.540	0.024[b] 2.330	0.023[b] 2.270
Proportion members 12-18	0.041[a] 2.650	0.037[b] 2.290	0.041[a] 2.810	0.096[a] 4.230	0.098[a] 4.200
Proportion members 18-45	0.001 0.070	-0.003 -0.190	0 0.030	0.046[b] 2.420	0.050[b] 2.510
Proportion members over 45	0.069[a] 3.200	0.063[a] 2.990	0.062[a] 2.950	0.111[a] 4.290	0.105[a] 4.000
Proportion members 6-12	0.024 1.210	0.023 1.160	0.033[c] 1.850	0.031[c] 1.730	0.032[c] 1.710
Head attends school?	-0.001 -0.020	-0.001 -0.040	0.001 0.050	-0.011 -0.550	-0.006[c] -0.210
Literacy of head	0.023[b] 2.150	0.023[b] 2.150	0.016 1.750	0.014 1.590	0.016 1.750
Primary incomplete	-0.010 -1.000	-0.012 -1.130	-0.017 -1.600	-0.017[c] -1.740	-0.016 -1.600
Primary complete	0.010 0.370	0.006 0.240	0.005 0.200	0.007 0.260	0.008 0.300
Junior incomplete	-0.021 -0.890	-0.022 -0.940	-0.027 -1.200	-0.025 -1.120	-0.022 -0.950
Junior complete	0.013 1.040	0.010 0.810	0.004 0.290	0.003 0.260	0.005 0.410
Senior incomplete	-0.029[c] -1.800	-0.038[b] -2.250	-0.041[b] -2.380	-0.044[a] -2.680	-0.040[b] -2.380
Senior complete	0.002 0.030	-0.014 -0.350	-0.031 -0.700	-0.036 -0.690	-0.022 -0.500
University degree	-0.046 -0.870	-0.062 -1.250	-0.076 -1.490	-0.084 -1.510	-0.068 -1.320
Household head sick	0.008 1.090	0.00 1.090	0.004 0.660	0.011 1.660	0.010 1.520
Land	...	0.004[b] 2.080	0.003[b] 2.050	0.003[b] 2.040	0.004[b] 2.120
Food markets	...	...	0.109[a] 3.230	0.109[a] 3.170	0.107[a] 3.110
Number of sick members	...	...	...	-0.022 -1.280	-0.021 -1.220
Proportion sick children	...	...	...	0.012 1.560	0.012 1.640
Number of children	...	...	...	0.011[a] 3.130	0.010[a] 2.940
Mother sick (with children)	...	...	...	0 0.060	0 0.060
Remittances (yes/no)	...	...	...	...	0.01 1.540
Non-farm income (yes/no)	...	...	...	...	-0.012 -1.990

Table 6. (cont.) Determinants of participation in export crops in Uganda: Land share (OLS results)

	(1)	(2)	(3)	(4)	(5)
Animal assets (yes/no)	...	...	...	...	-0.003 -0.510
Equipment assets (yes/no)	...	...	...	...	0.045[a] -0.510
Equipment assets (yes/no)	...	...	...	...	0.045[a] -3.580
Non-farm income (value)	...	...	...	0 0.830	...
Animal assests (value)	...	...	...	16.338 0.570	...
Equipment assests (value)	...	...	...	-1.606 -0.340	...
Remittances (value)	...	...	...	0.000[b] 2.090	...
Distance to feeder road	...	...	...	-0.001[c] -1.950	0 0.370
Distance to murram road	...	...	...	0.013[b] -3.380	-0.016 -2.370
Distance to paved road	...	...	...	-0.001 -1.860	-0.002 -2.560
Overall road constraints	...	...	...	0.052 0.530	0.432[b] 2.740
Distance to intermediaries	...	...	...	0.010[a] -3.450	-0.006 -1.120
Distance to employment opportunitie	...	...	...	0.002[a] -3.630	-0.005[c] -3.960
Use/rent oxen	...	...	...	0.030 0.470	0.409[b] 3.040
Use/rent tractor	...	...	...	0.201[a] 5.79	0.274[b] 4.130
Access to improved seeds	...	...	...	0.019 0.690	0.124[c] 2.320
Access to credit	...	...	...	0.019 0.710	0.004 0.090
Overall disease constraints	...	...	...	0.068 1.090	0.072 0.960
Overall security constraints	...	...	...	0.058 0.140	0.020 0.030
Land constraints	...	...	...	0.084 1.950	0.109 1.560
Land fertility	...	...	...	0.138 1.820	-0.065 0.490
Veterinary services	...	...	...	0.185[a] 6.010	-0.157[c] 3.140
Land conflict	...	...	...	0.274[a] 5.010	0.084 0.820
Primary school	...	...	...	0.086[a] 2.770	-0.011 0.170
Election	...	...	...	-0.024 0.650	-0.169[c] 2.680
Access to water	...	...	...	0.148[a] 4.570	0.097 1.420

Table 6. (cont.) Determinants of participation in export crops in Uganda: Land share (OLS results)

	(1)	(2)	(3)	(4)	(5)
Public hospital				0.155[a] 4.820	-0.165[c] 2.550
Private hospital				0.016 0.610	0.055 1.180
Observations	**6 554.00**	**6 554.00**	**6 554.00**	**6 513.00**	**6 554.00**
R-squared	**0.02**	**0.03**	**0.05**	**0.06**	**0.06**

Note: Standard errors in parenthesis. "a", "b", and "c" denote statistically significant at 1, 5, and 10 per cent, respectively. All Models include district dummies, not reported in this table.

club. If a farmer is a member of such a club, the share of land devoted to tobacco increases significantly as previously shown (model 5). It is also interesting to disentangle the aggregated effects tobacco clubs toward the benefits its members accrue. This is reported in model 6, where the tobacco club dummy is replaced by dummies of the different benefits the members receive from the club. As mentioned earlier, credit plays a very important role in the decision of farmers to engage in the production of export oriented crops. A farmer is also motivated to produce tobacco as there is always a ready market to sell it in order to obtain cash to later be able to buy food and other goods. In this sense, the availability of traders or produce markets is a crucial condition. This is why the quota access to auction floors has a big positive effect on motivating farmers to grow tobacco.

The district road variables included in the regressions seem to have little impact on the measure of commercialization when controlling by the rest of the covariates. This is true for two different measures of road infrastructure, which is an indication of transportation services: dummies for different types of roads (models 2 to 4), and distance to asphalt road in kilometres (models 5 and 6). There exist three reasons why this means roads are not important.

Firstly, it should be kept in mind that some of the measures of road access are dummies indicating the main type of road in the district. Asphalt roads are the omitted category in the regressions thus, the right interpretation of the sign and significance of the road dummies is that the different qualities of roads have no further effect on participation. Different road access specifications are experimented with in appendix 1.

Secondly, even though effects of different road access and distance on the share of land allocated to tobacco were not found, what was found is that access for the transport of bales to market is linked to higher participation in export agriculture. This is an important result as it implies that the presence of intermediaries linking farmers with markets facilitates participation. In other words, these services create markets for commercial crops and act as impulses toward participation.

Third, a household having a bicycle or an oxcart has a positive effect on participation. These two means of transport are used by tobacco farmers to carry their produce to the selling point. This indicates that even though a positive effect for different types of access to roads is not found, there are positive and significant effects of services related to transport.

In conclusion, the type of road access available to a farmer does not seem to be a great constraint to agriculture, provided roads (asphalt, gravelled) do exist and are maintained, and provided farmers are endowed with the means to reach selling points, have access to intermediaries or other marketing channels, and have transport facilities through, for instance, tobacco clubs.

Aggregate determinants in Uganda

As was the case with Malawi, road infrastructure (again, taken as in indicator of transport services) is also important for commercialization in Uganda. Table 6 reports the coefficients for three different measures of road infrastructure (distance to feeder roads, distance to murram roads, and distance to tarred roads). It is interesting to note the findings indicate that the most significant effects come from asphalt and murram roads. The evidence suggests that better road infrastructure is necessary to assist the poor to participate in agricultural commercialization and thus accrue gains.[6]

Table 6 revealed that farmers residing in villages served by truck and pickup services are more likely to participate in export commercialization. This is important as the presence of intermediaries linking farmers with markets facilitate participation. In other words, these services create markets for commercial crops and increase impetus toward participation. This is consistent with the findings regarding market costs in export agriculture (Balat, Brambilla and Porto 2009).

Another interesting result emerges from the presence of formal employment opportunities in a given area. Farmers located far from factories are more likely to be engaged in agriculture commercialization. One reason being, that employment opportunities in rural areas often allow workers to earn higher wages. For instance, a recent study found income differences of up to 100 per cent between rural employment and other agricultural activities in Zambia (Balat and Porto 2007). Therefore, when higher earnings employment opportunities are available, farmers (or at least a family member) may opt out of household agriculture and commercialization.

The bottom of table 6 includes additional results for several other measures of infrastructure and access to services. In these cases, results are less robust than for variables included in the first panel. A strong relationship exists between access to tractor services and commercialization. A somewhat weaker link exists between access to improved seeds, oxen use, and access to water. Overall, though, access to agricultural services seems to be a positive determinant of commercialization. Land constraints, such as access to land, conflict, and land fertility are also important, particularly for export crops, but less than expected, in terms of land fertility. One plausible explanation is that land is readily available for use, (either privately or communally), and soil and climate conditions are relatively good for growing crops such as maize, matooke, coffee and tea).

4. SERVICES FOR EXPORTS AND POVERTY ALLEVIATION: INTERMEDIARIES AND TOBACCO CLUBS

This section provides additional insights on the role of services as a vehicle for poverty reduction by exploring two examples of services for exports in Uganda and Malawi – the role of marketing services in Uganda and the role of tobacco clubs in Malawi.

4.1. Marketing services and poverty in Uganda

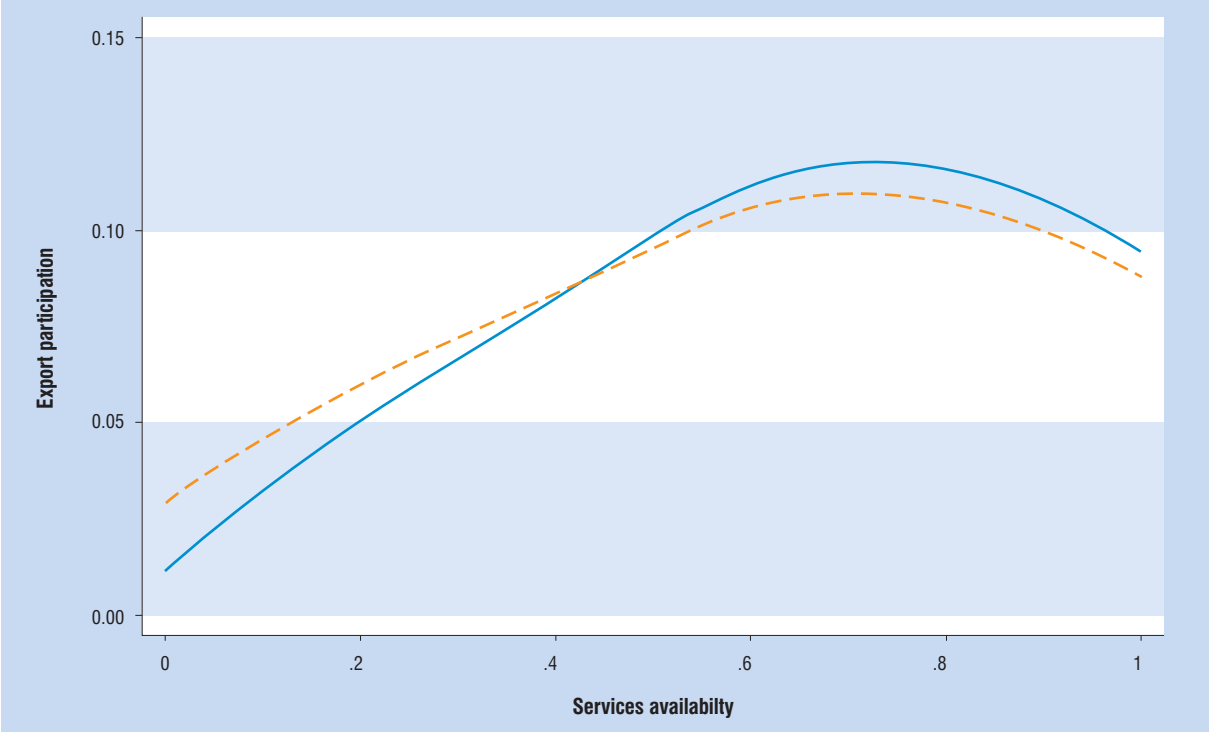
The chapter has thus far shown the negative correlation between export market participation and poverty in Uganda, as well as that a lack of services can be a hindrance to export crop adoption and thus impede the process of poverty reduction in Africa. This section, explores the role of one specific service with the aim of deriving general lessons for services, trade in services, and services reforms as vehicles toward poverty alleviation.

The role of marketing services in export agriculture is investigated. Due to insufficient infrastructure, export commercialization requires intermediaries that work as bridges between international markets and the farmers, throughout Africa. In rural areas, the lack of intermediation activity acts as an effective barrier to exports. The following case study quantifies these effects using UNHS.

Marketing services are associated with the presence of various outlets where farmers can sell their export crops. There are three different types of such markets in rural Uganda. First, the most widespread way of marketing export crops is through export intermediaries. These are agents that purchase output from farmers, store the production and then transport the agricultural produce with pick-ups or small trucks to Kampala, the capital of Uganda. Second, typical outlets for cash crop are district markets or stalls along the road to Kampala. Third, an additional channel to sell agricultural produce is through large commercial plantations, particularly coffee and tea. These plantations often purchase the output of neighbour farmers thereby constituting additional channels of market availability. Most plantations are run by foreign firms. The community module of the UNHS provides information on the availability of these three types of outlets for each community; these data are aggregated at the district level. Nationally, the average marketing service is 0.37, meaning that in 37 per cent of the communities there is at least one outlet for agricultural produce (intermediaries, export crop stalls, or local large plantations).

Figure 5 shows the relationship between marketing services and export participation. The solid line corresponds to the share of land allocated to export crops and the broken line, to the share of export crops in income. Clearly, the availability of marketing services for agriculture exports is positively linked to export

Figure 5. Marketing services availability and export market participation Uganda



Note: The graph reports the non-parametric regression of export crop participation on measure of market availability. The solid line corresponds to the share of land allocated to export crops suchas coffee, cotton, tea, pineapples, and fruits. The broken line corresponds to the share of income derived from those crops. The estimates are obtained with a locally weighted linear regression with Gaussian kernel and bandwidth equal to 0.15".

cropping. In turn, figure 6 establishes the negative link between poverty and marketing services. This relationship is negative, with lower poverty associated with a higher availability of services for exports.

These graphs corroborate that services, and in particular marketing services, are important for poverty reduction. Ugandan farmers facing abundant marketing services are less likely to be poor because the availability of marketing services allows them to adopt more profitable exports crops such as coffee, cotton or tea.

The graphical representation of the relationship between availability of services, export cropping, and poverty is a descriptive tool. In consequence, it cannot provide causal evidence. For such evidence the following formal regression analysis is utilized.

Estimation and results

Poverty regressions are begun with. Let be a dichotomous variable that indicates the poverty status of household in district. A household is poor if its per capita expenditure falls below the official poverty line. is regressed on the measure of marketing services, which includes the three types of outlets discussed above. The model also includes a number of additional controls, such as household characteristics, (size, demographic composition, age and gender of the household head, the level of education and literacy of the head, and the health status of the head) and district characteristics. These characteristics include access to credit, roads, equipment such as oxen or tractors, inputs, and extension services, indicators of major agricultural constraints (land quality and land availability), input availability, disease, and education, medical, sanitary and veterinary infrastructure, and prevalence of security and conflicts. To account for possible reverse causality (from poverty to marketing services), the model is estimated with instrumental variables. The instrument is the transportation costs from the district centre to Kampala.[7]

The main results are shown in table 7. In the top panel, estimates from linear IV regressions are reported. The first column corresponds to a simple linear model that

Table 7. Marketing services and poverty Uganda

	(1)	(2)	(3)
A) Poverty			
IV	-0.56[a] (0.11)	-0.27[b] (0.13)	-0.28 (0.13)
R^2	0.11	0.21	0.21
IV - Probit	-0.62[a] (0.12)	-0.35[a] (0.15)	-0.35[a] (0.15)
R^2	0.18	0.18	0.18
Observations	**6 743.00**	**6 743.00**	**6 743.00**
B) Export market participation			
IV	0.30[a] (0.052)	0.18[a] (0.07)	0.18[a] (0.07)
R^2	0.13	0.21	0.21
IV - Tobit	0.31[a] (0.040)	0.18[a] (0.052)	0.18[a] (0.050)
Observations	**6 554.00**	**6 554.00**	**6 554.00**

Note: Based on Balat, Brambilla and Porto (2009). Standard errors are reported within parenthesis.

only includes household characteristics as controls. The finding is market density, is negatively and significantly associated with poverty (with coefficient equal to -0.56). Since varies at the district level, the estimation of the variance is corrected for clustering effects. In column 2 of table 7, district characteristics and infrastructure variables are added. The negative association between export market density and poverty is robust to the inclusion of these variables. However, it should be noted that the addition of district variables has a sizeable impact on the coefficient of market density, which drops to -0.27.

In column 3 of table 7, food market density as an additional district variable to control for further unobserved district effects is included. There is a negative association found between food market density and poverty which still shows up strongly in the regressions; further, the magnitude of the coefficient, equal to -0.28, does not change a great deal with respect to model 2. The findings support the hypothesis that households residing in districts endowed with more marketing services are, on average, less likely to be poor: increasing the availability of services by 5 percentage points (from an average of 0.37) would cause poverty to decline by 1.4 percentage points.

Since the poverty indicator is a dichotomous variable, Probit models of poverty with endogenous regressors are set up in addition to the linear models described above. A control function approach is worked with, which requires the inclusion of the residuals from the first stage regression, together with the endogenous variable, in the second stage regression (Newey, 1987; Blundell and Powell, 2004). Results are reported in the second panel of table 7. The finding, that export market density is conducive to poverty reduction, is robust to the Probit specification. The magnitudes of the marginal effects, equal to -0.35 in model 3, are slightly higher, but comparable, to the linear case.

Having established a causal relationship between marketing services and poverty, it is now shown that this is due to marketing services facilitating the adoption of export crops. The regression model is as before; that is, the share of land allocated to export crops on the measure of marketing services is regressed (including household and district characteristics). The estimation is done using two-stages least squares, using transportation costs to Kampala as an instrument to marketing services.

The same three specifications are adopted as were previously and results are reported in the third and fourth panels of table 7. Column 1 corresponds to the simple model with only household controls. The measures of district infrastructure and other observed characteristics to control for confounding community effects are added in column 2. In column 3 food

market density is added as a control. Strong evidence is found that higher export market density induces farmers to participate more in export agriculture. This result holds for all specifications. This is an important result: improved trade facilitation and lower export marketing costs matter for export crop participation. The point estimate is equal to 0.18 – an increase in export market density of 5 percentage points would cause the average land share devoted to export crops to increase by 0.9 percentage points, equivalent to 13 per cent of the average export participation (roughly 7 per cent).

Since the two measures of export participation are shares that are left censored at 0 and right censored at 1, Tobit models are estimated with a control function approach (to account for the endogeneity of export market availability). As was the case before, this requires that inclusion of the estimated residuals from the first stage regression along with the endogenous variable and the other exogenous regressors in a standard Tobit model. The bottom panel of table 7 demonstrates that the findings are robust to censoring of the export participation variables. The coefficients on market density are positive and highly significant. Furthermore, the marginal effect of the Tobit estimates (the change in the unconditional average land share) is 0.18, the same as the IV estimate in the first panel.

4.2. Tobacco Clubs in Malawi

A different source of services for exports in Africa is the Malawi Tobacco Clubs. Tobacco is the largest commodity export of Malawi and is also one of the major sources of cash income for Malawi farmers. In an attempt to reduce poverty and foster smallholder tobacco production, the Government of Malawi started in the early 1990s a gradual process of liberalization of the tobacco sector. The reform comprised several steps. One was the amendment of the Special Crop Act that precluded participation of small farmers by allowing cultivation of tobacco only on leasehold and freehold land, and the allocation of an increasing share of the national burley quota to smallholder farmers. Another was the introduction of a programme of intermediate buyers to facilitate the logistics of bringing the smallholder's output to auction floors. Finally, a major feature of the reforms was the creation of "burley tobacco clubs"– groups of 10 to 30 smallholders that gathered together to grow tobacco and jointly perform critical farming activities.

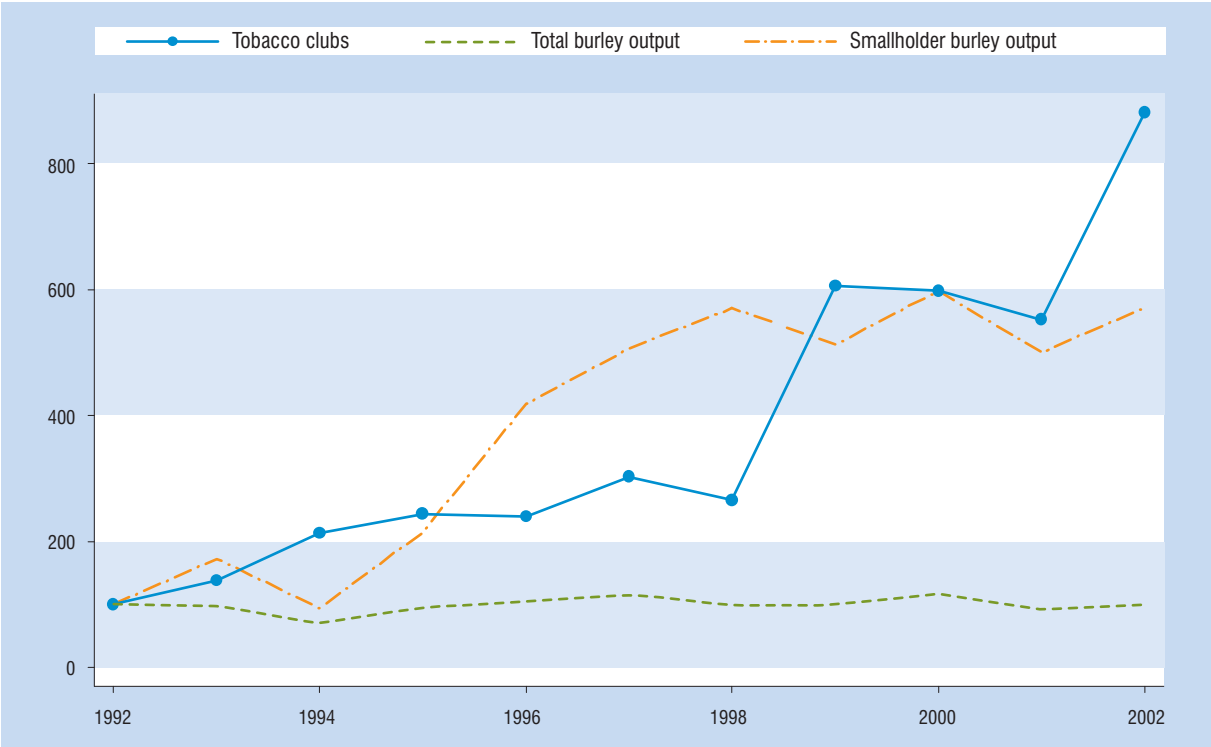
The tobacco club initiative was a success. According to the Tobacco Control Commission (TCC), the number of clubs grew to 23,843 in the 2006/2007 season from a few thousands in the early 1990s. In turn, smallholder production of tobacco grew hand in hand with the spread of burley clubs. Figure 7 depicts, both the number of clubs and the volume of smallholder burley production experienced a steady growth after market liberalization in 1992. Nevertheless, the total quantity of tobacco produced in Malawi underwent little variation over the same period. In the end, the participation of smallholders in total production and exports of tobacco grew as well.

The services delivered by the clubs increase the performance of members in key stages of the farming process. In order to document them, we use two sources of data. Some pieces of evidence come from the Tobacco Clubs Survey of 2007. This is a survey of clubs put together by Negri and Porto (2009). Other pieces of evidence come from the tobacco module of the Malawi IHS (2004 and 2005). Table 8 summarizes the evidence.

Institutional access has traditionally represented the major incentive for smallholder membership. For many years, tobacco clubs constituted almost the only way to access auction floors and fetch higher prices. Upon registration with the Ministry of Agriculture, the club was allocated a burley quota and a license to sell tobacco at the auction floor (Orr, 2000). Instead, non-members had to sell their tobacco either to intermediate buyers or across the border in Zambia or Mozambique, at a lower price. Although quotas have practically to all intents and purposes been abolished, tobacco clubs are still an efficient vehicle to reach output markets. The IHS and the TCS provide different complementary evidence, reported in panel A of table 8, on institutional access. On the one hand, IHS reveals that 73 per cent of the clubs acknowledge easier access to the auction floor. On the other hand, according to TCS, only 33 per cent of the clubs actually obtain better prices at the auction floors. Both IHS and TCS agree that tobacco clubs provide preferential institutional access to official extension support. In table 8, 90 per cent and 69 per cent of the surveyed clubs in TCS and IHS, respectively, claim to have received better training and technical advisory services from official extension workers.

Burley clubs have a major role as facilitators of collective actions. One example is debt repayment monitoring. In the absence of collateral, credit institutions use

Figure 7. Number of tobacco clubs and smallholder tobacco production (1992 - 2002)



Sources: Tobacco Control Commission; National Statistical Office, Statistical Yearbook (various issues); and Government of Malawi, Economic Report (various issues).

peer monitoring as a way to bridge the asymmetric information gap between lenders and borrowers in small-scale credit transactions (Pitt and Khandker, 1998; Besley and Coate, 1995; Morduch, 1999). Tobacco clubs act as a group-lending institution, and all members are jointly liable for repayment.[8] In turn, the clubs have the right incentives to honour their debts in order to avoid a bad reputation and to maintain the necessary credibility for further loans. The evidence from IHS is found in panel B of table 8 – the 65 per cent of the smallholders that organize themselves into clubs have better access to credit.

The loans, collectively obtained by the club, are used primarily to purchase inputs (fertilizer) in bulk at the beginning of the rainy season (October to December). In principle, this allows farmers to access cheaper and higher quality inputs (which is supported by the evidence). While only 13 per cent of clubs from IHS and 11 per cent from TCS actually pay lower prices for inputs, 66 per cent of clubs (in TCS) in fact have access to higher quality inputs. This implies that member farmers pay roughly the same amount as non-member farmers but get higher quality inputs.

The third major prerogative of burley clubs is the realization of economies of scale, especially in the transport of tobacco. Once again, IHS and TCS provide complementary evidence, presented in panel C of table 8. Approximately 67 per cent of club members surveyed by IHS benefit from overall transportation services (the actual question in the questionnaire refers to "transport of bales to the market", without specifying price or quality). However, according to TCS, only 5 per cent of the clubs enjoy lower transportation costs as a result of membership. To resolve this apparent discrepancy, additional qualitative information was collected from group interviews. Members stated that transportation of their output with the club (through NASFAM or TAMA) is not necessarily cheaper but is more secure and safer. Moreover, while club members can be compensated for any losses while the harvest is in transit, farmers transporting crops individually had to absorb any burdens or risk themselves. In summation, the realization of economies of scale does not allow club members to fetch higher net prices, but does allow them reduce risks associated with the marketing of tobacco.

Another major service provided by the clubs is as a support networks and safety net. This has significant implications in terms of labour supply, effort, absorption of negative shocks and externalities from positive shocks. The evidence from TCS is in panel D of table 8.[9]

Clubs allow for peer to peer extension support as members visit each other's fields and sometimes jointly grade tobacco. In addition, club members are expected to assist colleagues with farming activities and other social support in the event of sickness. This is to ensure sufficient tobacco production at the end of the season to offset any input loans – which in any event must be covered by the club. As a result, the clubs create an environment characterized by both, learning by doing and learning from others (Munshi, 2004). Almost all clubs interviewed by TCS (98 per cent) acknowledged having enhanced their farming ability due to member advice. Also, around 65 per cent of club members provide labour assistance to fellow members in farming activities such as baling, grading, harvesting or shade building. In contrast, only 44 per cent of respondents claimed to have actually received labour assistance from fellow club members. Almost half of the club members get advice in diverse issues such as personal matters and health matters and other tips on how to spend any extra income generated by tobacco. In fact, tobacco clubs represent an alternative to the farmer's informal network of family and friends, and thus diversify a farmer's social network. In the end, these support networks provide the needed motivation and identity to withstand the hard work required to grow tobacco. Overall, 96 per cent of respondents felt more motivated to work harder after membership in a tobacco clubs.

Clearly, the study of the tobacco clubs is relevant for the trade in services and poverty agenda for a number of reasons. The tobacco clubs work as instruments to provide various services needed for efficient tobacco farming. The clubs facilitate access to credit and inputs, improve the proper use of those inputs, spread knowledge, reduce labour constraints, reduce

Table 8. Benefits of tobacco club membership (Percentage of respondents)

	Malawi Integrated Household Survey (IHS)		Tobacco Clubs Survey (TCS)	
	Yes	No	Yes	No
A) Institutional access				
Improved access to auction floor	73	2	...	...
Higher prices	...	...	33	67
Better and more extension advice(a)	69	31	90	10
B) Collective actions				
Improved access to credit	65	3	...	...
Lower prices for inputs	13	87	11	89
Better input quality	...	...	66	34
C) Economies of scale				
Transport of bales to auction floors	67	3	...	...
Lower transport cost to auction floors	...	...	5	95
D) Supporting network				
Enhanced farming ability due to fellow advice	...	...	98	2
Provision of labour assistance to club members	...	...	65	35
Assistance on farming activities from club members	...	...	44	56
Advice on non-farm activities from club members	...	...	49	51
Motivation to work harder	...	...	96	4

Notes: The table shows weighted averages computed from the Malawi Integrated Household Survey of 2004/2005 and the Tobacco Clubs Survey of June 2007. In the Malawi Integrated Household Survey (2004/2005), 280 club members answered the question: "Which of the following benefits did you enjoy from membership in a tobacco club?" In the TCS, 240 clubs responded specific questions on the prerogative of clubs. See Aappendix 1. (a): refers to visits from government officers or people from NASFAM/TAMA/etc.

risks associated with transportation, secure higher output prices, and promote economic coordination among smallholders in liberalized markets. Tobacco clubs thus provide farmers with incentives to exert the required effort and to maintain the motivation essential for profitable tobacco farming. In addition, the tobacco clubs were created as one of the building blocks of the tobacco liberalization. It follows that these clubs are a manifestation of the process of agricultural liberalization in Africa.

The impact of tobacco clubs

This exploration is geared toward generating evidence on the impact of tobacco clubs on tobacco farming in Malawi. The analysis is based on data from IHS. The estimating equation is:

Where denotes an outcome of household, a tobacco grower; is a binary variable that indicates whether the person in charge of cropping activities in the household (usually, but not necessarily, the household head) has ever been a member of a tobacco club in the last 5 years; is a vector of additional controls including characteristics of the person who makes cropping decisions, such as gender, education, age, marital status and health, as well as characteristics of the household such as size, demographic composition, and land holdings. In some specifications, the vector also includes tobacco related variables such as tobacco experience, fertilizer use, baling procedures, and temporary work (ganyu). The equation also includes district dummies to control for differences in district infrastructure, local institutions, and demographic-cultural factors (such as the matrilineal or patrilineal nature of the district). Finally, the residuals capture other unobservable factors that affect the outcomes *y* and that may be correlated with club participation.[10]

Several outcomes *y* are explored including output per acre, (which is a measure of land productivity) and sales per acre. On the one hand, low productivity in agriculture is often the major reason behind the prevalence of poverty in rural Africa; while on the other hand, sales of cash crops such as tobacco often provide the income opportunities needed to escape poverty. There are two additional tobacco outcomes of interest – tobacco participation and unit values. A first question deals with whether farmers in clubs allocate higher shares of their land to tobacco than non-members. Low export participation is often cited as another major reason behind low household income and poverty traps. A second question deals with whether clubs allow members to fetch higher unit values for their tobacco. This is an important question because higher prices and higher quality, both associated with higher unit values, are also vehicles toward poverty reduction.

There is an obvious endogeneity problem in the simple model. The need to minimize the risk of default forces them to select trustworthy and able farmers to produce a sufficient amount tobacco. Among those likely to be denied membership are newcomers to the village, farmers with very little land, and farmers who have behaved badly in the past. Club membership is thus an endogenous variable and using OLS will produce biased estimates of. In consequence, is estimated with matching methods (see appendix 1 for details).

Results from the matching exercises are reported in table 9. The major finding is that club members are around 40 per cent more productive than non-members. The result is robust to the use of three different matching estimators, named Kernel matching (column 1), stratification matching (column 2), and nearest neighbour matching (column 3). The matching estimates also reveal higher sales (per acre) for members than for non-members. In the Kernel matching in column 3, the club premium in sales (per acre) is 45 per cent (also similar to the unconditional mean difference).

The land share allocated to tobacco is positively affected by club membership, but only marginally so. Furthermore, even though club membership makes farmers more productive and allows them to earn more income through sales, members do not fetch better prices – the unit values from tobacco sales do not show significant differences between members and non-members. This explains why the difference in sales per acre is roughly comparable to the difference in output per acre. This result is not really surprising due to the fact there are only a few buyers at the auction floors and tobacco clubs are not big enough to counterbalance their market power.

5. CONCLUSIONS

In this case study, the link between trade, services access and poverty have been tackled by first exploring the link between poverty and export cropping in Africa and secondly exploring the link between the provision

Table 9. Effect of club membership. Matching estimations

	Nearest neighbour	Stratification	Standard deviation
Output per acre (logs)	0.472[c] (0.124)	0.424[a] (0.095)	0.395[a] (0.083)
Sales per acre (logs)	0.429[b] (0.162)	0.487[a] (0.094)	0.449[a] (0.098)
Land share	0.190[c] (0.112)	0.103 (0.081)	0.112[c] (0.067)
Unit value (logs)	0.091 (0.079)	0.053 (0.051)	0.042 (0.053)

Notes: Standard errors (computed via bootstrap) in parenthesis: "a", "b", and "c" denote statistically significance at 1, 5, and 10 per cent, respectively. The balancing property is satisfied in all cases displayed in this table.

and access to various services (with varying degrees of tradability) and export cropping. This approach provides a chain of results that allows some light to be shed on the role of services and poverty in rural areas, where poverty is widespread.

Separate evidence is provided supporting the idea that poverty is lower among households and farms engaged in export cropping. This has been shown using various techniques, from non-parametric regressions to matching methods. The evidence using data from Malawi and Uganda shows a clear negative correlation between the extent of cash export cropping (share of land allocated to cash crops, for instance) and poverty in these countries.

Evidence is also provided of the role of various services on cash cropping and agricultural productivity. Correlations were first reported between export crop adoption and services using data from the community questionnaire (a rich source of information on access to different services such as roads, schools, hospitals, and markets). In Uganda, transportation services and marketing services (intermediaries) were found to facilitate the adoption of export crops. In the detailed analysis of marketing services across Ugandan districts, strong causal impacts of the availability of export outlets in facilitation adoption were also found. This is because more intermediaries bring farm-gate prices up and transport costs down.

In the case of Malawi, transportation services were found not to be as important as in they are in Uganda. However, marketing services and credit are. More concretely, belonging to a tobacco club is a major determinant of productivity (and participation) in tobacco production. To further look into these services, the lessons derived from a study of the Malawi tobacco clubs were explored in great detail to illustrate various gains from access to marketing services (product and input market access), credit and banking services, and transportation services.

The main lesson from this chapter is the complementarities that exist between the role of services, services reforms, and trade in poverty reduction, especially in Africa. The exercises illustrate that potential gains from trade arising from the production of export crops destined to international markets depends to a large extent on the availability of services (such as transportation and marketing). Services reforms that reduce trade costs and encourage marketing activities in rural areas may be useful to facilitate exports and reduce poverty.

APPENDIX

Propensity Score Estimation

Let be the yield (net of inputs) per acre in market agriculture of household. In the empirical exercise that follows, market agriculture is defined as tobacco farming (based on figure 1). Let be the net yield per acre from subsistence agriculture for household. Define also an indicator variable, set to 1 if the household is a tobacco producer or 0 if it is a producer of food for own-consumption.

Before proceeding there is one caveat. Few farmers fully specialized in one crop, say tobacco or hybrid maize. As mentioned earlier, production of food for own-consumption is widespread. Therefore, there is no evident division between subsistence and cash crops producers. In fact, the characterization problem faced is a continuum. While this problem is tackled later, at this moment, a farmer is defined as having specialization for a given crop (food crops, hybrid maize or tobacco) if the household devotes more than 50 per cent of its land to that crop.

Interest is focused on estimating the expected income differential of farmers engaged into export crops,

The problem is that for each farmer only or is observed. This is exactly the paramount obstacle of non-experimental data. The difference can be rapidly calculated as, but this is a potentially biased estimator of. The problem is that if treated and controls, in this literature terminology, systematically differ in their characteristics, then observing for the control group is not a good estimate of for the treated group. To sort this problem out, matching methods based on the propensity score are used. There is abundant literature on matching methods. Original pieces include Rubin (1977) and Rosembaun and Rubin (1983). More recently, Heckman, Ichimura and Todd (1997) and (1998), and Heckman, Ichimura, Smith and Todd (1996) extended and assessed these methods. Dehejia and Wahba (2002) provided a practical examination of propensity score matching methods using the data in Lalonde (1986).

The main assumption of this method is that, in this chapter's case, the participation into market oriented farming can be based on observables. More formally, this is the "ignorability" of treatment assignment and can be stated as (Rubin 1977). As such it is possible to control for differences in observed characteristics by grouping the observations into subclasses based on those observed characteristics, thus reducing the bias due to imbalances in the covariates. The drawback is that when the number of covariates increases, the number of subclasses grows exponentially, and potentially the cells will not contain both treated and control units jeopardizing the comparison between. Fortunately, there exists a scalar function of the covariates (the propensity score) that reduces the dimensionality problem and can be used to balance the distribution of the covariates, as proposed by Rosenbaum and Rubin (1983, 1985a, b).

The propensity score is defined as the conditional probability of participating in market oriented crops

Thus, this methodology requires estimating, for example, a Probit model of participation into export agriculture, which will then define the propensity score, for a given vector of observables. When the propensity score is a balancing one,. This is an important property because as shown by Rosenbaum and Rubin (1983, 1985a, b) it implies that

In other words, observations with a given propensity score have the same distribution of observables for households involved in market agriculture as in subsistence. Importantly, the balancing condition can and should be checked. In all of the exercises, these balancing conditions were tested following the procedure suggested by Dehejia and Whaba (2002).

Thereafter, subsistence farmers are matched with market farmers based on this propensity score, and the income differential is estimated using kernel methods. In the exercises that follow the vector of observable covariates include household characteristics such as household demographics (household size, age and sex composition) and health status of its members; household head characteristics, and district dummies to capture district level fixed effects.

Further Technical Issues

Let index each of the 5 categories. In this case interest is on the average outcome, the net yield per acre, for each one of the 5 categories of tobacco growers. As before, the problem with just taking averages within each category is that if the farmers across the categories differ systematically in their characteristics the results may not be directly comparable. Differences between the may be caused by differences on the observed covariates and not only due to differences on the exposure level of the treatment, that is, the specialization level in tobacco

production. In fact, a similar problem is faced as the one with only 2 categories.

The approach here is conceptually similar to the one used above but has been modified slightly to accommodate multiple treatment doses (Lu et. al. 2001; Imbens 2000; Imai and van Dyk 2003). The sample is sub classified by the estimated propensity score assigning each observation into a small number of subclasses or strata.

The estimation of the propensity score is more complicated because there are more than two categories. Fortunately, a scalar propensity score can be modelled using an ordinal logit (McCullagh 1980). In this case, the distribution of categories (or different doses of treatment) for household, given the set of observed covariates, is modelled with a proportional odds model.

Where is the cut point of. In this model the 5 cut points and the intercept cannot be estimated, and therefore set the constant to zero.

The important feature of this model is that the distribution of categories given the covariates depends on the observed covariates only through, so that the observed covariates and the categories are conditionally independent given the scalar. Therefore, is a balancing score.

The next step is to verify that the balancing condition is held, meaning that the distribution of covariates is balanced across categories, and after that the expected outcome for each one of the 5 categories can be estimated.

Let be the estimated mean outcome for farmers with grade of tobacco specialization. These estimates can be computed as the weighted average

Where is the observed mean outcome among farmers with specialization level and balancing score strata, and the weights equal the number of farmers in strata divided by the total number of farmers.

NOTES

[1] Sugar cane, tea and coffee are also cash crops produced in Malawi, but these are mainly grown by large estates. Therefore, for smallholders, they are of much less importance than tobacco or cotton, and there is no sufficient data to take them into account in the analysis.

[2] The income gain per acre from producing hybrid maize has also been estimated instead of subsistence farming, and this gain is positive though not statistically significant.

[3] It should be noted that for the 20 per cent to 40 per cent category, the differences with the first two categories are not statistically significant.

The standard errors of the gains in figure 4 are smaller; one reason for this may be the increased number of observations now included into each category.

[5] In the case of Uganda, some variations to the original model were explored as a way to check for robustness. Instead of using the share of land devoted to commercialized crops as dependent variable, an attempt was made to use the share of income derived from the sales of those same crops. The results and main conclusions were found, (for individual and aggregate determinants) not to be affected by the choice of independent variables used to measure commercialization. Regression results were also explored using the broader definition of commercialization. Overall, results are consistent across specifications. These results are not reported for sake of simplicity in the presentation of the findings.

[6] The regressions include other distances reported in the community questionnaire such as distance to hospitals, post office, or banks. These variables are used as controls in the regressions, to take account of other village effects.

7 In Uganda, (a landlocked country) most international shipments must pass through the capital, Kampala. The out-of-district transportation costs are proxied with district level data on transportation costs from the centre of each district to Kampala. These costs are reported in the community questionnaire of UNHS as the monetary cost of reaching Kampala by car or truck (for more detail see Balat, Brambilla, and Porto 2009).

[8] The loan is later repaid when tobacco is sold at the auction floor by deducting the amount of the loan, plus interest, from the amount of the sale of tobacco (the difference is deposited directly into the club's bank account).

[9] No information on this theme is available in IHS.

[10] The model is estimated only on the sample of tobacco growers during the 2004/2005 season and not on the whole sample. Therefore, the estimates of represent the causal effects of burley club membership on those farmers who have moved into tobacco. Since unobservable factors partially guide selection into different cropping activities, the estimates will not identify the impacts on a random farmer. Thus the average treatment effect on the treated as opposed to the average treatment effect on the population is identified.

TRADE IN SERVICES AND POVERTY: PRIVATIZATION, COMPETITION AND COMPLEMENTARY SERVICES IN RURAL ZAMBIA

IX

Services can play an important role in the eradication of poverty, especially in rural areas of Africa. Key services include financial services (access to credit), transportation services, marketing services (access to markets), and information. The objective of this chapter is to generate evidence on the likely impact of services reforms on poverty in Africa. The analysis explores reforms in the Zambian cotton sector. The appealing feature of the cotton reforms is that they implicitly embed services reforms due to the outgrower contracts. There is a strong business relationship between cotton firms and farms closely interacting through contract farming arrangements. In this arrangement firms provide credit, transport services, information services, and marketing services to the farmers. A major factor in this approach is the intertwined competition and the provision of these services. Greater competition among cotton firms is generally associated with higher farm-gate prices paid to cotton farmers, which has poverty reducing impacts. However, when firms also provide services, such as credit, the direct link between competition and poverty may break down because due to increased competition making it more difficult to sustain the institution of contract farming. Using simulation models and household survey data, it is shown that while more competition, indeed leads to higher prices, it can also lead to higher costs by way of higher credit prices and lower market access to farmers. This highlights the need to delve deep into the details when considering the poverty impacts of services reforms.

1. INTRODUCTION

This chapter explores the poverty impacts of privatization and competition policies in export agriculture in Africa, and in particular focuses on cotton in Zambia. This is an interesting case study due to the dynamics of the sector. The cotton sector was traditionally controlled by the marketing agency, Lintco (Lint Company of Zambia) until its privatization in 1994. At first, the privatization process led to some improvements in cotton farming (especially in adoption and yields). However, the market later collapsed primarily due to the failure of the outgrower scheme. Cotton farming in Zambia was conducted by way of outgrower contracts, whereby the firms gave inputs on loans to the farmers, which were repaid at harvest time. Unregulated entry into the market quite often led to a farmer's default as a result of higher interest rates and credit prices. This spiralled out of control which finally led to collapse of the system. In 2001, cotton buyers improved the outgrower arrangements and made contracts more efficient. As a result the sector became reinvigorated and is currently vibrant and growing, all within this decade.

The first part of the chapter investigates privatization impacts of the cotton sector on farm productivity, defined as yields per hectare. Increases in productivity are a straightforward mechanism toward poverty alleviation. To this end, reforms of the Zambia cotton sector are reviewed. This review includes the initial privatization of the cotton marketing board as well as the subsequent competition, entry and exit of the sector. These market dynamics greatly affected the availability of complementary services to the farmer, including credit, transportation, marketing, and information, thus acting as a de facto indirect liberalization of various services for exports. The evolution of participation in cotton farming and cotton productivity through the different phases of the liberalization will then be tracked.

The second part of the chapter provides a simulation analysis of the poverty reducing impacts of competition policies in the cotton sector. A theoretical model of export agriculture including farmers, ginneries and retailers are developed and, based on parameters that characterize the sector, poverty simulations are performed. The simulations explore the impacts of increases in competition at different levels of the cotton value chain and the subsequent competition, as well as entry and exit into the sector by domestic and or foreign firms (such as Dunavant, Cargill, Zambia-China Mulungushi, to name but a few).

This case study should allow for a better understanding of the impact of different forms of services liberalization on poverty, which may provide answers to the following two questions: (i) Were Zambia's cotton farmers assisted by the introduction of more competition in the marketing and distribution sector; (ii) Was foreign entry and the accompanying technology responsible for transforming the cotton sector? Understanding the mechanisms through which services liberalization affect the poor is crucial, particularly if Zambia is to consider other services liberalization schemes for the telecommunications, water, and electricity sectors (Mattoo and Payton, 2007).

Results suggest that if privatization of the cotton marketing and distribution sector was accompanied by an increase in the level of competition (due in part to entry by foreign firms), the effects may have been detrimental resulting from market failures not possible to address through privatization or increased competition. In the absence of a well functioning legal system, there is a need to strictly regulate entry into the market to ensure outgrower contract enforcement. It is believed applying the experience of the cotton sector in Zambia can help in designing better services reforms.

2. PRIVATIZATION OF COTTON IN ZAMBIA

Poverty is a severe phenomenon in Zambia (table 1). Fifty six per cent of the national population is poor (that is, it has a level of expenditure which is below the poverty line). As expected, poverty is more pervasive and widespread in rural than in urban areas. While in urban areas the poverty rate is 45.3 per cent, 61.8 per cent of the rural population is poor.[1]

Poverty rates vary significantly across provinces. The highest poverty rates are observed in the Northern, Luapula, and North-Western province. The lowest poverty rates are observed in Lusaka and Southern province. The poverty gap is a measure of how far the poor are from the poverty line. Intuitively, it is the share of the poverty line that would be "necessary" to put the poor out of poverty. It is of interest to note that rural Lusaka has a relatively "moderate" poverty rate of 63 per cent but has one of the largest poverty gaps in the country. This means that, even though the number of poor individuals is relatively small, they are farther away from the poverty line.

Table 1. Poverty in Zambia (%)

	Poverty rate			Poverty gap			Severity of poverty		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
National	45.33	61.75	56.02	16.73	23.44	21.10	8.19	11.60	10.41
Central	51.61	55.00	54.20	19.65	18.71	18.93	9.54	8.34	8.62
Copperbelt	48.31	65.17	51.64	18.99	25.14	20.20	9.62	12.38	10.17
Eastern	34.47	57.65	55.62	11.09	19.88	19.11	4.73	8.91	8.54
Luapala	47.63	70.06	66.59	17.05	30.29	28.25	8.32	16.53	15.26
Lusaka	43.42	63.07	47.04	14.86	30.20	17.69	6.90	17.44	8.84
Northern	59.15	77.98	75.45	24.61	32.90	31.79	13.46	17.48	16.94
North-western	36.85	64.42	60.77	14.36	22.79	21.67	7.33	10.73	10.28
Southern	32.48	51.15	47.12	10.92	16.62	15.39	4.98	7.52	6.97
Western	40.41	53.35	51.90	11.55	20.08	19.12	4.73	9.72	9.16

Note: Authors' calculations from 2003 living conditions monitoring survey. Poverty rates are computed using measures of per adult equivalent consumption aggregates. The head count is the proportion of the population with an income below the poverty line. The poverty gap is a measure of the amount of money that would move the poor to the poverty line. The severity of poverty puts more weights to the poorest individuals.

Nationwide, approximately 4 per cent of the income of rural households comes from the sales of non-food crops. Given the characteristics of the soil, cotton can only be grown in three provinces, the Eastern, Central, and Southern province. Where it is grown, cotton is a major source of income. Using data from the Living Conditions Monitoring Survey of 1998, the share of cotton in income was 8.4 per cent in the Central province, 9.5 per cent in the Eastern province, and 2.8 per cent in the Southern province.

2.1. The Reforms[2]

The process of reforming the cotton sector began in 1991, when the Movement for Multi-Party Democracy (MMD) was elected into power. Faced with a profound recession, the new Government of Zambia implemented economy-wide reforms such as macroeconomic stabilization, exchange rate liberalization, trade and industrial reforms, and maize subsidies deregulation. More importantly for this chapter's purpose, privatization of agricultural marketing in cotton was also pursued (Tschirley and Kabwe 2007, and Tschirley, Poulton, and Labaste 2009).

Traditionally, the Zambian cotton sector was heavily regulated. From 1977 to 1994, cotton marketing was controlled by Lintco, a parastatal organization. Lintco set the sale prices of certified cotton seeds, pesticides, and sprayers, as well as the purchase price of cotton lint. Lintco had monopsony power in cotton purchases and in inputs, sales and credit loans to farmers.

In 1994, Lintco was sold to Lonrho and Clark Cotton, firms with regional interests in cotton. It should be noted that both Lonrho and Clark had significant foreign participation. The privatization was conducted in a way that facilitated the geographical segmentation of the market, with Lonrho active in the Centre and Clark in the East. As a result, the initial phase of liberalization gave rise to geographical monopsonies rather than national oligopsonies.

At that moment, Lonrho and Clark Cotton developed an outgrower scheme with Zambian farmers. In these outgrower programmes, firms provided seeds and inputs on loans, together with extension services to improve productivity. The value of the loan was deducted from the sales of cotton seeds to the ginners at picking time. Supposedly, the pass-through of international prices to the farmer was enhanced. Initially, repayment rates were high (roughly 86 per cent) and cotton production significantly increased. This is referred to as the *outgrower introductory phase*.

By 1999, the expansion of cotton farming attracted new entrants in ginning and assembly. Instead of the localized monopsonies, competition ensued. Furthermore, independent cotton intermediaries emerged. These traders (who acquired inputs independently, distributed them to various farmers, purchased cotton lint, and sold it to the ginneries)

made competition even more aggressive. Without any regulatory framework to control entry, the system entered a vicious cycle and failed. Those firms that were not using outgrower schemes, as well as some cotton intermediaries, had incentive to offer higher net cotton prices to farmers who had already signed outgrower contracts with other firms (mostly Lonrho and Clark). This caused repayment problems and increased the rate of loan defaults. The loan repayment rate, for instance, dropped to approximately 60 per cent to 65 per cent. In turn, firms raised loan prices and non-defaulting farmers ended up receiving lower net prices for their cotton production. The sector collapsed. This is referred to as the outgrower scheme failure phase.[3]

Partly as a result of the failure of outgrower schemes, Lonrho exited the market and was acquired by Dunavant Zambia Limited (part of a United States of America multinational corporation). Dunavant and Clark Cotton actively worked to improve and expand the outgrower schemes.[4] Two innovations took place. First, firms adopted identifying labels on the cotton bags given to farmers to store production after harvest and committed them to only purchase cotton bags with their own labels. This helped eliminate most of the independent traders that contaminated the market during the failure phase. Second, Dunavant introduced the "Distributor System." The firms provided inputs which were allocated to farmers by a distributor, an independent agent (not a firm employee), that grew cotton himself. He prepared individual contracts with the farmers, was in charge of assessing reasons for loan defaults (being able, in principle, of condoning default in special cases), and renegotiated contracts in future seasons. The Distributor had discretion on the number of farmers under his control. Clark kept the more traditional agent/employee-based system but worked to extend coverage. Both Dunavant and Clark (and others) expanded the production network, thus facilitating access for a wider array of smallholders. Both systems worked well, and repayment rates increased from 65 per cent to 90 per cent (Tschirley and Kabwe, 2007). The sector advanced significantly. This is referred to as the outgrower scheme success phase.

From 2002 to the present, the cotton sector performed well. It is vibrant and the market is dynamic, with entry, exit, and acquisition taking place---for instance, Cargill bought Clark Cotton in 2006. Although the outgrower scheme works well, it is in need of constant monitoring due to potential deviations from the contract system by (occasional) new entrants.

2.2. Trends in Cotton Production

In the following, data from the Post Harvest Survey (PHS) is utilized to look at the correlation between cotton adoption and cotton yields with the different phases of reforms. The PHS data are collected by the Zambian Central Statistical Office (CSO). It is a repeated cross-section (not a panel). Annual cross-sections are only available for the period 1997 to 2002. The Post Harvest Surveys include data on land tenure, land allocation, output in physical units, limited input data, and household characteristics such as demographic composition, age of head, and housing infrastructure.

Table 2 provides an overview of the relevant sample sizes, by year and by province. In a given survey, around 600 to 700 households were interviewed in

Table 2. Post harvest survey (sample sizes)

Province	1997	1998	1999	2000	2001	2002
Central	654	674	648	795	663	701
Eastern	1 225	1 197	1 255	1 437	1 248	1 292
Southern	895	828	835	961	835	850
Lusaka	246	252	243	244	185	182
Copperbelt	370	349	379	464	367	372
Luapula	803	775	799	869	760	761
Northern	1 211	1 190	1 348	1 551	1 293	1 376
North-western	409	423	429	543	435	431
Western	706	648	725	835	699	733
Total	**6 519**	**6 336**	**6 661**	**7 699**	**6 485**	**6 698**

Note: Authors' calculations based on the post harvest surveys 1997-2002.

Table 3. Percentage of farmers growing cotton 1997-2002

Province	1997	1998	1999	2000	2001	2002
Central	24.6	22.6	16.6	10.3	14.7	20.2
Eastern	35.2	32.7	31.7	20.4	32.1	39.0
Southern	9.9	10.7	11.7	4.3	8.8	12.8
Lusaka	5.4	3.3	4.7	0.4	5.1	8.2
Copperbelt	0.8	0.6	0.3	0.0	0.0	0.0
Luapula	0.0	0.0	0.0	0.0	0.0	0.0
Northern	0.0	0.1	0.0	0.0	0.0	0.0
North-western	0.3	0.0	0.0	0.0	0.0	0.2
Western	1.3	0.6	0.4	0.1	0.1	0.0
Total	**11.0**	**10.4**	**9.4**	**5.4**	**9.0**	**11.6**

Note: Authors' calculations based on the post harvest surveys 1997-2002.

Table 4. Fraction of land allocated to cotton 1997-2002

Province	1997	1998	1999	2000	2001	2002
Total	**9.2**	**9.3**	**8.1**	**4.3**	**7.6**	**9.9**
Central	12.1	10.7	6.7	3.5	6.3	8.5
Eastern	12.4	13.0	12.3	7.2	11.9	14.6
Southern	4.1	4.2	3.7	1.3	3.2	5.1
Lusaka	2.4	1.4	1.7	0.1	1.9	3.3

Note: Authors' calculations based on the post harvest surveys 1997-2002.

the Central province, 1,200 in the Eastern province, 800 in the Southern province, and 200 in Lusaka. Table 3, which reports the fraction of farmers engaged in cotton production, confirms that in 2002 the major cotton producing areas were indeed the Eastern province (39 per cent of farmers), the Central province (20 per cent of farmers), and the Southern province (12.6 per cent of farmers). There were some, but not many cotton producers in Lusaka and, in the remaining provinces, the percentage of households involved in cotton production was virtually zero.

Table 3 also reveals some of the interesting early dynamic patterns of cotton farming in Zambia. During 1997 and 1998 – the introductory phase – cotton participation was relatively stable in all provinces (although a declining pattern was discernible). The failure phase (1999 to 2000) shows lower participation rates, particularly in 2000.[5] In the Central province, for instance, cotton participation dropped from 22.6 per cent in 1998 to 10.3 per cent. Similarly, participation declined from 32.7 per cent to 20.4 per cent in the Eastern province, from 10.7 per cent to 4.3 per cent in the Southern province, and from 3.3 per cent to 0.4 per cent in Lusaka. The success phase (2001 to 2002) was correlated with strong entry into cotton: the percentage of cotton growers increased significantly in all provinces: from 10.3 per cent to 20.2 per cent in the Central province; from 20.4 per cent to 39 per cent in the Eastern province; from 4.3 per cent to 12.8 per cent in the Southern province; and from 0.4 per cent to 8.2 per cent in Lusaka.

Similar conclusions emerged from the inspection of the degree of participation. Table 4, presents data on the proportion of land allocated to cotton. In 2002 the Eastern province had the highest allocation of cotton with an average land share of 14.6 per cent. The Central province had the second highest with 8.5 per cent, followed by the Southern province with 5.1 per cent. The dynamics of cotton adoption are also revealed in Table 4. The fraction of land allocated to cotton sharply declined in 1999 and 2000 (the failure phase) and then increased in 2001 and 2002 (the success phase).

Table 5 reports the evolution of cotton yields per hectare in Zambia. At the national level, cotton yields

Table 5. Yields per hectare in cotton 1997-2002

Province	1997	1998	1999	2000	2001	2002
Total	**483**	**685**	**590**	**498**	**626**	**596**
Central	561	788	829	1 141	1 075	837
Eastern	464	633	534	433	556	556
Southern	441	773	602	260	713	508
Lusaka	403	602	620	602	247	713

Note: Authors' calculations based on the post harvest surveys 1997-2002. The figures in the table are in logs (so that the difference from one year to the other is the percentage change in yields).

increased from 1997 to 1998, and then declined during the failure phase of 1999 to 2000. In fact, yields dropped by 38 per cent from 1998 to 2000 (although average yields in 2000 were comparable to average yields in 1997). During the success phase, average yields significantly recovered. There were interesting differences in regional dynamics that were worth exploring. In the Eastern and Southern province, for instance, changes in average yields tracked those observed at the national level. However, in the Central province, cotton output increased steadily from 1997 to 2000 and then declined in the success phase of 2001 to 2002.

The trends reported above uncover the consequences of the different phases of the privatization and competition process. They are a manifestation of several mechanisms through which the following marketing reforms affected yields: input prices, output prices, access to credit, access to improved inputs (sprayers, seeds, and equipment), induced input use (effort), technology and know-how, and overall efficiency in input combination.

Cotton ginneries (firms) act as intermediaries between international markets and the farmers. The rate of pass-through from international prices to farm-gate prices depends critically on the market structure and the degree of competition. When regional monopsonies prevailed, farmers fetched lower output prices and faced higher input and credit prices than when competition among ginneries prevailed. Better input and output prices affected yields because of improved incentives for farmers to supply more labour, exert more effort into cotton farming, and use more and better inputs such as fertilizers, pesticides, and seeds (conversely for lower output prices and higher input prices). In the success phase, in consequence, farmers took better care of the cotton crop. Conversely, during the failure phase, they neglected the cotton crop.

The reforms and the outgrower contract provided access to improved inputs, such as higher-yield cotton seeds and more effective pesticides and fertilizers. These are technological advances that firms transferred to farmers, leading to increases in farm output. In addition, the reforms provided credit and inputs on loans, which allowed farmers to better combine factors of production. During the collapse of the outgrower scheme, credit became more expensive to farmers, which hindered efficiency and productivity. When the scheme improved, credit became cheaper, causing yields to increase through an efficiency effect.

Finally, the success of the outgrower scheme involved an improvement in the provision of extension services. On the one hand, marketing information helped eliminate some uncertainty about the crop. On the other hand, better extension services, providing advice on crop husbandry and know-how, improved efficiency and helped farmers increase yields.

The evidence in Tables 2 to 5 clearly demonstrates how services for exports affected cotton farming in Zambia. The privatization process and the dynamics of the competition process (entry and exit) embed the provision of a myriad of services that could have profound impacts on the adoption of cotton at the smallholder level as well as on cotton yields, which, in turn, could affect farm income growth and poverty reduction.

3. COMPETITION POLICIES IN ZAMBIAN COTTON

Rural Zambia holds 61.8 per cent of the country's poor population. Most are farmers engaged in agriculture producing a variety of crops. While the vast

majority of households in rural areas produce food for home consumption, the number of farmers engaged in commercial agriculture such as cotton is much lower. It has long been recognized that, under the right circumstances, commercial agriculture, in particular cotton cultivation, can work as an effective vehicle for poverty alleviation (Balat and Porto, 2007). This is because commercial crops often show higher returns (per unit of inputs) than home consumption crops. However, as has previously been shown, cotton commercialization takes place along a value chain where intermediaries, exporters, downstream producers and upstream producers interact with farmers.

Farmers produce cotton seed which is the basic input of the cotton value chain, involving international markets and exports. The farming sector itself is composed of many atomistic smallholders. Instead, the lower-level of the chain is usually dominated by a small number of firms. Farmers may thus suffer from the non-competitive behaviour of agents at other levels of the chain. In this scenario, changes in the structure of these levels, for example by increasing downstream competition, will affect the prices received by farmers and therefore their income and earnings. The main purpose of this analysis is to estimate impacts, at the farm level, of changes in the cotton value chain on household income.

The household analysis at the farm level is quite broad. To begin with, it is important to discover how the income of an average farmer already participating in the cotton chain will respond to changes in the structure of that chain. These farmers are most likely to be affected by any changes in the commercialization of cotton. At the same time, it is necessary to shed some light on the income responses of those smallholders who are initially not participating in the chain. If these are the poorest or most vulnerable households, larger impacts on poverty should be expected when these farm responses are included in the analysis.

To address these questions, the analysis proceeds in two stages. In the first stage, the changes in farmgate prices of cotton given hypothetical changes in the structure of the chain are simulated. The second stage utilizes these price changes to estimate household income responses using household survey data.

To compute the price changes that would be generated by changes in the value chain, a theoretical model of a cotton sector with a vertical structure and different layers in the value chain was set up. The theoretical model commences with a basic model in which atomistic farmers produce cotton that is sold to an oligopolistic exporter. The basic model is then expanded to include two layers along the chain in order that farmers interact with both upstream and downstream producers and or retailers. Based on data on the elasticity of demand in the different layers, the elasticity of supply of cotton, the number of firms operating in each layer and other relevant information, price changes caused by changes in the main parameters of the model that characterize the cotton value chain are simulated. The simulations involve the re-evaluation of the solution to the theoretical model under different assumptions about the value of those parameters. Two markets were explored: the market for cotton lint, where farmers sell cotton seed to the ginneries, and the ginneries export cotton lint; and the market for cotton yarn, where farmers sell cotton seed to the ginneries, the ginneries in turn sell to the retailers, who export yarn.

In the second stage, price changes for cotton calculated in the first stage are fed into household survey data. The available household surveys have information on the structure of income derived from various agricultural activities. Faced with a change in farmgate cotton prices, the effect on farm income can be studied by exploring the income shares (Deaton, 1989; Deaton, 1997). This methodology provides an evaluation of the income responses of those households already participating in the value chain. By inspecting the distribution of the income shares along the income distribution, it will be possible to identify which farmers will benefit more from the price changes and whether the poor will enjoy any of these benefits.

The analysis takes a further step and evaluates the likely responses of those farmers initially not involved in the value chain. This is an important addition to the more standard analysis, since those farmers that are out of the chain are likely to be the poorest or the most vulnerable households. In order to conduct this evaluation four steps were required. First, based on information from the household survey, a Probit model of cotton participation is estimated, allowing for a prediction of the probability of participation for all farmers in the household survey sample. Second, using the simulated price changes from the first stage, aggregate supply responses at the farm level are calculated. Third, these supply responses are allocated to the farmers in proportion to the estimated Probit probabilities. It should be noted that this method allows these supply responses to affect

farmers already in the chain as well as farmers outside the chain. Fourth, the average supply responses, evaluated at the changed prices from the simulation from the first stage, provide an estimate of the income gains from enhanced participation into the cotton value chain.

4. IMPACTS OF COTTON REFORMS

The value chain in cotton includes the production of cotton seed at the farm level, the production of cotton lint, the production of cotton yarn, and, eventually, the production of textiles. Most of the production of cotton seed in Zambia is devoted to the export of cotton lint and, to a much lesser extent, the export of cotton yarn. In this section, simulations of the impacts of changes in the value chains in these two scenarios are produced.

4.1. Cotton Lint

The case of cotton lint exports is perhaps the simplest one. In this scenario, farmers produce cotton, which is purchased by the ginneries to produce cotton lint. Cotton lint is then exported to world markets. World markets for cotton lint are best described as competitive – that is, any given firm cannot influence world prices to a large extent. For the purpose of the simulations, it is assumed that the export price of cotton is given. Farmers are atomized and cannot exert monopoly power when selling cotton seed. Instead, it is assumed that the ginneries can act monopolistically over farmers.

This market can be studied with the "exporter's model". Appendix 1 provides the mathematical details of this model. It is based on Bardhan and Udry (1999), Welch, McMillan and Rodrik (2003), Horenstein and Porto (2007), Sexton, Sheldon, McCorriston, and Wang (2007), and Ennis, Ludmer, and Porto (2009).

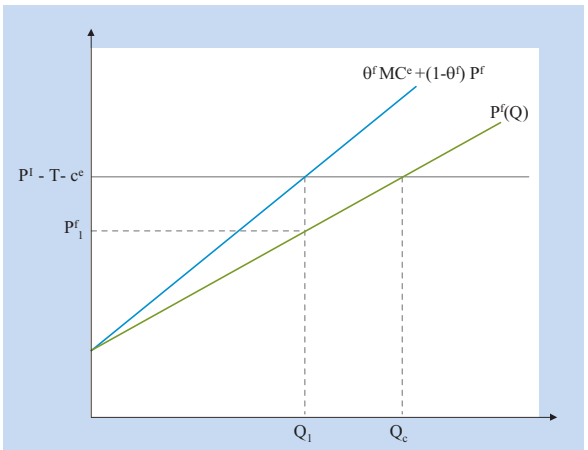
Model 1: The Exporter's Model

The study considers a market structure with two production sectors, an atomized agricultural sector (farmers) and an oligopolistic exporter sector (exporters). The exporters are small in world markets so that they cannot exercise market power in international markets and are thus price takers. Figure 1 shows the equilibrium of the model when the international price (net of the tariff) is given in international markets at p^I. The supply curve of the farmers in $P^f(Q)$. Under perfect competition, the equilibrium would be found at the intersection of the net export price $P^I - T - c^e$ (where T is any tariff on the good and c^e is the cost of production and the supply curve with a level of output of Q_c. When there is monopsonistic behavior in the exporters, the relevant curve is the perceived marginal cost for the firm. This function takes into account that, after a decrease in quantities purchased by one processor, other processors will react too. In the study's model, this is captured by the parameter θ^f. Appendix 1, shows that a higher θ^f means a higher degree of imperfect competition. As a result, it becomes profitable for the exporters to contract production and thus lower the price paid to the farmer. The graph shows how a decrease in θ^f – more competition for cotton seeds among exporters – results in an increase in the final price received by the farmers. Also, an increase in international prices, a decrease in tariffs on Zambian exports, or an improvement in the production costs of the exporters (via better infrastructure for example) can lead to a higher price for the farmers.

A Caveat

One of the key implications of this model is that farmgate prices are higher when there is more competition among both processors and retailers. This is because the model emphasizes efficiency issues and efficiency is achieved under perfect competition. This does not necessarily rule out cases where imperfect competition may end up being beneficial for the farmers. This situation may arise, for example, if the

Figure 1. Model 1: Exporter's model



Note: At the competitive equilibrium, output is given by Q_c, the price received by the exporters is $P^I - T$ and the price received by the farmers is $P^I - T - c^e$. Under imperfect competition, equilibrium output is Q_1 and the prices received by the exporters and the farmers are $P^I - T$ and P_1^f respectively.

realization of monopoly profits allows for the creation of new goods and markets that use farm outputs as key inputs. In other words, in cases where monopoly profits allow firms to create new markets for the poor, it may be desirable to allow for imperfect competition at different layers of the value chain. The analysis does not accommodate these cases. However, in the simulations below, cases are considered where the presence of a few firms allows for the success of the outgrower scheme in cotton. This is then an instance where imperfect competition, to some degree at least, may be desirable.

Micro econometric Model: Household Impacts

The numerical solution to the "exporters' model" deliver market prices and quantities in equilibrium. These solutions can be shocked to simulate price and quantity responses from a baseline situation to a proposed scenario. With this simulation and the household survey, the next task was to estimate welfare effects. To be as comprehensive as possible, first order effects and second order effects which include supply responses, were included.

First order effects are the direct impact, caused by those price changes, over current cotton producers. First order effects are computed as the cotton share in total household income multiplied by the per cent change in cotton prices. For example, if a household earns 50 per cent of its income from cotton and the price of cotton increases by 50 per cent, then the first order effect of this price change would be equivalent to 25 per cent of the (initial) household income. These effects represent the short term impacts of the price changes, before any production response.

The analysis also accounts for supply responses. Therefore, when prices go up, farmers are allowed to expand production and even switch to other crops. These comprise second order effects of the price change, which are a measure of the benefit from adjusting production. Changes in production levels are calculated with the "exporters' model" of value chains. To allocate these quantity changes among farmers, a procedure was adopted that assigned responses in proportion to the likelihood of being a cotton producer. This probability can be estimated with the relative propensity score as follows.

First, the propensity score $p(\mathbf{x})$ is defined as the probability of producing cotton as a function of a vector of characteristics $\mathbf{x}$. The estimating equation of the propensity score is $p(\mathbf{x}_i) = P(D=1 \mid \mathbf{x}_i)$ where D is an indicator function of whether the household is a producer of the agricultural product and $\mathbf{x}$ is the set of relevant characteristics.[6]

Next, these probabilities are re-scaled by the sum of the individual propensity scores

$$\tilde{p} = \frac{p(x_i)}{\sum_i p(x_i)}.$$

This re-scaling transforms the estimated propensity score into weights that can be used to allocate the increased production predicted by the "exporters's model."

Simulations

First, a baseline scenario was calibrated, based on information on the number of firms in each sector and on their market shares. In the case of cotton, measures of market shares are built based on the available data on processing capacity. There are six major players in cotton: Dunavant (44 per cent), Cargill (32 per cent), Amaka (13 per cent), Mulungushi (6 per cent), Continental (5 per cent) and Mukuba (1 per cent). Minor changes in these shares are not likely to affect the results. A key parameter of the model, in contrast, is the elasticity of supply of cotton at the farm level. Estimates of the elasticity of supply are generally hard to obtain. In principle, this elasticity should be quite low, particularly in the short run. Based on estimates available in the literature and also based on personal interviews with cotton farmers in Zambia, a baseline elasticity of supply of 0.75 was used. To explore how robust results are, a full set of sensitivity results were carried out (appendix 2). Five different competition configuration scenarios were then simulated: "Leader splits"; "Small entrant"; "Leaders merge + Small entrant"; "Leaders merge"; "Exit of the largest"; "Equal market shares"; and "Competition". These simulations describe several possible mergers, splits and new entrants in the industry.

Table 6 presents the simulation results for each competition scenario by different rural population groups. The exercise shows that the change in cotton prices ranged from 34 per cent (in cases of increased market power) to 42 per cent (in cases of increased competition).

The main conclusion from Table 6 is that competition at the cotton processing level is good for the farmers. In the model, more competition among processors translates into higher farm-gate prices.

Table 6. Changes in income (%)

	Simulation						
	1	2	3	4	5	6	7
P^f Δ%	0.1253	0.0221	-0.3049	-0.3429	-0.0937	0.1955	0.4237
Total	0.0049	0.0008	-0.0074	-0.0080	-0.0029	0.0082	0.0227
1st order	0.0043	0.0008	-0.0104	-0.0116	-0.0032	0.0066	0.0144
2nd order	0.0006	0.0000	0.0030	0.0037	0.0003	0.0016	0.0083
Producers	0.0430	0.0075	-0.1004	-0.1126	-0.0314	0.0677	0.1515
1st order	0.0424	0.0075	-0.1033	-0.1161	-0.0317	0.0662	0.1435
2nd order	0.0006	0.0000	0.0028	0.0035	0.0003	0.0015	0.0079
Poor	0.0047	0.0007	-0.0067	-0.0072	-0.0027	0.0080	0.0224
1st order	0.0040	0.0007	-0.0098	-0.0111	-0.0030	0.0063	0.0137
2nd order	0.0007	0.0000	0.0031	0.0039	0.0003	0.0017	0.0088
Non-Poor	0.0052	0.0008	-0.0085	-0.0092	-0.0032	0.0086	0.0232
1st order	0.0046	0.0008	-0.0112	-0.0126	-0.0034	0.0072	0.0156
2nd order	0.0006	0.0000	0.0027	0.0034	0.0003	0.0014	0.0076

Note: Authors' calculations based on the exporter's model and household data from the 2003 living conditions monitoring surveys.
Simulation 1: "Leader splits"
Simulation 2: "Small entrant"
Simulation 3: "Leaders merge +Small entrant"
Simulation 4: "Leaders merge"
Simulation 5: "Exit of the largest"
Simulation 6: "Equal market shares" (imperfect competition)
Simulation 7: "Competition"

As a result, either entry or split of incumbents generates welfare gains for the farmers. This can be seen, for example, in simulation 1 ("Leader splits") and simulation 2 ("Small entrant"), both involving an increase in competition. On the other hand, further market concentration leads to lower farm income and generates losses for the farmers. This can be seen, for example, in simulation 3 ("Leaders merge + Small entrant") and simulation 4 ("Leaders merge"), both involving a decrease in competition.

Small changes in the value chains are not likely to generate large impacts on farmers. For instance, simulation 2 ("Small entrant") shows very small impacts on farm income; in contrast, large changes in competition such as simulation 1 ("Leader splits") cause much larger effects. Similar remarks can be made about decreases in competition. Small changes in market power generate relatively small impacts at the farm level – demonstrated when comparing simulation 3 with simulation 4.

For a given simulation, the average per cent income change is much larger for cotton (household) producers than for non-cotton producers. For example, in simulation 1 ("Leader Splits"), the increase in farm-gate prices was 12.53 per cent. This generates an increase in the average income of rural households of 0.49 per cent, an effect that is quite small from a practical point of view. However, the income of a cotton producer increased by 4.30 per cent. This is a sizable income effect, especially for the poor. The impacts on the entire rural population were smaller because of two main factors. First, only 8.4 per cent of households were cotton producers and, second, their average specialization rate was 35.5 per cent. This means that the increase in cotton prices would only affect a relatively small fraction of an average farmer's income.

Another way to see this is by comparing the first and second order impacts of the price change. The first order effects reveal the impacts at a given level of production (without any adjustments). The second order impacts allow farmers to respond to new prices as well. In other words, second order effects allow for supply responses and increased farmer participation in cotton. The simulations clearly show that the first order effects account for most of the change in household income.

It is interesting to note that the previous result is true even in the presence of supply responses. The reason being that, in the case of supply responses, higher cotton prices are only enjoyed by marginal units. However, even though the second order effects are small, they are very important for "non-producers." While the second order impacts on producers account for a small fraction of their overall gains, they account for all the benefits accruing to non-producers.

Another important result is that the benefits for the poor and the non-poor are similar in magnitude. On the one hand, results show that the benefits of increased competition in the value chain do not concentrate on the non-poor. On the other hand, the fact that the impacts on both groups are small indicates that cotton participation is low across all levels.

One concern often encountered in practice is to better understand the implications of exit, particularly of the largest firm. This is the grounds for conducting simulation 5. In the case of cotton, the exit of Dunavant led to a decrease of competition among firms and thus to a decline in farm-gate prices by 9.37 per cent. This caused income losses for farmers, equivalent to 0.29 per cent for an average farmer (not necessarily producing cotton to begin with) and to 3.14 per cent for an average cotton producer.

Two additional simulations attempting to quantify the largest potential gains for the farmers were run. In the first case (simulation 6, "Equal Market Shares,"), the assumption was that imperfect competition remains in place (so that the processors retain market power over farmers). It was also assumed that the benchmark firms alter their market shares to reach equal market participation (that is, if production were relocated from big companies to small ones). This scenario would reveal an upper bound increase in income under imperfect competition. In this case, farm-gate prices increased by 19.55 per cent, due to increased competition among cotton firms. Higher prices translate into higher household income: 0.82 per cent for an average producer and 6.77 per cent for a cotton producer. This scenario produced large impacts on household income.

The final simulation assumed perfect competition among processors (simulation 7). This maximizes overall efficiency. Farm-gate prices could be 42.37 per cent higher than in the current situation. This implies large increases in household incomes. An average farmer would enjoy benefits of up to 2.27 per cent and, in contrast, a typical cotton producer would enjoy gains of 15.15 per cent, on average. This situation led to the largest possible gains for the farmers (but is probably unlikely).

Outgrower Schemes: Adverse Competition Effects

Small farmers can receive financing from processors (in the form of inputs) in exchange for future production through the outgrower scheme. In the absence of enforcement mechanisms, however, processors would not have incentives to provide input in advance. If contracts cannot be enforced, farmers could default on their debt and sell all the production to the best buyer (thus depriving processors from investment returns). Importantly, the degree of failure of the outgrower contract can, at least in part, be linked to increased competition.

The failure of the outgrower programme could be thought of as increases in the firms' costs. There are a number of mechanisms that could prevent farmers from not honouring contracts. Social norms, reputation, monitoring, price controls, collusion and specific storage devices are some examples. Although some of these mechanisms demand no active role of processors, in practice firms spend resources to reduce farmer fraud. An increase in the degree of competition in the processor sector could induce an adverse effect because these contract-enforcing expenses are likely to rise with the number of firms. This would probably translate into lower output prices for farmers. More importantly, it is believed that the failure of the outgrower programme would increase the price of inputs faced by firms. This increases the costs of production of the farmers and thus reduces household income.

Table 7 incorporates the impacts of increases in the cost of a farmer's production. It is assumed that these costs increase with competition in proportion to the decrease in θ. More concretely, a farmers cost, when there is perfect competition, is 10 per cent higher than in the baseline situation. This factor of proportionality is kept constant in all intermediate simulations. While arguably this is an arbitrary setting, the idea of this exercise is to exemplify the type of potential hazards associated with increases in competition in the presence of an outgrower scheme.

As the results in Table 7 show, this effect reduces a farmer's potential gains and losses because the impacts of more competition and of higher costs move

in opposite directions. For instance, if the chain were characterized by a monopsony, the farmers would not be able to sell their product to an alternative buyer and thus the option of not honouring the contract vanishes. Contract enforcement would be maximized. However, the monopsonist would be in a position to extract the largest surplus from the farmers. The impacts of this adverse competition effect can be sizeable. For instance, in simulation 6, the prices faced by farmers increased by 14.27 per cent, as opposed to 19.55 per cent (table 6). Also, when competition decreases the symmetric result revealed, as for the example in simulations 3 and simulations 4, the price drop faced by the farmers is lower when the effects of the failure of the outgrower scheme are taken into account.

Clearly, this is an important issue in the cotton value chain. The analysis reveals the strong trade-off that has to be unavoidably faced in any policy discussion on competition in cotton. On the one hand, more competition brings about improvement in farm-gate prices because of a lower degree of monopsonistic competition among cotton firms. On the other hand, to the extent that the outgrower scheme facilitates farm production, a higher degree of firm concentration and thus lower competition can facilitate access to farm production of high-return cash crops.

However, it is important to note that the magnitude of the reported effects is likely to depend heavily on the functional form adopted in the modelling of the adverse effects of increased competition (table 7). While there is a lack of guidelines in the available data regarding the shape of this function, the sensitivity of the results can be explored in relation to alternative assumptions. In table 7a and table 7b, a different functional form is adopted, whereby the cost of the firms change in response to changes in θ according to the function $(1-\theta^{\alpha})*g$, where g is a constant. This factor g is determined so that when there is perfect competition ($\theta=0$), the outgrower scheme collapses (so as to make the case that some degree of imperfect competition may be necessary to develop a successful outgrower scheme). The parameter α measures the sensitivity of costs to a given change in competition. The results in table 3a are simulated with $\alpha=0.1$. These results are similar to those in table 7. Instead, in table 7b, the assumption is that $\alpha=0.3$. It was discovered that the benefits of more competition (simulations 1 and 2) tend to disappear, and that the

Table 7. Changes in income (%)

	Simulation						
	1	2	3	4	5	6	7
P^f Δ%	0.0906	0.0158	-0.2067	-0.2310	-0.0657	0.1427	0.3184
Total	0.0034	0.0005	-0.0056	-0.0061	-0.0021	0.0057	0.0152
1st order	0.0031	0.0005	-0.0070	-0.0078	-0.0022	0.0048	0.0108
2nd order	0.0003	0.0000	0.0014	0.0018	0.0002	0.0008	0.0044
Producers	0.0311	0.0054	-0.0688	-0.0767	-0.0221	0.0492	0.1124
1st order	0.0308	0.0054	-0.0702	-0.0784	-0.0223	0.0485	0.1081
2nd order	0.0003	0.0000	0.0014	0.0017	0.0001	0.0008	0.0043
Poor	0.0033	0.0005	-0.0052	-0.0056	-0.0020	0.0055	0.0150
1st order	0.0029	0.0005	-0.0067	-0.0075	-0.0021	0.0046	0.0103
2nd order	0.0003	0.0000	0.0015	0.0019	0.0002	0.0009	0.0047
Non-Poor	0.0036	0.0006	-0.0063	-0.0069	-0.0023	0.0060	0.0158
1st order	0.0033	0.0006	-0.0076	-0.0085	-0.0024	0.0052	0.0117
2nd order	0.0003	0.0000	0.0013	0.0016	0.0001	0.0007	0.0041

Note: Authors' calculations based on the exporter's model and household data from the 2003 living conditions monitoring surveys.
Simulation 1: "Leader splits"
Simulation 2: "Small entrant"
Simulation 3: "Leaders merge +Small entrant"
Simulation 4: "Leaders merge"
Simulation 5: "Exit of the largest"
Simulation 6: "Equal market shares" (imperfect competition)
Simulation 7: "Competition"

Table 7[a]. Changes in income (%)

	Simulation						
	1	2	3	4	5	6	7
P^f Δ%	0.0905	0.0167	-0.2467	-0.2787	-0.0732	0.1347	...
Total	0.0034	0.0006	-0.0066	-0.0073	-0.0023	0.0052	0.0000
1st order	0.0031	0.0006	-0.0084	-0.0095	-0.0025	0.0046	0.0000
2nd order	0.0003	0.0000	0.0017	0.0022	0.0002	0.0006	0.0000
Producers	0.0310	0.0057	-0.0821	-0.0925	-0.0247	0.0464	0.0000
1st order	0.0307	0.0057	-0.0838	-0.0947	-0.0248	0.0458	0.0000
2nd order	0.0003	0.0000	0.0017	0.0021	0.0002	0.0006	0.0000
Poor	0.0032	0.0006	-0.0061	-0.0067	-0.0022	0.0050	0.0000
1st order	0.0029	0.0005	-0.0080	-0.0090	-0.0024	0.0044	0.0000
2nd order	0.0003	0.0000	0.0018	0.0023	0.0002	0.0007	0.0000
Non-Poor	0.0036	0.0006	-0.0075	-0.0082	-0.0025	0.0055	0.0000
1st order	0.0033	0.0006	-0.0091	-0.0102	-0.0027	0.0050	0.0000
2nd order	0.0003	0.0000	0.0016	0.0020	0.0002	0.0006	0.0000

Note: Authors' calculations based on the exporter's model and household data from the 2003 living conditions monitoring surveys.
Simulation 1: "Leader splits"
Simulation 2: "Small entrant"
Simulation 3: "Leaders merge +Small entrant"
Simulation 4: "Leaders merge"
Simulation 5: "Exit of the largest"
Simulation 6: "Equal market shares" (imperfect competition)
Simulation 7: "Competition"

Table 7[b]. Changes in income (%)

	Simulation						
	1	2	3	4	5	6	7
P^f Δ%	0.0197	0.0057	-0.1262	-0.1457	-0.0309	0.0115	...
Total	0.0007	0.0002	-0.0039	-0.0045	-0.0010	0.0004	0.0000
1st order	0.0007	0.0002	-0.0043	-0.0049	-0.0010	0.0004	0.0000
2nd order	0.0000	0.0000	0.0004	0.0005	0.0000	0.0000	0.0000
Producers	0.0067	0.0019	-0.0424	-0.0489	-0.0104	0.0039	0.0000
1st order	0.0067	0.0019	-0.0427	-0.0493	-0.0104	0.0039	0.0000
2nd order	0.0000	0.0000	0.0004	0.0005	0.0000	0.0000	0.0000
Poor	0.0006	0.0002	-0.0037	-0.0042	-0.0010	0.0004	0.0000
1st order	0.0006	0.0002	-0.0041	-0.0047	-0.0010	0.0004	0.0000
2nd order	0.0000	0.0000	0.0004	0.0005	0.0000	0.0000	0.0000
Non-Poor	0.0007	0.0002	-0.0043	-0.0049	-0.0011	0.0004	0.0000
1st order	0.0007	0.0002	-0.0046	-0.0054	-0.0011	0.0004	0.0000
2nd order	0.0000	0.0000	0.0003	0.0004	0.0000	0.0000	0.0000

Note: Authors' calculations based on the exporter's model and household data from the 2003 living conditions monitoring surveys.
Simulation 1: "Leader splits"
Simulation 2: "Small entrant"
Simulation 3: "Leaders merge +Small entrant"
Simulation 4: "Leaders merge"
Simulation 5: "Exit of the largest"
Simulation 6: "Equal market shares" (imperfect competition)
Simulation 7: "Competition"

costs of increased monopsonistic power (in terms of lower farm-gate prices) decline significantly as well.

4.2. Cotton Yarn

Another destination of farm cotton is to producers of cotton yarn. In this case, the production of the farmers is processed by the ginneries into cotton lint and then sold as cotton yarn. This may involve another level down the value chain. If producers of cotton yarn have to pay fixed international prices for the input (cotton lint), then the model works similar to the "exporters" model (this addition is immaterial for the farmers). That is, the ginneries check international prices and set farm-gate prices depending on their monopsonistic power as before.

It could be interesting, however, to investigate a model where the price of cotton yarn is fixed in international markets, but spinners compete for cotton lint produced domestically (because of transportation costs, quality, or other barriers that isolate Zambian lint). This case is useful to explore how farm-gate prices are affected by the structure of competition both at the retailers (yarn) and processors (lint) level.

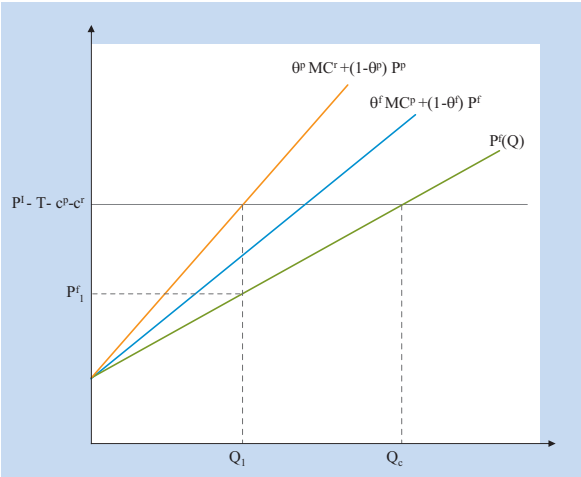
Model 2: A Three-Sector Value Chain with Fixed International Price

The model is extended in order to consider a market structure with three production sectors. As before, there is a set of cottonseed producers (farmers); in addition, there is an intermediate industrial sector (processors); and finally, there is an industry that produces the final product (retailers). Retailers sell the final good in international markets at a fixed price. As before, farmers are atomized, while processors and retailers are concentrated.

Figure 2 provides a representation of the equilibrium (see Appendix 1 for details). The graph can be used to illustrate the comparative static effects of changes in competition on farm prices. As before, the international price is given at P^I and this defines a net price of $P^I - T - c^r$ for the retailers (where c^r is the cost of production of the retailers). The supply curve of the farmers is still represented by $P^f(Q)$.

Since in this model there are two active layers in the value chains, there are two different curves representing the perceived marginal cost of the processors and retailers respectively. Given the monopsonistic power of the processors, the parameter θ^f captures how close the marginal cost of the

Figure 2. Model 2: Three-sector value chain fixed prices



Note: At the competitive equilibrium, output is given by Q_c, the price received by the exporters is $P^I - T$ and the price received by the farmers is $P^I - T - c^e$. Under imperfect competition, equilibrium output is Q_1 and the prices received by the exporters and the farmers are $P^I - T$ and P_1^f respectively.

processors will be to the supply curve of the farmers. Similarly, the monopsonistic power of the retailers and the parameters θ^p determine their perceived marginal costs. At the competitive equilibrium, production is Q_c, the price received by the retailers is $P^I - T$ and the price received by the farmers is $P^I - T - c^r - c^p$ (where c^p is the processor cost). Departures from the competitive equilibrium lead to lower farm-gate prices. In the Figure, the equilibrium is such that farm prices are P_1^f.

Both θ^f and θ^p affect farm prices. More concretely, a lower θ^p and a lower θ^f imply more competition and higher prices for the farmers. It can be observed that the degree of imperfect competition at both layers of the value chain matters. The monopsonistic behavior of processors toward farmers was established with the exporters' model. In addition, for a given monopsonistic behavior of the processors (even competition), more competition among retailers will translate into higher farm-gate prices for cotton producers.

Model 3: A Full Three-Sector Value Chain

The most complete model extends the three-sector value chain model to allow retailers to have market power in selling the output. This situation can arise if retailers sell in domestic markets, or if Zambia exports a differentiated product in international markets.

In these cases, the demand function for the final downstream product is $P^r = D(Q)$

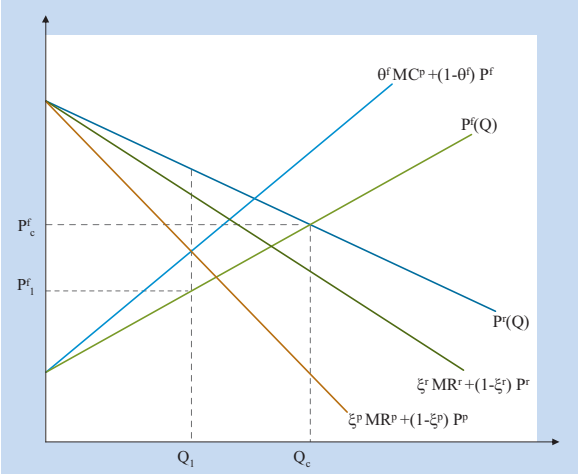
This additional feature in the theoretical structure introduces significant challenges to the solution of the model because retailers and processors may exercise oligopsonistic and oligopolistic market power simultaneously. This involves a complex bargain interaction between them. To illustrate how this affects farm prices, two bound models were developed (instead of modeling the bargaining game). In the first model, it is assumed that the processors have oligopoly market power over the retailers and that retailers behave competitively with respect to the processors. Alternatively in the second model, it is assumed that the retailers have oligopsony market power over the processors, who act competitively with respect to the retailers.

Model 3.1: Processors Hold Market Power.

In the first bound model, the processors may still use their oligopsonistic market power over the farmers – however, the retailer's profit function incorporates the consumer inverse demand $P^r = D(Q)$ and thus the derived demand for the processors's product is no longer perfectly elastic. This allows the processors to use oligopolistic market power over the retailers. This is modeled with the conjectural elasticity $\xi^p = \frac{\partial Q}{\partial q^p}\frac{q^p}{Q}$ which is a measure of market power.
This represents how much the total processors supply to the retailers (and thus their derived demand) would change after a change in the output of a given processor. In other words, as was the case previously, the conjectural elasticity represents the ability of processors to change market quantities and thus market prices, incorporating not only the impacts of the actions of a given processor but also the responses of all other processors. In a competitive environment, this conjectural elasticity is equal to zero and is 1 in a purely monopoly case. In this model, the retailers do not have oligopsonistic power, but they may impose oligopolistic power over the consumers. To capture this, the conjectural elasticity is defined $\xi^r = \frac{\partial Q}{\partial q^r}\frac{q^r}{Q}$, which captures the overall responses of domestic retailers to the actions of a given retailer. In other words, ξ^r provides a sense of how response market prices are to given actions of a retailers, taking into account the responses of all other retailers.

Figure 3 depicts the equilibrium. International prices are not given as before; in its place, the retailers face a downward sloping demand curve. Farmers supply is $P^f(Q)$ as before.

Figure 3. Model 3.1: Three-sector value chain fixed prices



Note: To simplify the graphic, we assume $c^p = c^r = 0$. Competitive equilibrium produces Q^c and farmers receive P_c^f. Imperfect competition produce Q^1 and price P_1^f for farmers.

In this model, the processors have market power with respect to the farmers. Hence, the perceived marginal cost departs from the supply curve $P^f(Q)$ to an extent that depends on the imperfect competition parameter θ^f (as before). Since processors hold all market power in this model (and thus retailers behave competitively toward them), there is no additional shift in the perceived marginal cost of the retailers.

Retailers have market power over consumers, though. Therefore, they look at the marginal revenue curve when setting prices. Under imperfect competition, the relevant curve is the perceived marginal revenue, which converges to the demand curve under perfect competition ($\xi^r = 0$) and to the marginal revenue curve when there is a monopoly ($\xi^r = 1$). Furthermore, by assumption, processors retain market power when selling to retailers. This generates another level of oligopolistic behavior, which shifts the perceived marginal revenue of the processors downward. This depends on the imperfect competition parameter ξ^p.

At the equilibrium described in figure 3, farmer output is Q_1 and farmer prices are P_1^f. It is clear that a decline in θ^f (more competition among processors when buying crops from the farmers) leads to higher farm-gate prices. Also, a more competitive attitude

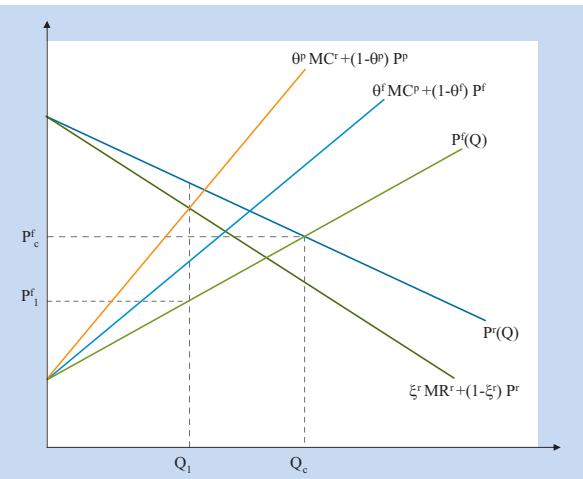
of processors toward retailers implies higher farm-gate prices. By the same token, a more competitive behavior of retailers toward final consumers also leads to higher farm gate prices. Figure 3 clearly shows that farmers suffer from lower prices by the imperfect competition structure at different layers of the chain. The monopsonistic behavior of the processors certainly matters, as was the case previously. But the oligopolistic behavior of sellers down the chain matters as well.

Model 3.2: Retailers Hold Market Power

The second bound model is similar to the first one, but with the assumption that retailers use both oligopsonistic and oligopolistic market power over the processors and the consumers. In contrast, the processors can only exercise oligopsonistic market power over the farmers. Figure 4 depcits the equilibrium.

In figure 4, there is one perceived marginal revenue curve that captures the imperfect competition of retailers toward final consumers. Also, there is a standard perceived marginal costs of the processors (to capture oligopsonistic behavior of processors toward farmers) and, by assumption, there is a perceived marginal cost of the retailers that represents their oligopsonistic power over the processors. The equilibrium output under imperfect competition is Q_1 and farm prices are P_1^f. It is evident that farm-gate prices increase when there is more competition at different levels of the chains.

Figure 4. Model 3.2: Three-sector value chain fixed prices



Note: To simplify the graphic, we assume $c^p = c^r = 0$. Competitive equilibrium produces Q^c and farmers receive P_c^f. Imperfect competition produce Q^1 and price P_1^f for farmers.

Impacts

Table 8 displays the results of changes in competition at the processor level (ginneries). The simulations are the same as before. As expected, the same conclusions arise, although the magnitudes of price changes are different because of the additional layer of competition at the retailer level. In particular, the price changes are in general smaller than in the exporters' model. (However, it should be noted that the models cannot be directly compared since they assume different structures in the chain).

Table 9 shows the simulations of changes in competition at the retail level. It is interesting to observe that the qualitative results do not change (in terms of changes in farm-gate prices and changes in competition). However, magnitudes do change significantly and are higher than in the exporter's model (as they are also higher than in table 8 as well). This suggests that changes at the retail level can be very important in terms of the inclusion of farmers into the value chain and poverty reduction. Although it should be noted that policy changes at the retail level can be more difficult to achieve.

5. CONCLUSIONS

Services can play an important role in the eradication of poverty, especially in less developed regions such as rural areas in Africa. Key services include financial services (access to credit), transportation services, marketing services (access to markets), and information. The purpose of this chapter was to generate some evidence on the likely impact of services reforms on poverty in Africa. The analysis exploited reforms in the cotton sector in Zambia. In particular, focus was placed on privatization and market dynamics on cotton – a reform begun in 1994 and witnessed several phases of failure and success. The appealing feature of cotton reforms is that they implicitly embed services reforms due to the outgrower contracts. Concretely, cotton firms and farms interact through contract farming arrangements whereby firms provide credit, transport services, information services, and marketing services to farmers. The analysis thus explored the varying impacts of changes in access to these services across different phases of the privatization episode to shed light on the likely poverty impacts of services reforms on poverty.

A major factor in this approach was the interlinkages

Table 8. Changes in income (%)

	Simulation						
	1	2	3	4	5	6	7
P^f Δ%	0.0581	0.0100	-0.1254	-0.1394	-0.0409	0.0924	0.2123
Total	0.0022	0.0003	-0.0033	-0.0036	-0.0013	0.0037	0.0104
1st order	0.0020	0.0003	-0.0043	-0.0047	-0.0014	0.0031	0.0072
2nd order	0.0002	0.0000	0.0009	0.0011	0.0001	0.0006	0.0031
Producers	0.0199	0.0034	-0.0417	-0.0463	-0.0138	0.0319	0.0751
1st order	0.0197	0.0034	-0.0426	-0.0474	-0.0139	0.0314	0.0721
2nd order	0.0002	0.0000	0.0009	0.0011	0.0001	0.0005	0.0030
Poor	0.0021	0.0003	-0.0031	-0.0033	-0.0012	0.0036	0.0102
1st order	0.0019	0.0003	-0.0041	-0.0045	-0.0013	0.0030	0.0069
2nd order	0.0002	0.0000	0.0010	0.0012	0.0001	0.0006	0.0033
Non-Poor	0.0023	0.0004	-0.0038	-0.0041	-0.0014	0.0039	0.0107
1st order	0.0021	0.0004	-0.0046	-0.0051	-0.0015	0.0034	0.0078
2nd order	0.0002	0.0000	0.0008	0.0010	0.0001	0.0005	0.0029

Note: Authors' calculations based on the exporter's model and household data from the 2003 living conditions monitoring surveys.
Simulation 1: "Leader splits"
Simulation 2: "Small entrant"
Simulation 3: "Leaders merge +Small entrant"
Simulation 4: "Leaders merge"
Simulation 5: "Exit of the largest"
Simulation 6: "Equal market shares" (imperfect competition)
Simulation 7: "Competition"

Table 9. Changes in income (%)

	Simulation						
	1	2	3	4	5	6	7
P^f Δ%	0.1559	0.0279	-0.4037	-0.4571	-0.1200	0.2412	0.5109
Total	0.0059	0.0010	-0.0107	-0.0118	-0.0038	0.0097	0.0249
1st order	0.0053	0.0009	-0.0137	-0.0155	-0.0041	0.0082	0.0174
2nd order	0.0006	0.0000	0.0030	0.0037	0.0003	0.0015	0.0076
Producers	0.0535	0.0095	-0.1342	-0.1516	-0.0405	0.0833	0.1808
1st order	0.0529	0.0095	-0.1371	-0.1552	-0.0407	0.0819	0.1735
2nd order	0.0006	0.0000	0.0029	0.0036	0.0003	0.0014	0.0073
Poor	0.0057	0.0009	-0.0099	-0.0109	-0.0036	0.0094	0.0246
1st order	0.0051	0.0009	-0.0131	-0.0148	-0.0039	0.0078	0.0166
2nd order	0.0006	0.0000	0.0032	0.0039	0.0003	0.0015	0.0080
Non-Poor	0.0063	0.0010	-0.0121	-0.0134	-0.0041	0.0102	0.0257
1st order	0.0057	0.0010	-0.0148	-0.0168	-0.0044	0.0089	0.0188
2nd order	0.0005	0.0000	0.0027	0.0034	0.0003	0.0013	0.0069

Note: Authors' calculations based on the exporter's model and household data from the 2003 living conditions monitoring surveys.
Simulation 1: "Leader splits"
Simulation 2: "Small entrant"
Simulation 3: "Leaders merge +Small entrant"
Simulation 4: "Leaders merge"
Simulation 5: "Exit of the largest"
Simulation 6: "Equal market shares" (imperfect competition)
Simulation 7: "Competition"

between competition and the provision of these services in the context of contract farming. Higher competition among cotton firms is generally associated with higher farm-gate prices paid to cotton farmers. This has poverty reducing impacts. However, when firms also provide services, such as credit, the direct link between competition and poverty may break down because higher competition may make it harder to sustain the institution of contract farming. To explore these issues, simple models of value chains in cotton were developed to simulate various price changes arising from different scenarios. These simulations were then set against household survey data to provide a quantification of plausible poverty impacts. It has been shown, that while more competition leads to higher prices, it can also lead to higher costs via higher credit prices and lower market access to farmers. This highlights the need to delve deep into details when considering the poverty impacts of services reforms.

The analysis has focussed on the impact of cotton reforms and competition on the well-being of cotton farmers. However, while farmers will be directly impacted by such policies, the local community, as well as non-cotton farmers, may also be affected from possible spillover effects. Various sources of spillovers exist, for example from cotton farming to the provision of local services, which in turn hire local labour, which in turn can demand other types of products be produced locally. More generally, there can be a whole array of general equilibrium effects. The model, being a partial-equilibrium model in nature, did not capture such spillovers which could be considered in future research.

APPENDIX 1: MATHEMATICAL FORMULATION

Model 1: The Exporter's Model

A market structure with two production sectors is considered an atomized agricultural sector ("farmers") and an oligopolistic exporter sector ("exporters"). The "exporters" are small in world markets so they cannot exercise market power in international markets and are thus price takers. The model builds on the supply function of the cotton produced by the household and on the demand for the final product – cotton lint. The farmers inverse supply function $S(\cdot)$ is given by

(1) $$P^f = S(Q^f)$$

where Q^f is the total production of the raw agricultural product and P^f is the price per unit received by the farmers. In principle, $S(\cdot)$ is upward-sloping so that higher crop prices can trigger supply responses from the farmers. Also, in order to establish production, farmers may need factors including fertilizer, seed, capital, and infrastructure.

The inverse demand function for the final product, cotton lint, is given by

(2) $$P^e = P^I - T,$$

where P^I is the international price of the final good and T is a per unit import tariff. These tariffs are included to model potential complementarities between the structure of the domestic value chain and the structure of trade protection in international markets (especially tariffs faced by Zambian producers in world markets, if any).

Following this, it is necessary to model the technology of production of cottonseed and of cotton lint. To simplify the model, and to focus on competition effects, it is assumed that the exporters utilize a "Leontief" technology with fixed proportions and constant returns to scale. Without loss of generality, it is also assumed input requirements such that $Q^f = Q^e = Q$, where Q^e is the total production of the exportable (cotton lint in this case). Under these assumptions, the cost of production of the exportable has two components: the cost of purchasing the farm output and the cost of manufacturing the final good. A representative exporter's cost function is given by

(3) $$C^e = (c^e + P^f)q^e,$$

where C^e is the exporter's total cost of producing q^e. The cost of purchasing a unit of farm output is P^f and the (constant) unit cost of processing is c^e.

Exporters choose output levels to maximize profits, taking as given the export price (and other parameters of the model like tariffs) and the behavior of other firms.

The representative exporter profit function is

(4) $$\Pi^e = (P^I - T - c^e - P^f)q^e.$$

The first order condition is

(5) $$P^I - T - c^e - P^f - \frac{\partial P^f}{\partial Q}\frac{\partial Q}{\partial q^e}q^e = 0$$

Rewriting it in terms of elasticities yields

(6) $$P^I - T = P^f(1 + \frac{\theta^f}{\varepsilon^f}) + c^e,$$

where $\varepsilon^f = \frac{\partial Q}{\partial P^f}\frac{P^f}{Q}$ is the farmers price supply elasticity and $\theta^f = \frac{\partial Q}{\partial q^e}\frac{q^e}{Q}$ is the exporter's oligopsony

market power conjectural elasticity. The supply elasticity is a measure of how responsive farmer output is to prices. The conjectural elasticity θ^f is a measure of the exporter's oligopsonistic market power and shows how equilibrium output Q responds to a change in the production level of an individual exporter. In perfect competition, $\theta^f = 0$ because each individual exporter would be too small to affect the market; in the case of a monopsony, $\theta^f = 1$ since the exporter is the only buyer and $Q = q^e$. In the case of imperfect competition, θ^f lies between 0 and 1, being closer to 0 when the "exporters" are less concentrated and closer to 1 when they are more concentrated.

The first order condition (6) has a simple interpretation. As usual, profit maximization requires the equalization of the marginal revenue from the production of an additional unit of exports (the international price net of the tariff given by the left hand side) with the marginal cost. This is given by the unit processing cost c^e and the price paid to farmers P^f, taking into account the supply response and the conjectural elasticity. Several interesting cases emerge.

Consider first the case where there is competition among exporters in the value chain. In this case, $\theta^f = 0$ so that the first order condition implies

(7) $$P^f = P^I - T - c^e.$$

In this case, there is no strategic behavior of the exporters and therefore the price paid to the farmer is just the difference between the net price of exports and the cost of processing. Since exporters do not have market power over farmers, the price paid adjusts to eliminate profits among exporters.

The opposite case arises when there is only one exporter, who thus acts as a monopsonist over the farmers. In this case, the price paid to the farmer is actually lower than the net price of the exporter ($P^I - c^e - T$), a fact that reveals monopsonistic behavior. Intuitively, by reducing the price below this level, the exporter realizes a gain not only on the marginal unit but also on the inframarginal units. This makes price reductions – from the competitive level – profitable for the exporter. In consequence, the price paid to the farmer is lower than the competitive price and the extent of this wedge depends on the elasticity of supply of farm output. Intuitively, the higher the elasticity of supply ε^f, the higher the price received by the farmers. When the processors decide to cut P^f (from, say, the competitive equilibrium), farmers respond by decreasing quantities to an extent given by ε^f. When ε^f is high, farmers respond a lot to given price cut and this reduces the profitability of further price cuts leading, in the end, to higher equilibrium prices.

Finally, for a given elasticity of supply, the price paid to the farmers increases when the competition among exporters is more intense. In the model, this is captured by a lower value of θ^f, the parameter that describes the competitive nature of the model and that depends on the number of firms and their relative size. A low θ^f means that a given exporter expects little reaction from other exporters. This translates into higher farm-gate prices P^f. Conversely, a higher θ^f means less competition (more monopsonistic power) and lower farm-prices.

Model 2: A Three-Sector Value Chain with Fixed International Price

As before, the building blocks of the model are the supply of farm output and the demand of the final product. The farmers inverse supply function is given by equation 1 and the final product inverse demand function is given by equation 2. The cost functions of the processors and retailers are, respectively

(8) $$C^p = (c^p + P^f)q^p$$

(9) $$C^r = (c^r + P^p)q^r,$$

where c^p and c^r are fixed per unit production costs and P^p and P^f are the processor price and the farmers price, respectively. Let T be a per unit tariff. The profit functions are, thus

(10) $$\Pi^p = (P^p - c^p - P^f)q^p$$

(11) $$\Pi^r = (P^I - T - c^r - P^p)q^r.$$

The first order conditions from profit maximization are

(12) $$P^I - T - c^r - P^p - \frac{\partial P^p}{\partial Q}\frac{\partial Q}{\partial q^r}q^r = 0$$

for the retailers and

(13) $$P^f - c^p - P^f - \frac{\partial P^f}{\partial Q}\frac{\partial Q}{\partial q^p}q^p = 0$$

for the processors.

As before, it is useful to rewrite these expressions in terms of elasticities. This yields

(14) $$P^I - P^p(1 + \frac{\theta^p}{\varepsilon^p}) = c^r + T$$

(15) $$P^p - P^f(1 + \frac{\theta^f}{\varepsilon^f}) = c^p.$$

Market equilibrium in this case is determined by equations (1), (2), (14) and (15) where $\varepsilon^p = \frac{\partial Q}{\partial P^p}\frac{P^p}{Q}$

is the derived supply elasticity of "processors" and $\varepsilon^f = \frac{\partial Q}{\partial P^f}\frac{P^f}{Q}$ is the supply elasticity of "farmers". The competition parameters are $\theta^p = \frac{\partial Q}{\partial q^r}\frac{q^r}{Q}$ and $\theta^f = \frac{\partial Q}{\partial q^p}\frac{q^p}{Q}$ which measure the oligopsonistic market power of "retailers" and "processors" respectively. When $\theta^{\{p,f\}} = 0$, downstream firms are small to affect market volumes and therefore are competitive; instead, when $\theta^{\{p,f\}} = 1$ both firms have monopsonist power. Intermediate parameter values of θ capture different degrees of imperfect competition.

Equation 14 is the retailer first order condition. It states that the retailer chooses to produce a quantity such that the international price P^I equals the sum of the unit import tariff (T), the unit production cost (c^r), and the marginal cost of getting a unit of processed input (q^p). This marginal cost depends on the competition parameter θ^p (the ability to affect other retailers production), on the supply elasticity of processors (ε^p), and on the equilibrium processor price. This equation determines the processor price, which, in equilibrium, is a wedge on the net price received by the retailers. This wedge depends on θ^p and ε^p; the intuition and mechanisms are exactly as before, in Model 1. In particular, more competition among retailers (i.e., a lower θ^p) brings the processor price closer to the competitive price level $(P^I - c^r - T)$, and a higher θ^p (more monopsonistic power of retailers) reduces P^p.

Equation (15) summarizes an analog condition for the processor optimization and implicitly defines the farm price, given the equilibrium producer price P^p. Farm prices are, once again, a wedge on producer prices P^p and this wedge depends on θ^f and ε^f in exactly the same manner as in Model 1. However, it should be noted that this model has a prediction of how P^f responds to imperfect competition at the retailer level. This is because θ^p determines P^p, which in turn determines P^f. More concretely, more competition at the retail level (a low θ^p) implies a higher producer price P^p and thus, via (15), higher farm prices.

Model 3: A Full Three-Sector Value Chain

Model 3.1: Processors Hold Market Power

In this model, the demand function for the downstream product is

(16) $$P^r = D(Q)$$

The first order conditions for this model are

$$P^r - T - c^r - P^p + \frac{\partial P^r}{\partial Q}\frac{\partial Q}{\partial q^r}q^r = 0$$

(17) $$P^f - c^p - P^f + \frac{\partial P^p}{\partial Q}\frac{\partial Q}{\partial q^p}q^p - \frac{\partial P^f}{\partial Q}\frac{\partial Q}{\partial q^p}q^p = 0$$

These yield the following equilibrium conditions

(18) $$P^r(1 + \frac{\xi^r}{\eta^r}) - P^p = c^r + T$$

(19) $$P^p(1 + \frac{\xi^p}{\eta^p}) - P^f(1 + \frac{\theta^f}{\varepsilon^f}) = c^p$$

Equation (18) is the first order condition for profit maximization of the retailers. Production level q^r is chosen to equate marginal revenue ($P^r(1 + \frac{\xi^r}{\eta^r})$) with the sum of the per unit tariff (T), the per unit cost (c^r) and the input price (P^p). This equation has a standard monopoly pricing interpretation. Concretely, the price charged by retailers P^r is a markup on marginal costs. The markup depends on the (inverse) of the elasticity of demand η^r (so that a more inelastic demand leads to higher equilibrium prices) and on the competition parameter ξ^r. When there is perfect competition ($\xi^r = 0$), price is just equal to marginal cost. Under imperfect competition, a higher ξ^r (so that the actions of a given retailer trigger significant responses from the competitor retailers) leads to higher equilibrium prices.

Equation 19 summarizes the first order condition of the processors. Since processors may use both oligopsonistic and oligopolistic power, the optimization condition takes into account the whole set of upstream and downstream reactions measured by θ^f, ξ^r and ξ^f (as well as on the demand elasticity η^p and the supply elasticity ε^f). Equilibrium farm prices are a wedge on the net producer prices, as before. Although there are now several additional mechanisms to explore, the basic intuition is similar to that in Models 1 and 2. For example, farm prices respond to the processor monopsonistic power parameter (θ^f) and the supply elasticity (ε^f) in exactly the same way as before. In addition, farm prices respond to changes in the oligopoly parameter of processors toward retailers (ξ^p). If there is no oligopolistic behavior and processors behave competitively when selling the output to retailers, then the pricing condition is closer to the simpler models previously discussed. Notice also that the producer price depends on the oligopoly parameter of the retailers in the downstream sector. Hence, changes in (ξ^r) affect producer prices and thus farm prices as well.

Model 3.2: Retailers Hold Market Power

The second bound model is similar to the first one, but with the assumption that the retailers use both oligopsonistic and oligopolistic market power over the processors and the consumers. In contrast, the processors can only exercise oligopsonistic market power over the farmers. The first order conditions of retailers and processors are

(20) $$P^r - T - c^r - P^p + \frac{\partial P^r}{\partial Q}\frac{\partial Q}{\partial q^r}q^r - \frac{\partial P^p}{\partial Q}\frac{\partial Q}{\partial q^r}q^r = 0$$

(21) $$P^f - c^p - P^f - \frac{\partial P^f}{\partial Q}\frac{\partial Q}{\partial q^p}q^p = 0$$

respectively. These lead to the following pricing equations

(22) $$P^r(1 + \frac{\xi^r}{\eta^r}) - P^p(1 + \frac{\theta^p}{\varepsilon^p}) = c^r + T$$

(23) $$P^p(1 + \frac{\xi^f}{\eta^f}) - P^f = c^p.$$

The equilibrium of the model is characterized by equations 1, 16, 22, and 23.

In equation 22, the retailers retain monopsonistic and monopolistic power; as a result, they have to account for both consumer's and processor's reaction as well as for their market power over them. Equation 23 describes the optimization condition for the processors, which only takes into account the farmers reaction and market power over them.

APPENDIX 2: SENSITIVITY ANALYSIS

The key parameter of the simulations is the elasticity of supply at the farm level. This parameter was estimated at 0.75 in all the simulations run in the text (based on available estimates in the literature and on personal interviews with Zambian farmers). The aim of this appendix is to illustrate how results would change if different estimates of that elasticity are used. Although estimates of the standard deviation of the generic supply elasticities are not available, all the evidence indicates that the short-run elasticity is generally low, and often smaller than one. Hence, the main simulations of the model using two bounds for the supply elasticity are conducted again: a lower bound of 0.5 and an upper bound of 0.9. Results are reported in table A.1 (for the lower bound) and table A.2 (for the upper bound). For simplicity and concreteness, three of the seven simulations of the main text are conducted again: simulation 1

Table A1. Sensitivity analysis: Lower bound cotton supply elasticity 0.5. Exporter's model (table 2). Changes in income (%)

	Simulation		
	1	4	7
P^f Δ%	0.2126	-0.7239	0.6608
Total	0.0083	-0.0168	0.0354
1st order	0.0072	-0.0246	0.0224
2nd order	0.0011	0.0078	0.0129
Producers	0.0732	-0.2383	0.2368
1st order	0.0722	-0.2458	0.2244
2nd order	0.0010	0.0075	0.0124
Poor	0.0080	-0.0152	0.0351
1st order	0.0069	-0.0235	0.0214
2nd order	0.0011	0.0082	0.0137
Non-Poor	0.0088	-0.0195	0.0361
1st order	0.0078	-0.0266	0.0243
2nd order	0.0010	0.0071	0.0118

Table A2. Sensitivity analysis: Upper bound cotton supply elasticity 0.9 Exporter's model (table 2). Changes in income (%)

	Simulation		
	1	4	7
P^f Δ%	0.0888	-0.2258	0.3129
Total	0.0035	-0.0052	0.0167
1st order	0.0030	-0.0077	0.0106
2nd order	0.0004	0.0024	0.0061
Producers	0.0305	-0.0741	0.1118
1st order	0.0301	-0.0765	0.1060
2nd order	0.0004	0.0023	0.0059
Poor	0.0033	-0.0047	0.0166
1st order	0.0029	-0.0073	0.0101
2nd order	0.0005	0.0026	0.0065
Non-Poor	0.0037	-0.0061	0.0171
1st order	0.0033	-0.0083	0.0115
2nd order	0.0004	0.0022	0.0056

Note: Authors' calculations based on the exporter's model and household data from the 2003 living conditions monitoring surveys.Sensitivity analysis from table 2. The elasticity of supply here is 0.5 (it is 0.75 in the baseline models).

Simulation 1: "Leader splits"
Simulation 4: "Leaders merge"
Simulation 7: "Competition"

(increase in competition); simulation 2 (decrease in competition); and simulation 7 (perfect competition).

The main observation from this sensitivity analysis was that results can be quite sensitive to the elasticity of supply. In table A.1, the price changes from the same baseline are larger (in absolute value). In table A.2, the price changes are smaller. For example, while in simulation 1 (increase in competition) the price faced by farmers increased by 12.53 per cent with an elasticity of 0.75, it increased by 21.26 per cent with an elasticity of 0.5 and by 8.88 per cent with an elasticity of 0.9. Naturally, the sign of the change is not affected by the elasticity of supply, but the magnitude of the price changes, and therefore of the income and poverty impacts, do depend critically to that elasticity.

NOTES

[1] See Balat and Porto (2007) and World Bank (2007) for a more thorough analysis of poverty in Zambia.

[2] This section is based on Brambilla and Porto (2009).

[3] See Kranton and Swamy (2008) for a theoretical model of firm hold-up and farmer debt renegation, and for a discussion of similar cases in textiles and opium in India.

[4] Some of the other minor players that had recently entered the market also used outgrower schemes, although they arguably free-rode on the schemes successfully developed by the major players, Dunavant (Lonrho) and Clark.

[5] While these correlations suggest a link between the different phases of the reforms and cotton participation rates, causality does not necessarily follows. Among other things, there might be other variables that may contaminate any causal relationship. One key such variable is the international price of cotton, which showed a declining trend during this period.

[6] In the empirical applications, these characteristics include household size, distance to the market, production assets, housing ownership, number of farm workers, province dummies, and others. See the discussion below.

BRAZIL: POSTAL SERVICES FOR FINANCIAL INCLUSION AND TRADE

X

This chapter examines the role of Brazil's postal network on the implementation of inclusion policies aimed at increasing access to trade-related services for relatively poor municipalities in the rural and peri-urban areas of Brazil. After mapping the level of exclusion from essential services necessary to participate in the trading system – such as financial and logistics services – two major inclusion policies, delivered by the postal sector, in finance and trade are described and evaluated. This exercise reveals how the postal sector can respond to the integration needs of the population and firms located in the periphery. The economic impacts of these policies are estimated through a variety of econometric models and prompt: i) the local development effects of access to finance; ii) the opportunities of entering export markets for micro-, small- and medium-size enterprises (MSMEs) through access to a simplified postal export system – more particularly, in communities with lower levels of income per capita, lower numbers of firms and lower access to services. The chapter concludes with a highlight of the close link between access to finance and participation in export markets.

1. INTRODUCTION

Posts have facilitated trade and international exchanges for many centuries, supplying essential communication and logistic services to businesses and states of all types.[1] With the surge of new information and communication technologies, the role and relevance of the postal services in the twenty-first century is uncertain. Could access to physical retail networks ease the provision of basic services for the poor and help them integrate into the international trading system? Moreover, what is the economic impact of supplying a wider range of postal services to rural and peri-urban populations in emerging and developing countries? Can the observations drawn from Latin America, particularly from the Brazil study be applied to other developing or emerging countries?

Whatever form future mail communications take, posts are characterized by two main potential assets for their development. The first is by ubiquitous physical networks in all industrialized countries and in many developing and emerging nations – connecting over 660,000 world-wide post offices. The second is that they have people's trust in the performance of their services. Albeit, this second characteristic may hold less true in many Latin America countries which did not pursue clear sectoral policies in the late twentieth century and de facto left postal exchanges to fully deregulated markets. As a consequence, a process of destructive competition – a somewhat counterintuitive phenomenon for economists – is observed in the region. Compared to peers in other regions this destructive competition resulted in a smaller number of postal exchanges as well as a lower quality of service negatively affecting the public trust.

Brazil's postal services on the other hand faced different developments. Although not the only exception in Latin America with a harmonious development of postal services, Brazil is increasingly cited as a best practice case and referred to in reforms of postal services in other developing and emerging countries. Thus, this chapter measures the Brazilian postal sector's contribution to better access of essential services for the development of trade, namely access to finance and logistics. It also estimates the sectors' economic impact in terms of local economic development.

In Brazil, postal and delivery services enterprises are key trade facilitators. The country provides non-discriminatory access to simplified customs and trade procedures to all postal and express carriers, having heavily invested in and enhancing delivery and logistics networks in the last twenty years. The Government of Brazil as well as the postal incumbent was also instrumental in enhancing the postal sector through regular investment and offering universal access to postal, express and basic financial services through the national network of 6,000 post offices (approximately one third of which are under franchising agreements with private agents).

This chapter evaluates recent policies aimed at including more exporters in the trading system, particularly MSMEs. It also assesses the extent to which universal access, provided by the Brazilian postal incumbent, and has made a difference, particularly, in terms of trade inclusion to provide a first export opportunity to many small firms located in relatively poorer municipalities, where the density of firms is lower and the access to a wide range of services limited. Moreover, the chapter highlights the postal networks inclusion power in access to basic finance – payments and financial transactions paramount to a smooth handling of trade transactions and to deliver the second largest anti-poverty programme in Brazil, that is, the payment of pension benefits.

By examining these initiatives it is possible to test whether there is a need to balance greater economic and geographic concentration, resulting from economic development and trade openness (World Bank, 2008), with more integration of the periphery and the less well-off parts of society. Econometric results regarding the impacts of these initiatives are very much consistent with what was expected in terms of poverty alleviation. After showing that the rural and peri-urban poor suffered from a lack of access to services prior to the introduction of the abovementioned policies, the great untapped demand for financial and logistics services by these segments of the population is highlighted. The extended use of these services reveals the needs of marginalized populations and enterprises in terms of access to essential services for trade. Moreover, the provision of services through the Brazilian postal sector triggered important economic impacts on local development, particularly in relatively deprived communities. These impacts ranged from facilitating first time entry into export markets to creating new micro and small enterprises that would have otherwise not existed or traded.

Section 2 maps financial and trade exclusion in rural and peri-urban areas of Brazil. Section 3 describes two historical inclusion policies that resulted in

pro-active and extensive use of the postal network toward achieving greater economic integration. Section 4 tests the postal networks impact on the delivery of inclusion policies, both in terms of improved access to services, increased use of services and local development effects. Section 5 concludes.

2. MAPPING FINANCIAL AND TRADE EXCLUSION IN BRAZIL: A QUANTITATIVE AND GEOGRAPHICAL ASSESSMENT

Relatively high levels of income inequality have historically characterized Brazil. Inequality is often linked to a lack of access to basic infrastructure and services, of which finance and trade heavily depend on.

This section provides some measurement of exclusion from access to finance and trade infrastructure in Brazil prior to a number of pro-inclusion reforms initiated over the last decade.

In the early years of 2000, many instances of exclusion from basic finance and international trade infrastructure were evident. Much of the population did not have open banking access, even in light of accelerating economic developments. Over forty per cent of municipalities were without a bank branch, particularly in rural and peri-urban areas. Relative to peer countries, Brazil had only a small number of enterprises – and barely any MSMEs – involved with export markets. High levels of income inequality were persistent over time.

In terms of exclusion from financial infrastructure, the

Figure 1. Brazilian municipalities without any bank branch in 2002 (grey areas)

Source: Authors' calculation; data from the Brazilian Central Bank.

map of the Brazilian municipalities (figure 1) identifies locations without bank branches in 2002. Regional disparities in terms of geographic access to finance were wide ranging from 8,100 inhabitants per bank branch in the South to 20,100 inhabitants per bank branch in the North (tables 1 to 3). For instance, in order for a pensioner to collect his pension benefit from a city far from where he resided, equated to roughly $30, or approximately forty per cent of the benefit and two-days travel.

By relating financial infrastructure exclusion to population or wealth, the picture became clear. Financial institutions – not surprisingly – were disproportionally concentrated among high population and wealth areas (tables 1 to 3). In some cities, such as Autazes in the north, distances to reach a bank could easily exceed 100 kilometres, translating into a 14-hour boat ride to cover part of the 140 kilometres before reaching the first available bank. Financial access figures by region – credit per GDP, deposit per GDP – reflect this situation (table 3).

Table 1. Socio-demographic regional differences (2005 values)

Region	Population	GDP (in million BRL)	GDP per capita (in BRL)	Industry share (%)	Agricultural share (%)	Service share (%)	Number of firms
Central/west	13 014.333	190.000	14 599.29	14.35	36.31	49.34	43 419
Northeast	51 016.525	280.000	5 488.42	13.02	20.38	66.60	952 466
North	14 698.878	107.000	7 279.47	13.57	30.04	56.38	214 720
Southeast	78 444.032	1 210.000	15 425.01	20.21	20.77	59.02	3 041.597
South	26 973.511	356.000	13 198.13	19.18	28.27	52.55	1 416.670
Total	**184 147.279**	**2 143.000**	**11 637**	**...**	**...**	**...**	**6 059.651**

Source: Authors' calculation; data from IBGE.

Table 2. Exporting activity regional differences (2005 values)

Region	Exported value (in million USD FOB)	Total exporters	DSE exported value (in USD)	EF exported value (in BRL)	EF number of exporters	EF value per exporter
Central/west	4 922	828	1 666.735	796.579	76	10 481.31
Northeast	10 520	1 380	6 824.055	1 459.181	223	6 543.41
North	7 192	840	8 956.397	13 200.000	25	528 000.00
Southeast	68 890	10 565	160 400.000	24 700.000	1 780	13 876.40
South	26 770	5 902	42 997.365	3 047.839	347	8 783.40
Total	**118 294**	**19 515**	**220 844.552**	**43 203.599**	**2 451**	**17 626.93**

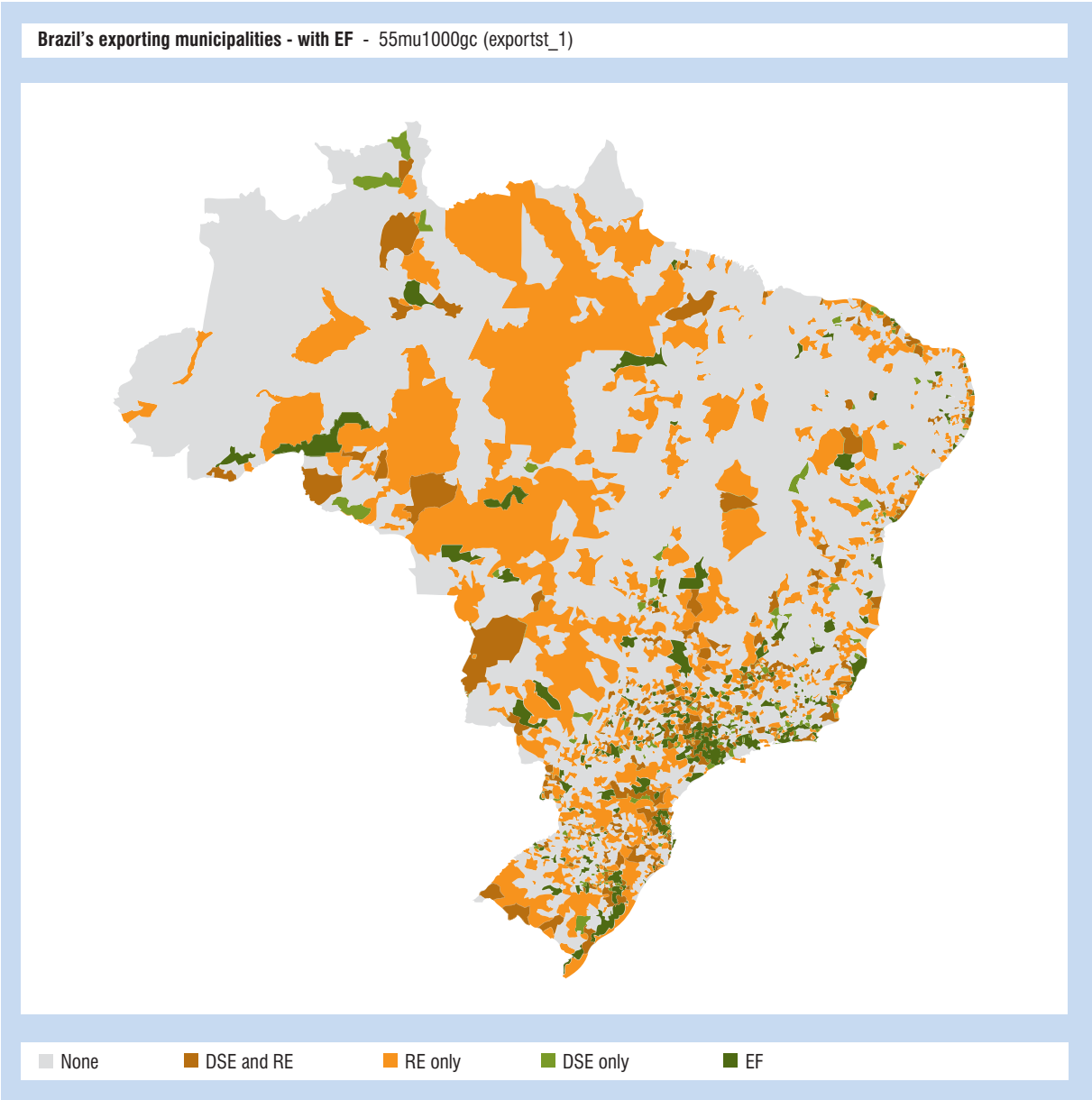
Source: Authors' calculation; data from IBGE and Ministry of Economic Development.

Table 3. Financial access regional differences (2006 values)

Region	Banco Postal agencies	Bank agencies	Banking correspondents	Credits per GDP (%)	Deposits per GDP (%)
Central/west	537	1 253	3 366	129.30	20.23
Northeast	1 687	2 539	8 914	41.25	15.32
North	481	693	1 204	37.48	14.80
Southeast	1 855	9 624	18 744	78.99	23.10
South	1 007	3 575	7 178	118.53	20.92
Total	**5 567**	**17 684**	**39 406**	**...**	**...**

Note: Credits and deposits refer to both public and private.
Source: Authors' calculation; data from IBGE.

Figure 2. Need for simplified export processes (2005)



Source: Authors' calculations; data from Correios (ECT) and MDIC.

Note: RE is the abbreviation for Registry of Exports, where exports following the usual export procedures are registered in Brazil. DSE is related to simplified export declarations for exports following the simplified procedure. EF is the abbreviation for "Exporta Facil", the Brazilian postal incumbent's programme for simplified export also using DSE regulations.

Figure 2 highlights municipalities not exclusively using conventional export procedures, and thus: excluded from international export trade (not "RE only" in yellow ink); without a single firm participating in the export markets ("NONE" in grey ink); and MSMEs in need of alternative simplified export procedures to start exporting ("EF" in green ink or "DSE only" in orange ink, and in some cases "DSE and RE" in red ink). A depiction of the concentration of exporters in the south and south-eastern regions is also presented.

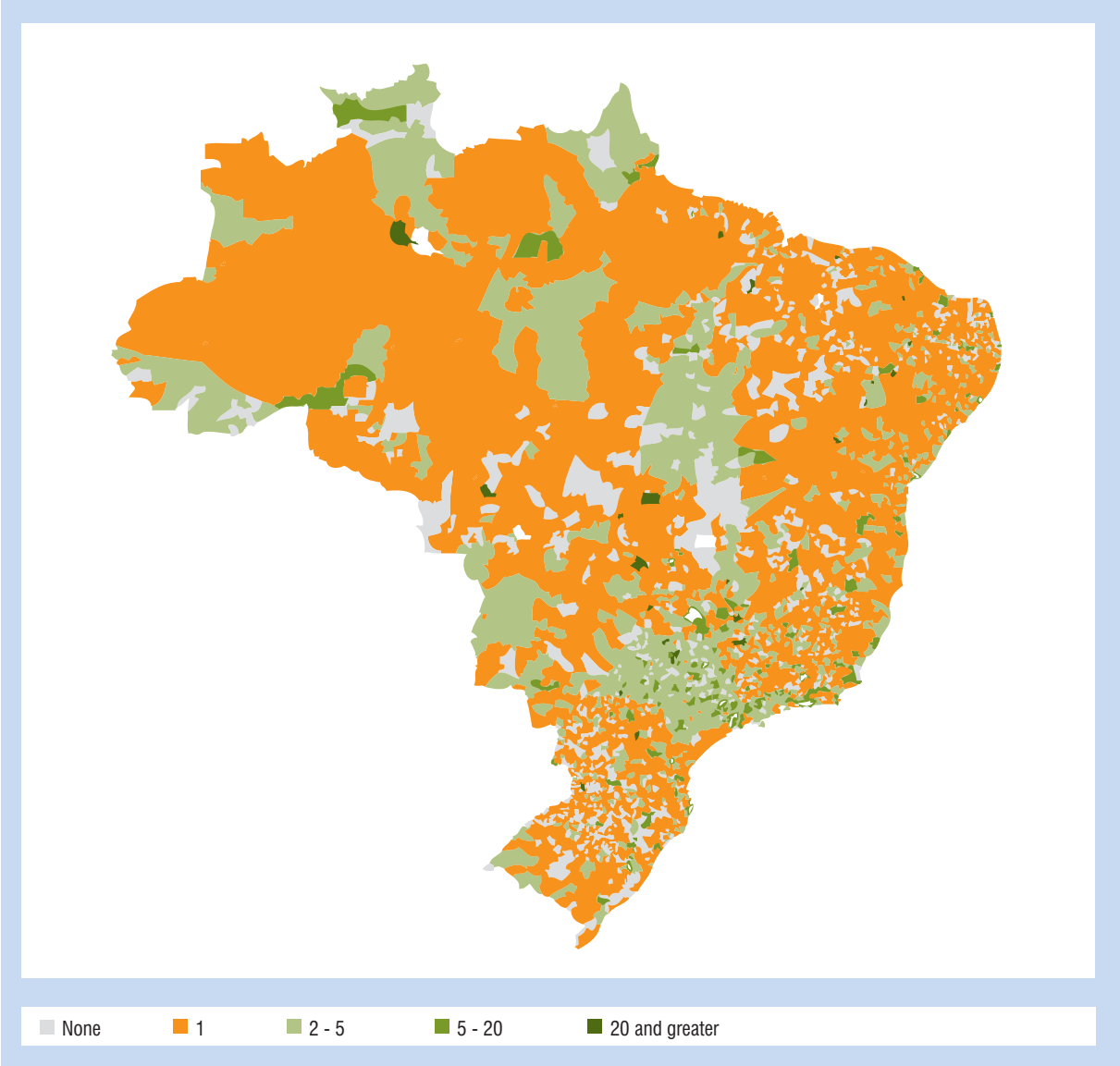
Trade and financial exclusion are closely related. In 2002, there were 2,302 municipalities without a single bank branch. Out of these, 2,101 municipalities were not exporting at all, that is only nine per cent had at least one exporter. This situation differed considerably

from municipalities with bank branches – forty-five per cent of which had at least one firm exporting.

Although other quantitative indicators were lacking, it is safe to assume that exclusion from finance and trade infrastructure was likely correlated with a greater share of the informal sector in the local economy, a lower level of financial literacy and a lack of access to new information and communication technologies (ICTs) in many small cities and rural locations in the early part of 2000.

Access to finance and trade infrastructure services was thus systematically uneven between the economic centres and the periphery – the most and the least populated cities, the richest and the poorest communities, and the rural and the peri-urban areas. Nevertheless, there was a remarkable exception to this systematic concentration of services. It is interesting to note that the Brazilian postal network – a finance- and trade-related network – displayed a different pattern, in terms of general access to services. The postal network was made up of more than 5,500 offices and 2,000 franchised points of sale, accessible in almost every municipality (figure 3). For decades, an ambitious universalization policy had been undertaken providing access to postal in-

Figure 3. Geographical distribution of Correios post offices (2005)



Source: Authors' calculations; data from Correios (ECT).

frastructure services. Moreover, Correios – the Brazilian Post – had been ranked at the top of the most-trusted institutions or companies in Brazil several times. In fact, only the family and firemen closely followed, while banks and telecommunications companies held distant rankings. This trust made the postal network an ideal hub for distributing financial and trade facilitation services to the entire population, and by so doing served poverty alleviation policies.

3. INCLUSION POLICIES IN BRAZIL DURING THE EARLY PART OF 2000: INCREASING ACCESS TO FINANCE AND TRADE INFRASTRUCTURE THROUGH POSTAL AND DELIVERY NETWORKS

This section describes how the Government of Brazil closely associated and guided its postal network in adopting pro-inclusion policies over the last decade. In so doing, it had a pivotal impact on Correios, making it one of the most innovative postal networks in the world. Two such pro-inclusion policies are introduced below. The first deals with improving access to basic finance, and the second with trade facilitation for MSMEs. In each case, the general policy is presented prior to specifying the role played by Correios in this context. The possible impacts on poverty alleviation are highlighted.

3.1. Access to finance: general policy and role of the post

It was not until the 1990s that the development of other forms of financial institutions, especially microfinance institutions and credit cooperatives, started to increase in addition to traditional banking in Brazil. At that time, the Government of Brazil strengthened its innovative approach for supplying financial services and incrementing access to finance through a system of correspondent banks (considered a form of microfinance institutions).

Banking correspondents acting as agents for banks are ultimately responsible for financial transactions vis-à-vis, its customers. The rationale behind this form of banking uses the large capillary of networks (typically lottery kiosks, post offices, pharmacies, supermarkets and other retailers) to achieve a universal provision of financial services. The interest to financial institutions of operating through such large retail networks was related to sharing fixed costs, benefiting from economies of scale and reaching more customers.

In this framework, Banco Postal (BP) – a special postal financial service provided by the Brazilian Post, through its agent Empresa de Correios e Telégrafos (ECT) – acts as a correspondent for a private bank, namely Bradesco (the principal). Banco Postal founded in 2001 as a result of a governmental auction won by Bradesco, bid 200 million BRL to operate until 2009 in the ECT agencies. The general principles of BP were established by the Brazil Ministry of Communication and reflected the institution's social inclusion objectives. These objectives stipulated that priority be given to municipalities without a bank in order to provide them with a first access to financial services. Indeed, the establishment of BP agencies was designed to achieve specific timetable objectives – to serve at least 1,000 municipalities by the end of 2002 and to reach all of Brazil's financially unattended municipalities by the end of 2003. In order to achieve this goal, Correios had to first resolve important connectivity problems. Points of sales (POS) terminals and V-Sat antennas, sometimes relying on solar energy, had to be set up and installed in many locations. As continuous communication between Correios and Bradesco data centres was paramount, numerous postal employees were trained to ensure this new service. Finally, Bradesco organized a fail-safe and timely manner in which to transport cash to thousands of new point of sales (POS).

Each BP agency provided a range of payment, savings and lending services (including microcredit), although the partner bank remained responsible for approving any transaction. Banco Postal offered simplified bank accounts with easy and affordable fees structure. Unlike private banks, it did not require a substantial deposit to open an account. These features contributed to make deposits attractive for low-income people with relatively low levels of financial literacy. A wider access to finance can be better leveraged in terms of poverty reduction when a specific offer toward lower-income groups is designed. More precisely, in the case of the simplified account "Conta Fácil", as long as deposited money remained in the account for more than thirty days, it earned interest so as to automatically convert stable deposits into savings. The monthly fee in this account was lower than that of the Bradesco fee with only a minimum amount of 5 BRL required.[2] Loans and micro credits

were first granted in 2002 and 2003 respectively. As Credit risks were completely assumed by Bradesco, BP's employees were not responsible for ensuring lower-income groups pay back loans[3].

3.2. Access to trade: general policy and role of the post

For its size, Brazil's share of total global trade is low (1.14 per cent in 2007)[4]. Moreover, most of its exports are concentrated in hands of large exporting firms. In 1999, MSMEs only contributed 2.3 per cent to total exports.[5] This can partially be explained by increased delays and costs created by an export-specific bureaucracy that were unbearable to smaller firms which exported objects of low value.

To offset this, in 1999, the Government of Brazil instituted new procedures enabling the export of low-valued objects without going through normal formalities thereby, reducing the number of export procedures from twenty-three to only three. In the same year, different government ministries teamed up to create a new legislation introducing a simplified export form called "Declaração Simplificada de Exportação" (DSE)[6] which applied to the export of objects whose value was less than $10,000 (this limit was raised to $20,000 in 2006, and to $50,000 in 2008). This form presented a number of advantages greatly simplifying export procedures. As with the product features of BP described above, simplicity was a key factor to increase the possible leverage of the initiative on relatively poor entrepreneurs. The usage of the DSE was open to all logistics intermediaries – among them postal operators and other express operators falling into the postal sector – as defined by the Brazilian Ministry of Communication.

Exporta Fácil was launched by Correios in November 2000 after the introduction of DSE in 1999. However, the service was not intended to simply take advantage of this simplified export form. Correios' goal was to provide universal and easy access to export markets, by making the service available in more than 8,000 Brazilian post offices (in almost every municipality), theoretically permitting the inclusion of remote towns and villages that would, without the capillarity of the designated postal operator's network, have been geographically excluded from accessing a carrier to export. Exporta Fácil relied on Correios' traditional international package services and permitted shipments of up to 30 kilograms through the EMS (express mail services) system and of 20 kilograms through standard package sending, to upward of 200 countries.

4. FROM EXCLUSION TO INTEGRATION IN FINANCE AND TRADE: TESTING THE IMPACT OF THE POST IN DELIVERING PRO-INCLUSION POLICIES

This section evaluates the extent to which the postal network was efficient in delivering pro-inclusion policies outlined in section 3, in response to the lack of initial access to basic finance and trade infrastructure described in section 2. A common database was built to analyse the economic impacts of both policies at the municipality level. Financial inclusion through BP was evaluated in terms of access, use and impact on local economic development. The trade facilitation programme, Exporta Fácil, was analysed over a time-period to better identify its users' characteristics and whether it enabled small firms to enter export markets. This empirical evaluation assess whether the outcomes of these initiatives were supportive of poverty alleviation goals. More methodological and estimation details can be found in Ansón and Bosch Gual (2008) and Ansón and Caron (2008).

4.1. Empirical approach for evaluating two pro-inclusion policies through the postal network: data

Both evaluations are mainly based on municipality-level data covering the period 1999 to 2007. This data being the most disaggregated level, permitted the researchers to exploit the huge variations in the size and income of Brazil's municipalities – defined as the smallest political administrative unit after a state and, although the number of municipalities changed only slightly during the period, a total 5,561 municipalities remained static throughout the time frame. Cognizant of the fact that there was considerable heterogeneity within municipalities, especially for the big cities where disparities between slums and rich neighbourhoods made it dubious to consider them as uniform areas, a solution was used to reduce the potential statistical bias arising from this lack of information – the availability of within-municipality inequality measures (Gini indices).

4.2. Access to basic finance: testing the impact of the post in delivering inclusion and local economic development

First, municipalities were dived by semi-deciles of their GDP per capita and population in order to provide a concise picture of BP's location and use, and to compare it with that of bank agencies and correspondents (Boldron et al. 2006). Second, in order to examine whether financial intermediation through BP exerted a causal impact on local development, the opening of a BP agency in a municipality in 2002 was considered a "treatment" for the municipality, and also use propensity score matching methods to estimate the impact of such an opening on the post-intervention economic state of the municipality (Ansón and Bosch Gual 2008).

Evaluating and comparing access provided by different channels

The first BP branch was opened in March 2002 and, by the end of 2006, a total of 5,567 BP agencies were in operation after a progressive opening of point of sales.

A way to analyse the distribution of financial intermediaries is by grouping municipalities according to their population or their wealth. It can be inferred from tables A.1.1 to A.2.2 (appendix 1) that BP agencies, other correspondents and traditional bank agencies all presented different network topographies. Municipalities with higher overall GDP per capita and population tended to have a denser network of financial intermediaries. However, a comparison of these networks at different levels of income and population revealed that they complemented each other in some cases and overlapped in others, possibly creating some competitive pressure.

Bank agencies tend to cluster in wealthier and densely populated areas as a result of their rational and profit-maximizing behaviour. Such a clear concentration does not appear in the case of BP agencies because their introduction was proportional to the more evenly distributed postal network. Consequently, the distribution of BP agencies was quite constant across different levels of wealth and population. Other correspondents seem to have behaved similarly to bank agencies, locating in wealthier and densely populated areas and in all probability where the density of other networks, such as supermarkets or pharmacies, was also higher.

In 2002, 20 per cent of municipalities with the lowest number of inhabitants, representing less than 2 per cent of Brazil's total population, corresponded to very different percentages of each network's outlets – 8.55 per cent of all BP agencies or 1.78 per cent of all bank agencies and 0.5 per cent of all correspondents (table A.1.1). In 2006, BP agencies stood at 13.41 per cent but only accounted for 1.53 per cent of all bank branches and approximately 1 per cent of all correspondents in these same municipalities. It was also found that in only 60 per cent of the largest municipalities that the average number of correspondents was greater than that of BP agencies (table A.1.2). For bank agencies, it was only from the median municipality that their average number became larger than that of BP agencies.

A similar, though less striking, phenomenon was seen with the same analysis of municipalities' income level (tables A.2.1 and A.2.2). The average number of BP agencies increased with wealth, but not as dramatically for traditional bank agencies. The biggest difference in BP distribution occurred between the lowest and the highest semi-decile; the poorest 5 per cent of municipalities had, on average, roughly 2.8 times fewer agencies than the richest 5 per cent. On the other hand, the distribution in the bank agency network according to level of income was even more skewed – the difference in the average number of agencies between the richest and poorest municipalities was by a factor of about 60. Approximately 32 per cent of the banking network was concentrated in the 278 richest municipalities. Alternatively, 58 per cent of their network was concentrated in the 278 most populated municipalities.

To sum up, in 2002, there was less than one bank agency in the 35 per cent of the poorest municipalities and in the 55 per cent of the least populated municipalities. This result improved four years later, when "only" 30 per cent of the poorest and 33 per cent of the least populated municipalities had less than one traditional bank branch on average.

The fact that BP agencies were homogeneously distributed throughout the territory, regardless of the municipalities' level of economic development and population, also reflects the institution's desire for social and financial inclusion.

Evaluating use by previously excluded customers

The three main components of financial services provided by BP are savings, credit and payment

services. Savings accounts are important for they help buffer emergencies to which poorer segments of the population are more vulnerable.[7] Access to credit for segments of the population with more modest incomes is often viewed as a way to enhance small business development. Lastly, access to payment services such as money transfers, social security payments or international remittances, is also important to the less well-off rural inhabitants, who often rely on these payments.

The population's relative participation in BP services was gauged by exploring how these components were utilized in each region and in each group of municipalities (divided into semi-deciles of population and GDP per capita).

Tables A.3.1 and A.3.2 present the distribution of different BP services and products across semi-deciles. Table A.3.1 presents the number of current deposits and savings deposits and the number of withdrawals[8]. At first glance, it seems that wealth and the per capita demand for BP services and products were not proportionally related. In fact, those living in the poorest 50 per cent municipalities, representing less than one third of the population (29 per cent) accounted for some 50 per cent of all BP deposits. This is a very positive result as regards financial inclusion, as it indicates that there were more BP deposits in poorer municipalities.

Access to credit is one of the most quoted constraints to business development by the self-employed and micro entrepreneurs. Micro enterprises accounted for the vast majority of all Brazilian firms and contributed substantially to employment and GDP. Brazil's 4.5 million micro and small enterprises accounted for 44 per cent of all employment and more than 60 per cent of urban jobs (Kumar et al., 2001). From its creation up to the end of 2006, BP granted 1.93 million loans, including micro-credits, loans and e-loans. On average, in 2006, a BP agency granted some 200 loans in the north and central west, while in the northeast and southeast the average number of loans per BP agency was half that amount. The difference was more striking in the south, where a typical BP agency granted four times fewer loans on average than in the north or central west.

Table A.3.2, presents an analysis of credit services, including micro-credits, loans and e-loans.[9] The micro-credits, loans and e-loans granted by BP were disproportional. In 2005, 10 per cent of the total population, was concentrated in the 20 per cent poorest municipalities and received some 20 per cent of all micro-credits. Conversely, the richest semi-decile, containing some 20 per cent of the population, received less than 10 per cent of all micro-credits granted. This disproportionality was even more apparent with regular loans. Nearly one quarter of all loans were granted to the poorest two deciles, while only some 4 per cent of loans were granted to the wealthiest 5 per cent throughout all municipalities, accounting for 10 per cent and 20 per cent of the total population respectively. These figures confirm the evidence of a North-South pattern in BP lending services.

Local economic development

The analysis of the treatment effect of a BP branch opening in 2002 is based on seven outcome variables: i) number of new firms; ii) variation in the level of employment; iii) growth in the average number of employees per firm; iv) growth in proportion of salaried employees; v) number of new bank agencies; vi) number of new correspondents; and vii) growth in real GDP. All the outcome variables are presented as the difference in their values between 2001 (before the BP treatment) and 2005 (after the BP treatment). The results are presented in tables A.4 to A.5.3 in appendix 1.

The number of firms was used to study the impact of a BP branch opening on local entrepreneurship. The level of employment was used to assess job creation. To determine BP impact on the size of the firms, the average number of employees per firm was utilized. Furthermore, in order to understand the effect of a new BP branch on the level of formalization of the labour market, the proportion of salaried people compared with all employees was applied. To determine whether the launch of BP generated positive externality on other financial intermediaries, (whether it attracted bank agencies and other correspondents) the change in the number of other correspondent agencies and bank branches was looked at. Lastly, any BP impact on local economic growth was considered.

The average outcome for the treated groups and for the control (non-treated) groups is summarized in columns i and ii of tables A.4 to A.5.3 respectively. Column iii presents the difference between columns i and ii. This can be interpreted as the average treatment effect on the treated (ATT). A positive (negative) difference means that the average affects on the treated group is greater (smaller) than on the non-treated group.

The estimates given in table A.4 reveal that the launch of a BP agency in a municipality in 2002 had significant average causal effects on most of the outcome variables concerned. In a four-year period (2002 to 2005), the municipalities that had received the treatment experienced a formalization of their labour market and attracted more bank agencies and correspondents. In concrete terms, the increase in the number of bank agencies (other correspondents) was 56 per cent higher in municipalities with a BP agency compared to peers without BP. Another positive impact brought about by BP was the average 37 additional new firms per municipality with BP compared to peers without BP in four years.

The results in table A.4 make no allowance for other sources of variation in outcome, such as differences attributed to regions per se. For example, some regions may have had a more formalized labour market or an industrial structure highly dependent on external financing, which could bias the results. To deal with the intrinsic regional effects or structural regional differences, regional dummies were included in a new set of estimations, the results of which are summarized in table A.5.[10] This might have reduced the region-specific bias (which, despite the inclusion of all relevant control variables, is a difficult, if not impossible task). The addition of regional dummies attenuate coefficients and raise standard errors, rendering it impossible to reject the null hypothesis of a zero BP effect on outcome variables, except in the case of enterprise creation. However, these statistical results are more likely to be simply due to the fact that most BP branches were first opened in the north and north east regions – the municipalities without a bank. Therefore, it can be inferred from table A.5 that the average treatment effect of a BP agency launch in 2002 was the creation of an estimated average of 29 additional new firms per municipality with BP compared to peers without BP in four years.

The underlying heterogeneity could be utilized better by conditioning the municipalities on their level of banking penetration prior to treatment. Tables A.4.1 to A.4.3 report the estimation results of the baseline model using three conditioning information sets. The first set includes only municipalities without a bank in 2001. The second includes municipalities with at least one, but fewer than six, bank branches. The third includes only those municipalities with more than five bank agencies. These sets represent 42.4 per cent, 51.9 per cent and 5.7 per cent of all municipalities respectively. The ATT was conditioned to determine where the causal effect was more pronounced. In other words, the treatment was conditioned to use the level of access. Furthermore, conditioning was based on the level of banking penetration – a proxy for financial literacy – and adds regional dummies in tables A.5.1 to A.5.3.

It can be concluded from table A.5.2, that taking into account regional differences and specific levels of financial access, the opening of a BP agency in 2002 had a causal impact on the creation of 20 additional new firms in municipalities as well as some level of financial competition and literacy (from one to five bank agencies) compared to peers without BP. It can also be concluded that treated municipalities with some level of financial competition and literacy in 2001 experienced a 17 per cent higher growth in the number of additional new firms than non-treated municipalities.

Although BP led to the creation of enterprises, the average size of the firms remained virtually unchanged. This can probably be explained by the fact that most newly created firms had a small number of employees on average.

As regards the effects on the labour market, it was discovered that, once regional differences were taken into account, jobs were created in municipalities already benefiting from some degree of financial intermediation. This result could well highlight a greater impact of the financial inclusion policy under study in communities with people already being financially literate to some extent in 2001 (table A.5.2). Interestingly, in municipalities with low levels of financial literacy – for instance in municipalities that were initially un-banked – significant BP effects are only found on the formalization of the labour market. On average, municipalities that were initially un-banked experienced relatively more growth in the proportion of salaried workers than other initially un-banked municipalities not benefiting from a BP launch in 2002.

Furthermore, the first wave of BP branch openings did not have any medium-term effect on local GDP per capita growth in 2005. A plausible explanation is that financial inclusion is above all a matter of numbers rather than value. While many individuals and small firms were financially included through BP, it is intuitive to understand that the monetary added value of all transactions was not large enough so as to have an

impact on a macroeconomic aggregate – such as GDP – which is measured in value terms. The result is the same when comparing these transactions to the overall financial system. Yet, this constitutes further tangible proof of the inclusion power of BP, for if many new firms had been created locally thanks to BP (as tested econometrically) while the value aggregate (GDP) remained largely unaffected, this in turn means that the newly created economic activities have mostly involved the less well-off segments of the population – low-income households and micro enterprises. The positive macroeconomic local impact of BP is to be found at the extensive rather than at the intensive margin.[11] Thus confirming BP was an important factor of integration for those segments of the population – mostly rural or living in small cities – at a time of stronger concentration of economic activities in large centres due to economic development and greater trade openness. More concentration also calls for more integration in order to prevent the periphery from becoming a de-stabilizing factor and jeopardizing the sustainability of economic development (World Bank WDR 2008).

Ultimately the treatment did attract other bank agencies, but only in municipalities already with bank agencies in 2001. Treated municipalities, with at least one bank agency in 2001, had more than three times as many bank agencies as non-treated municipalities with the same level of financial access through bank agencies.

4.3. Trade facilitation for all: testing the impact of the post in delivering access to export markets for first-time exporters

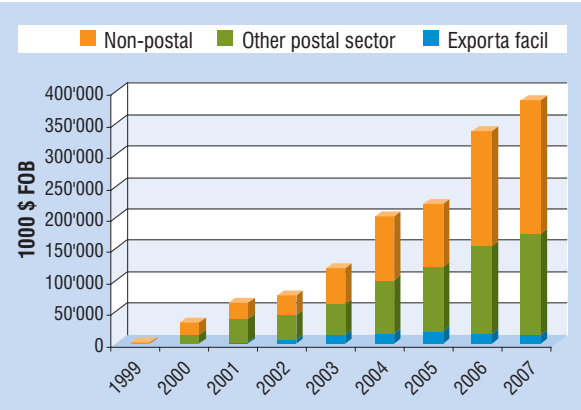
After demonstrating the impacts of providing access to finance through a postal network, the extent to which the Brazilian postal sector was equally successful for easing access to export markets to those formerly "excluded" firms from the international trading system was examined.

4.3.1. Evolution of DSE exports

How have low-valued exports evolved since the introduction of simplified export procedures (DSE) in 1999?

Figure 4 illustrates three important and revealing trends. The first trend, illustrates the clear upward evolution of the value of low-valued exports through DSE to $387 million in 2007. A particularly large

Figure 4. Evolution of DSE exported value



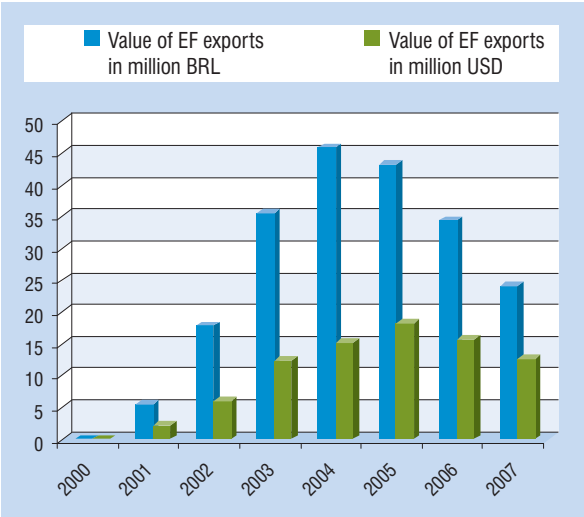
Source: Authors' compilation; data from MDIC / MC / Correios.

increase was noticed between 2005 and 2006, which can be explained in part by the increase in the maximum exportable value from $10,000 to $20,000 taking place at that time. The second trend concerning total DSE exports include postal exports carried out by what the Brazilian Ministry of Communications defines as the postal sector – the historical operator Correios, but also eight other express carriers, including the usual global players. Exports through the postal sector had continuously grown, encompassing about one half of total DSE exports. This leads to the conclusion that the postal sector as a whole has an important role to play in the delivery of low-valued exports. The third trend revealed by this graph concerns the evolution of Exporta Fácil exports: they represented a relatively small share of the total small export market and their importance, both in absolute and in relative terms, was decreasing in 2006 and 2007.

4.3.2. Evolution of Exporta Fácil

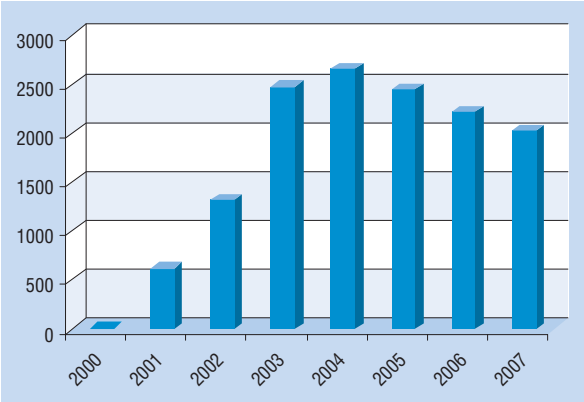
Figures 5 to 7 illustrate the evolution of, Exporta Fácil exported values, the number of exporters having used Exporta Fácil, and the number of objects sent through Exporta Fácil, respectively. All three measures followed the same trend: a rapid increase in the years following Exporta Fácil's launch in late 2000, followed by a clear peak around 2004 after which usage declined. Three explanations can be provided. One is not specific to the programme but attributable to Correios' general performance in the outgoing international shipment of packages. Advertising for these services was unexpectedly temporarily interrupted between 2005 and 2007 (more recent provisional figures show renewed growth). The reason for this interruption is that it coincided with a review

Figure 5. EF exported values



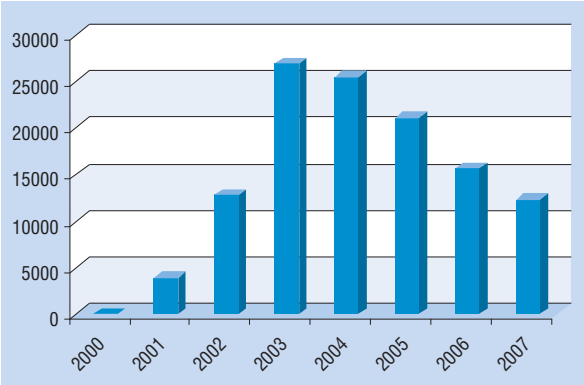
Source: Correios (ECT).

Figure 6. EF number of exporters



Source: Correios (ECT).

Figure 7. EF number of objects



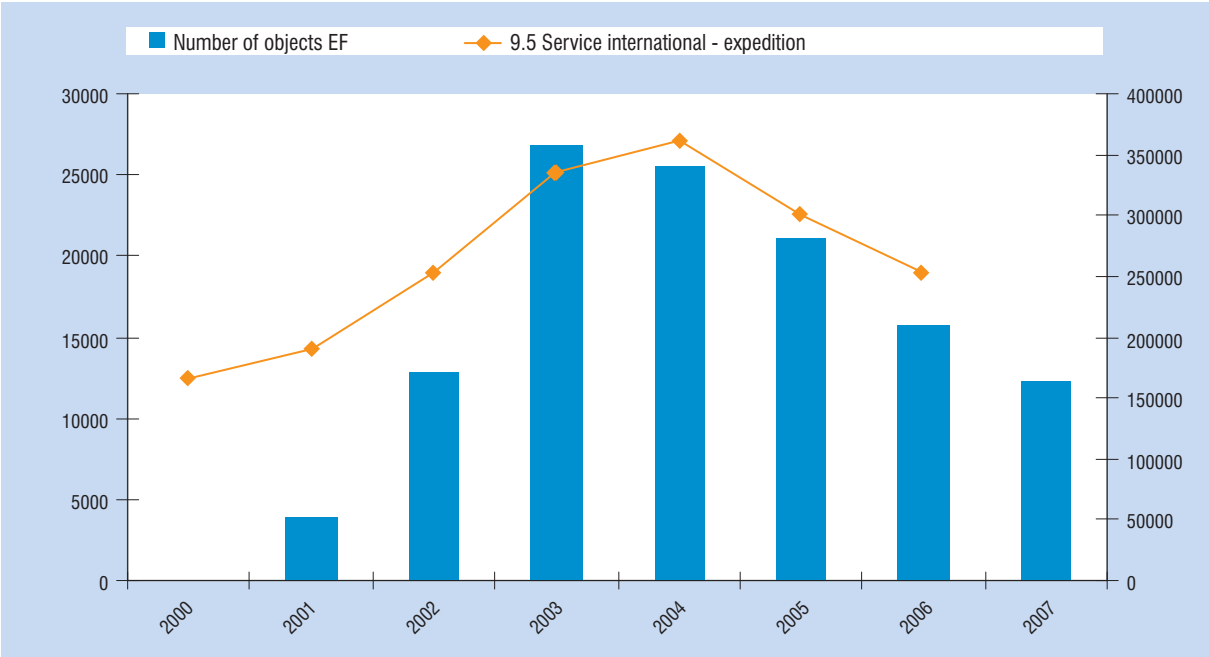
Source: Correios (ECT).

of the public procurement process at Correios. As figure 8 illustrates, Exporta Fácil followed the same declining trend as the rest of Correios' international shipments. This trend reveals a marketing structural problem, especially when it is confronted to the general growth of Brazilian exporting activity during the same period. Furthermore, Correios was handling an ever-increasing number of incoming international packages showing that the reliability of its services was not a concern. The second explanation is related more to the implementation of the Exporta Fácil programme itself. Correios underestimated the fact that repeat exports were not the rule but the exception in international trade (Besedes and Prusa (2004), or Braidford et al. 2003). It did not sufficiently renew its customer base in terms of new small exporters holding the belief that repeat purchases would be as high as for other products or services delivered through the postal network. Maintaining and growing this customer base would have required greater effort and coordination with local chambers of commerce and small firm organisations. It is interesting to note that other Latin American countries replicating Exporta Fácil through an IIRSA programme– such as the Post in Peru – learned from Correios experience and have made efforts to secure a constant inflow of new exporters. The third explanation is related to competition exerted by foreign couriers and express companies, which were also allowed to access DSE. These operators have offered end-to-end integrated services from the originating to the destination country for several decades, while historical postal operators have only recently started to develop greater interconnectivity and integration of their services – making international postal regulations more flexible in terms of parcel sizes and weights, or adding reliable international track-and-trace options for their customers.

4.3.3. Econometric analysis: the determinants of low-value exports

The data allows for further investigation into what drives exporting activity at the municipality level, by econometric methods. It is thus possible to estimate the impact of socio-economic and demographic variables on exported value and number of exporters for RE, DSE, and Exporta Fácil exports.

Figure 8. Exporta Fácil vs. all Correios international shipments



Source: Correios (ECT).

Table 4 displays the estimated effect of the different explanatory variables, by export channel, on the number of exporters and exported value, respectively. To make interpretation easier, only the sign (positive = "+", negative = "-") of the effect is displayed here for statistically significant coefficients. A lack of statistical significance for the variable coefficient is reported with "0". It is to be noted that all explanatory variables are not used at the same time in the econometric estimation due to multi co- linearity problems. The full coefficients as well as more detailed technical considerations can be found in Anson and Caron (2008).

The first test conducted relates to geographic inclusion. All other effects being controlled for, both transport cost to São Paulo and transport cost to nearest capital either negatively affected or did not affect low-valued (DSE and Exporta Fácil) exports. Hence, neither DSE (which was expected) nor Exporta Fácil (which was not expected) had promoted geographical inclusion. It is interesting, then, to analyse which variables affect their usage, and if there are some explaining DSE exports but not RE exports.

The following factors seem to consistently explain all types of exporting activity in a municipality: share of industrial sector (positively); labour participation rate (positively); and education level – as defined by the median number of years of schooling, (positively). This gives an insight into the necessary prerequisites for exporting activity in a municipality – it has to be industrialized, educated and with a high labour participation rate (likely to increase access to a variety of production factors). The total number of firms in a municipality explains positively the number of exporters but not the exported value (for both the DSE and the RE).

More interestingly, some factors influence low-valued exports (DSE including Exporta Fácil) differently than normal ones (RE). As can be seen, population (in log form) affected positively DSE and Exporta Fácil exports, but not RE exports, whereas the log of GDP affected RE exports and the number of DSE exporters, but not its value and not Exporta Fácil exports. This implies that low-valued exports (particularly Exporta Fácil) depend more on population and less on wealth than regular exports. Moreover, it appears that the share of the services (tertiary) sector explains positively DSE exports, meaning that low-valued exports were more intensely used in service-oriented cities. Finally, it looks as if the average size of firms (in employees) affected negatively the value of DSE exports. These two last results taken together appear to indicate that cities with a concentration of small firms where the service sector plays a larger role will generate a higher usage of DSE and Exporta Fácil exports.

The results demonstrate that most municipality-level characteristics explaining Exporta Fácil usage are not much different from those explaining overall DSE exports. However, three variables, (log GDP, the share of the service sector, and the number of firms) exerting a positive influence on the total number of DSE exporters had no significant effect on Exporta Fácil exports. These variables together represent a proxy for the level of wealth and economic structure of a municipality. This is important in the sense that it tends to prove that, (geographical location controlled for) Exporta Fácil exports were less affected by wealth, access to numerous services, and the number of existing firms than other DSE exports. This may well be indicative of the real inclusion value of Exporta Fácil – answering the needs and facilitating trade to small exporters irrespective of their municipality's income level, access to services or existence of a rich industrial structure. If trade is to alleviate poverty, then Exporta Fácil programmes seem to be needed by such communities (relatively poor, with few firms, and little access to services).

Trade creation? A panel analysis

A crucial element in the analysis of the impact of these trade facilitation policies is the question of actual trade creation: has Brazil exported more because of the availability of simplified export procedures? The fundamental question follows: how much of these exports would have happened anyways? Otherwise said: are DSE-oriented services just used as substitutes to other exporting means, or are they fostering new trade flows? This question cannot be answered by a simple look at DSE exported values, as firm-level data on DSE exporters is not disposed of. Therefore, analysis requires econometric estimation techniques.

The DSE policy was implemented in 1999 and, in theory, made immediately available to everyone everywhere. This means that there is no source of variation in availability across municipalities which could be used to directly identify its effect on trade creation through treatment effects models (unlike in the case of access to finance presented above).

Table 4. Tobit regression of number of exporters and exported value, per type of export - sign of effect

2005 estimates	RE		DSE		Exporta Facil	
	# Exporters	Value	# Exporters	Value	# Exporters	Value
Population	0	0	0	-	-	0
Log population	0	0	+	+	+	+
Share of rural population (2000 est.)	0	+	0	0	0	0
GDP	0	0	-	0	0	0
Log GDP	+	+	+	0	0	0
Gini Inequality coefficient (2000 est.)	-	0	0	0	0	0
Share of services sector	0	0	+	+	0	0
Share of Industrial sector	+	+	0	+	+	+
Transport cost to closest capital	0	0	-	0	-	0
Transport cost to Sao Paulo	0	0	0	0	-	0
In large metro area (dummy)	+	0	0	0	0	0
Labor participation rate (2000 est.)	+	+	+	+	+	0
Number of bank agencies	-	0	-	+	0	0
Median no of years of schooling	+	+	+	0	0	+
No of firms (unidades)	+	0	+	0	0	0
Average size of firms (in employees)	0	0	0	-	0	0
Constant	-	-		-	-	-
No. of uncensored observations	**1 714**	**...**	**459**	**...**	**302**	**...**

Note: Signs are reported if effect was found to be statisticaly significant at the 5% level.

Not having any possible source of variation in access to DSE, variation across usage of DSE in time within municipalities has been used. The problem is formulated in the following terms: over time, all other things being held constant, do municipalities which export more through DSE export more in total? This can be tested both in terms of exported value and in terms of number of exporters. The inherent logic assumes that there is an unobservable element (such as historical exporting activity, cultural impact, etc.) in each municipality which is correlated with the amount of exporting activity that does not change over time and that can as such be eliminated by running a fixed effect model (within municipality estimation). Such an econometric model is appropriate for this analysis as it allows for a municipality specific constant, which will capture all time-constant (unobserved) characteristics.

To identify possible substitution between RE exports and DSE exports, the number of RE exporters is regressed (that have not used the DSE) on the number of DSE exporters (that have not used the RE), controlling for exporters who exported through both systems (DSE/RE). If this coefficient is not significantly different than zero, then no evidence of substitution would have been found, as it could not be ascertained that a new DSE exporter explains the loss of an RE exporter.

Other possible export determinants are controlled for, but only those that have yearly values can be used (therefore less control variables are used than those used in the cross-section analysis of the previous section). Additionally the possibilities of time-specific effects have been accounted for by adding yearly dummies, which might capture nation-wide variations in exporting activity (due to changes in exchange rate, for example).

Two types of specifications are presented in appendix 2, which give comparable estimates. The conclusions are robust to both specifications: the number of DSE-only exporters does not significantly affect the number of RE-only exporters in a municipality (see p-values displayed under the coefficients). Therefore, there is no evidence that a new DSE exporter comes at the expense of an RE exporter. Moreover, it was found that that the instant substitution effect taking place immediately after the introduction of DSE legislature in 1999 was much higher than in following years (third column of results table A.6 in appendix 2).

These estimates imply that, out of a total of 20,160 exporters in Brazil during 2005, an estimated 4,915 exporters or 24 per cent of the total number of exporters would otherwise not have exported without access to the DSE programme. The Exporta Fácil programme provided by the historical postal operator enabled 2,451 exporters – the smallest relative to others – to access export markets, out of which 2,084 or 10 per cent of the total number of exporters used DSE as their exclusive export channel and would otherwise not have exported. In summary, the Exporta Fácil programme was responsible for having included in the trading system the bottom 10 per cent of exporters in terms of size in Brazil, providing a unique opportunity for relatively poorer entrepreneurs to export for the first time.

5. CONCLUSION

This chapter has revealed that an improved access to basic finance and trade services is necessary not only to facilitate trade, but also to balance the concentration of economic activities with a greater integration in the economic and trading systems of previously excluded players. The latter are often located in the geographic periphery, are small firms or people from less well-off segments of the population. Exclusion from basic services in Brazil as of the early twenty-first century translated into geographical exclusion with rural and peri-urban municipalities without a bank branch or with large distances to the next, a geographic concentration of service providers in large urban centres, or communities without a single exporter. In turn, inequalities and the weight of the informal sector could not be easily reduced in these initial circumstances. This chapter has thus examined whether the extensive and pro-active use of the Brazilian postal network has changed this initial state and enabled: i) small firms which would have otherwise not exported to export; ii) poor individuals which would have otherwise not saved to save; iii) micro enterprises which would have otherwise not borrowed to borrow; and iv) micro entrepreneurs which would have otherwise not created new businesses and jobs to create them. Throughout the chapter, the positive answers to these questions demonstrate the value of these policies toward alleviating poverty or increasing opportunities for relatively small and poor entrepreneurs. They underline the value of a harmonious development of the postal sector in Brazil

unlike in many other Latin American countries where *"laissez-faire"* policies related to postal markets have seriously damaged the potential use of the postal network as a prime channel for trade and financial inclusion.

In terms of financial inclusion, this chapter has confirmed that the Brazil postal network has been used effectively to promote access to financial services in the most deprived areas. Banco Postal is present in 4,860 of a total of 5,561 municipalities. A total of 12.4 million people living in 1,525 municipalities in which a BP agency was opened did not have any bank agency prior to that time. Moreover, in 2006, BP was present in 865 municipalities that had no bank branches or other correspondent institutions, thus acting as the sole financial intermediary for 5.98 million people.

Banco Postal agencies were evenly distributed across the country, while other financial intermediaries were mainly concentrated in the relatively wealthy and populated areas. Banco Postal, other correspondent banks and bank agencies are therefore mostly complementary networks. Although access to financial services and products is a necessary condition for development, it is by evaluating the use of those services and products that an assessment can be made on actual financial inclusion. Banco Postal appears to have attracted relatively low-income customers, with a very similar profile across the regions. Interestingly, in 2005, about one quarter of all loans and micro-credits were granted to the 20 per cent poorest municipalities, which accounted for 10 per cent of Brazil's population. The 50 per cent poorest municipalities, equal to 29 per cent of the entire population, accounted for 50 per cent of all BP deposits. The analysis suggests that the extended financial access achieved by BP's presence had a positive medium-term impact on entrepreneurship and employment in municipalities with a certain degree of financial literacy and competition in 2001 and also helped formalize the economy of municipalities without any bank branch previous to the introduction of BP. The very fact that local GDP values remained unaffected while numerous new small firms were simultaneously created signifies that the opportunities created by BP were seized by the poorest and most vulnerable segments in each municipality.

In terms of trade inclusion, the fact that Exporta Fácil is used to export a comparatively small number of comparatively low-valued exports can be seen as a justification for Exporta Fácil's very existence: if the postal incumbent's vast network is going to help provide access to export markets, it might not be, as was originally postulated, in the inclusion of geographically remote areas, but in meeting the needs of very small exporters (who export smaller values) in relatively poorer and less service oriented municipalities. Indeed, these exporters often start out by posting very low-valued objects, and the postal incumbent, as the data shows, seems to be most apt in meeting their needs. As such, it seems that the market failure which Exporta Fácil is effectively countering is that of the under provision of affordable shipment of very low valued objects. It is used by customers who will only export a few packages a year on average and are therefore less attractive to private carriers. Nonetheless, as was argued in this chapter, they are potentially crucial to the creation of new exporting activity by the poorest sectors. Having facilitated the access to trade to the sector – 10 per cent of exporters in terms of size is indeed the most remarkable success of Exporta Fácil. However, due to the low retention rates among exporters, the continuing success of the programme relies on the attraction of a new and steady inflow of small exporters. This appeared to again be the case in 2009 and 2010 after a temporary decline in the number of users in 2006 and 2007.

Access to trade and finance are closely related. In 2002, there were 1,456 municipalities that had at least a bank branch and an exporter. Three year later, after the successful implementation of financial and trade inclusion policies, 1,708 municipalities were served by a financial institution and had at least one firm exporting – an increase of 17.3 per cent of exporting municipalities with direct access to finance that has mostly benefited the poorest sectors of society.

APPENDIX 1: EVALUATING FINANCIAL INCLUSION POLICIES

Statistical tables

Interpretation

The content of tables A.1.1 to A.2.2 can be interpreted as follows: the 5,561 Brazilian municipalities were divided in 20 categories (semi-deciles), each one containing 278 municipalities (5 per cent of the total). The categories refer to the population in 2002 (table A.1.1) and in 2006 (table A.1.2), and to the GDP per capita in 2002 (table A.2.1) and in 2005 (table A.2.2).

As an example, the first semi-decile of population (first row of table A.1.1) contains the 5 per cent least populated municipalities in 2002, all having fewer than 2,442 inhabitants. The last semi-decile of the same table contains the 5 per cent of the municipalities with the highest number of inhabitants in 2002, all having more than 88,477 inhabitants. Row 10 (10th semi-decile) is the median. Fifty per cent of the municipalities had fewer than 10,417 inhabitants in 2002. The columns show the distribution of the different networks across semi-deciles: BP agencies, bank agencies and correspondents (without BP)

Tables A.3.1 and A.3.2 show services and products offered by BP according to the semi-deciles of GDP per capita of a municipality in 2005. Again, the 5,561 municipalities were divided into 20 categories (semi-deciles), each containing 5 per cent of the 5,561 municipalities. The categories refer to GDP per capita in 2005. As an example, the first semi-decile of GDP per capita (first row of table A.3.1) contained the 5 per cent poorest municipalities in 2005, all with a GDP per capita lower than 1,975.72 BRL. The last semi-decile of the same table contains the 5 per cent wealthiest municipalities, all with a GDP per capita of more than 18,296 BRL, approximately nine times as much as the lowest.

Table A.1.1. Networks by semi-deciles of population, 2002

Semi-decile population	Banco Postal agencies			Bank agencies			Correspondents			Population		
	%	cumul.	average	%	cumul.	average	%	cumul.	average	%	cumul.	average
< 2 442	1.92	1.92	0.17	0.25	0.25	0.15	0.07	0.07	0.00	0.31	0.31	1 971.66
2 442 to 3 072	2.12	4.04	0.19	0.38	0.62	0.23	0.15	0.22	0.01	0.43	0.75	2 747.43
3 072 to 3 725	2.12	6.16	0.19	0.53	1.16	0.32	0.22	0.44	0.01	0.53	1.28	3 407.03
3 725 to 4 363	2.29	8.45	0.20	0.62	1.77	0.37	0.00	0.44	0.00	0.64	1.92	4 038.57
4 363 to 5 062	3.06	11.51	0.27	0.65	2.43	0.39	0.15	0.59	0.01	0.74	2.66	4 702.73
5 062 to 5 842	3.10	14.61	0.27	0.81	3.24	0.49	0.00	0.59	0.00	0.86	3.52	5 449.94
5 842 to 6 765	2.90	17.51	0.26	0.92	4.16	0.55	0.15	0.74	0.01	0.99	4.51	6 309.19
6 765 to 7 798	4.24	21.76	0.37	1.08	5.24	0.65	0.15	0.88	0.01	1.14	5.65	7 235.33
7 798 to 9 056	3.14	24.90	0.28	1.20	6.44	0.72	0.15	1.03	0.01	1.32	6.97	8 399.84
9 056 to 10 417	4.12	29.02	0.36	1.50	7.95	0.90	0.29	1.32	0.01	1.54	8.51	9 751.03
10 417 to 12 059	4.78	33.80	0.42	1.52	9.46	0.91	0.15	1.47	0.01	1.77	10.28	11 229.23
12 059 to 13 815	5.35	39.14	0.47	1.84	11.30	1.10	0.51	1.99	0.03	2.05	12.32	12 939.59
13 815 to 15 989	4.45	43.59	0.39	2.18	13.48	1.31	0.51	2.50	0.03	2.34	14.66	14 891.41
15 989 to 18 602	5.35	48.94	0.47	2.46	15.94	1.48	0.44	2.94	0.02	2.72	17.38	17 296.74
18 602 to 21 684	5.51	54.45	0.49	2.99	18.93	1.79	1.40	4.34	0.07	3.16	20.55	20 075.62
21 684 to 26 769	5.92	60.37	0.52	3.66	22.59	2.19	1.47	5.81	0.07	3.81	24.36	24 212.31
26 769 to 33 644	6.04	66.41	0.53	4.29	26.88	2.58	1.91	7.72	0.09	4.71	29.07	29 879.24
33 644 to 48 959	6.61	73.02	0.58	5.96	32.83	3.58	4.85	12.57	0.24	6.35	35.41	40 110.79
48 959 to 88 477	7.67	80.69	0.68	8.87	41.71	5.33	10.88	23.46	0.53	10.37	45.78	65 904.87
> 88 477	19.31	100.00	1.70	58.29	100.00	34.99	76.54	100.00	3.74	54.22	100.00	344 101.50

Table A.1.2. Networks by semi-deciles of population, 2006

Semi-decile population	Banco Postal agencies			Bank agencies			Correspondents			Population		
	%	cumul.	average	%	cumul.	average	%	cumul.	average	%	cumul.	average
< 2 416	2.91	2.91	0.58	0.23	0.23	0.15	0.19	0.19	0.27	0.29	0.29	1 942.93
2 416 to 3 031	3.16	6.07	0.63	0.35	0.58	0.22	0.23	0.42	0.33	0.41	0.70	2 735.92
3 031 to 3 752	3.66	9.74	0.73	0.47	1.05	0.30	0.33	0.75	0.46	0.51	1.21	3 403.01
3 752 to 4 367	3.68	13.42	0.74	0.58	1.63	0.37	0.28	1.03	0.40	0.60	1.81	4 061.14
4 367 to 5 096	3.65	17.06	0.73	0.58	2.22	0.37	0.37	1.40	0.52	0.70	2.51	4 702.17
5 096 to 5 890	4.22	21.29	0.85	0.97	3.19	0.62	0.55	1.95	0.78	0.81	3.32	5 471.71
5 890 to 6 794	4.08	25.36	0.82	0.89	4.08	0.56	0.62	2.57	0.87	0.95	4.27	6 369.80
6 794 to 7 937	4.24	29.60	0.85	1.19	5.27	0.76	0.63	3.19	0.89	1.09	5.36	7 322.66
7 937 to 9 237	4.44	34.04	0.89	1.38	6.65	0.88	0.95	4.14	1.35	1.27	6.64	8 561.76
9 237 to 10 690	4.60	38.64	0.92	1.54	8.19	0.98	1.03	5.17	1.45	1.48	8.12	9 936.30
10 690 to 12 463	4.80	43.43	0.96	1.57	9.76	1.00	1.18	6.35	1.68	1.72	9.83	11 519.18
12 463 to 14 294	4.81	48.25	0.96	1.83	11.59	1.17	1.45	7.80	2.05	1.99	11.82	13 380.74
14 294 to 16 672	4.87	53.12	0.97	2.31	13.91	1.47	1.69	9.48	2.39	2.30	14.12	15 422.97
16 672 to 19 279	4.90	58.02	0.98	2.41	16.32	1.54	1.96	11.45	2.78	2.68	16.80	17 991.08
19 279 to 22 815	4.96	62.98	0.99	3.10	19.42	1.97	2.58	14.03	3.66	3.12	19.92	20 940.03
22 815 to 28 164	4.96	67.94	0.99	3.58	23.00	2.28	3.04	17.07	4.31	3.77	23.69	25 349.42
28 164 to 35 612	5.05	72.98	1.01	4.48	27.48	2.85	4.19	21.27	5.95	4.70	28.39	31 562.55
35 612 to 52 082	4.96	77.94	0.99	5.67	33.15	3.60	5.67	26.93	8.03	6.35	34.74	42 639.92
52 082 to 96 515	5.42	83.37	1.09	8.62	41.77	5.48	11.13	38.07	15.78	10.49	45.23	70 452.58
> 96 515	16.63	100.00	3.33	58.23	100.00	37.04	61.93	100.00	87.79	54.79	100.00	367 978.00

Table A.2.1. Networks by semi-deciles of GDP per capita (current values, BRL), year 2002

Semi-decile GDP p.c	Banco Postal agencies			Bank agencies			Correspondents			Population		
	%	cumul.	average	%	cumul.	average	%	cumul.	average	%	cumul.	average
< 1 405.38	4.21	4.21	0.37	0.42	0.42	0.25	0.00	0.00	0.00	2.28	2.28	14 517.2
1 405.38 to 1 603.11	3.84	8.04	0.34	0.59	1.01	0.35	0.00	0.00	0.00	2.57	4.85	16 253.0
1 603.11 to 1 764.94	4.21	12.25	0.37	0.81	1.82	0.49	0.00	0.00	0.00	2.59	7.44	16 411.7
1 764.94 to 1 950.89	4.53	16.78	0.40	0.95	2.77	0.57	0.37	0.37	0.02	2.80	10.24	17 846.1
1 950.89 to 2 147.21	5.72	22.50	0.50	1.15	3.92	0.69	0.51	0.88	0.03	2.80	13.04	17 685.2
2 147.21 to 2 362.36	4.49	26.99	0.40	1.19	5.11	0.72	0.88	1.76	0.04	2.65	15.69	16 867.3
2 362.36 to 2 681.4	4.08	31.07	0.36	1.51	6.62	0.90	1.03	2.79	0.05	2.82	18.51	17 829.4
2 681.4 to 3 096.2	4.98	36.06	0.44	1.95	8.58	1.17	2.87	5.66	0.14	3.63	22.13	23 005.3
3 096.2 to 3 560.51	4.00	40.06	0.35	1.79	10.36	1.08	1.84	7.50	0.09	2.81	24.95	17 906.4
3 560.51 to 4 024.535	4.29	44.34	0.38	2.18	12.54	1.31	3.01	10.51	0.15	3.29	28.24	20 870.1
4 024.535 to 4 479.83	4.25	48.59	0.38	2.63	15.17	1.58	2.21	12.72	0.11	3.32	31.56	21 145.3
4 479.83 to 4 940.06	4.33	52.92	0.38	3.18	18.35	1.91	4.19	16.91	0.21	4.15	35.71	26 351.2
4 940.06 to 5 426.75	4.70	57.62	0.41	3.27	21.62	1.95	3.01	19.93	0.15	3.64	39.35	23 033.4
5 426.75 to 5 951.28	4.65	62.27	0.41	4.50	26.11	2.70	4.85	24.78	0.24	5.09	44.44	32 282.9
5 951.28 to 6 519.49	5.80	68.07	0.51	7.15	33.27	4.31	7.79	32.57	0.38	7.43	51.87	47 183.2
6 519.49 to 7 254.7	4.25	72.32	0.37	5.08	38.35	3.05	3.90	36.47	0.19	4.30	56.17	27 266.6
7 254.7 to 8 285.03	4.45	76.77	0.39	5.60	43.95	3.36	4.71	41.18	0.23	4.60	60.76	29 168.7
8 285.03 to 9 741.27	6.61	83.38	0.58	11.36	55.31	6.79	15.96	57.13	0.78	8.33	69.10	52 851.7
9 741.27 to 13 244	6.49	89.87	0.57	13.56	68.87	8.14	15.96	73.09	0.78	11.11	80.21	70 456.3
> 13 244	10.13	100.00	0.90	31.13	100.00	18.75	26.91	100.00	1.32	19.79	100.00	12 6087

Table A.2.2. Networks by semi-deciles of GDP per capita (current values, BRL), year 2002

Semi-decile GDP p.c	Banco Postal agencies			Bank agencies			Correspondents			Population		
	%	cumul.	average	%	cumul.	average	%	cumul.	average	%	cumul.	average
< 1975	3.91	3.91	0.77	0.48	0.48	0.30	0.75	0.75	0.43	2.49	2.49	16 514.35
1 975 to 2 236	4.10	8.01	0.80	0.67	1.15	0.42	0.87	1.62	0.50	2.55	5.05	16 887.00
2 236 to 2 457	4.37	12.38	0.86	0.82	1.97	0.51	1.48	3.10	0.84	2.46	7.51	16 345.16
2 457 to 2 686	4.34	16.72	0.85	1.00	2.98	0.62	1.84	4.94	1.05	2.63	10.14	17 415.01
2 686 to 2 948	4.56	21.28	0.89	1.17	4.14	0.72	1.71	6.64	0.97	2.56	12.70	16 889.37
2 948 to 3 266	4.39	25.67	0.86	1.38	5.52	0.86	2.01	8.66	1.15	2.74	15.43	18 179.09
3 266 to 3 782	4.56	30.22	0.89	1.67	7.20	1.03	2.43	11.09	1.38	3.23	18.67	21 336.04
3 782 to 4 413	4.41	34.63	0.87	1.79	8.98	1.11	2.30 .	13.39	1.31	2.93	21.60	19 483.46
4 413 to 5 035	4.63	39.26	0.91	2.05	11.04	1.27	2.82	16.21	1.60	3.29	24.89	21 802.13
5 035 to 5 657	4.28	43.54	0.84	2.26	13.29	1.40	3.02	19.23	1.72	3.76	28.66	24 902.54
5 657 to 6 267	4.54	48.08	0.89	2.83	16.12	1.75	2.97	22.20	1.69	3.61	32.27	23 924.69
6 267 to 6 846	4.94	53.02	0.96	3.62	19.74	2.24	4.29	26.49	2.43	4.45	36.72	29 357.72
6 846 to 7 480	4.48	57.51	0.88	3.22	22.96	2.00	2.68	29.17	1.53	3.18	39.90	21 033.30
7 480 to 8 139	4.76	62.26	0.93	4.60	27.56	2.85	5.16	34.33	2.94	4.73	44.63	31 334.12
8 139 to 8 872	5.44	67.70	1.06	5.73	33.29	3.55	5.75	40.08	3.27	5.76	50.39	37 961.33
8 872 to 9 889	5.35	73.05	1.05	5.86	39.15	3.63	6.90	46.98	3.93	5.49	55.88	36 464.21
98 89 to 11 249	5.47	78.52	1.08	7.25	46.39	4.51	6.88	53.87	3.94	5.60	61.47	37 285.25
11 249 to 13 484	5.27	83.80	1.03	9.49	55.89	5.86	9.33	63.20	5.29	7.50	68.97	49 504.20
13 484 to 18 296	5.92	89.71	1.16	12.18	68.07	7.55	13.73	76.93	7.82	10.38	79.35	68 815.60
> 18 296	10.29	100.00	2.02	31.93	100.00	19.87	23.07	100.00	13.19	20.65	100.00	137 261.60

Table A.3.1. Banco Postal services and products by semi-deciles of GDP per capita (current values, BRL), 2005

	Population		Current deposits (#)			Savings deposits (#)			Accounts (#)			Tributes (#)		
Semi-decile GDP p.c	%	cumul.	%	cumul.	average	%	cumul.	average	%	cumul.	average	%	cumul.	average
<1 975.72	2.49	2.49	3.86	3.86	2 860.16	4.42	4.42	717.81	4.53	4.53	926.6655	2.10	2.10	1.62
1 975.72 to 2 236.23	2.55	5.05	3.92	7.78	2 899.11	4.36	8.78	708.88	4.29	8.82	876.7842	2.33	4.43	1.79
2 236.23 to 2 457.8	2.46	7.51	4.58	12.36	3 399.01	4.67	13.45	761.77	4.50	13.33	919.9424	2.66	7.09	2.05
2 457.8 to 2 686.05	2.63	10.14	4.19	16.55	3 103.75	4.82	18.27	782.28	4.26	17.59	871.2122	2.51	9.61	1.93
2 686.05 to 2 948.25	2.56	12.70	4.49	21.04	3 315.10	5.04	23.31	816.01	4.03	21.62	823.7158	1.06	10.66	0.81
2 948.25 to 3 266.09	2.74	15.43	4.58	25.62	3 400.66	5.58	28.88	909.06	4.13	25.75	844.0576	5.06	15.72	3.90
3 266.09 to 3 782.46	3.23	18.67	5.55	31.17	4 091.52	5.55	34.44	898.60	4.80	30.55	981.1223	1.42	17.14	1.09
3 782.46 to 4 413.16	2.93	21.60	4.90	36.07	3 640.27	5.20	39.63	847.15	4.08	34.63	833.5396	30.15	47.28	23.25
4 413.16 to 5 035.39	3.29	24.89	5.07	41.14	3 753.36	5.70	45.33	926.22	4.29	38.91	875.7878	0.24	47.52	0.18
5 035.39 to 5 657.74	3.76	28.66	4.78	45.92	3 539.01	4.58	49.91	743.81	3.89	42.80	794.5504	0.83	48.35	0.64
5 657.74 to 6 267.37	3.61	32.27	4.47	50.39	3 308.72	3.66	53.57'	594.17	3.45	46.25	705.1763	2.66	51.02	2.05
6 267.37 to 6 846.34	4.45	36.72	4.78	55.17	3 526.43	4.17	57.74	675.80	3.48	49.73	711.6151	5.18	56.20	3.97
6 846.34 to 7 480.5	3.18	39.90	4.22	59.39	3 124.63	3.68	61.42	597.68	3.50	53.24	716.036	3.45	59.65	2.65
7 480.5 to 8 139.71	4.73	44.63	4.55	63.94	3 368.68	3.77	65.19	612.41	4.30	57.54	879.3058	5.46	65.11	4.19
8 139.71 to 8 872.64	5.76	50.39	5.22	69.16	3 865.38	4.92	70.11	799.08	4.79	62.32	977.9388	5.20	70.31	4.00
8 872.64 to 9 889.17	5.49	55.88	5.65	74.81	4 179.59	4.83	74.94	785.21	5.84	68.16	1 192.9339	4.08	74.39	3.13
9 889.17 to 11 249.74	5.60	61.47	4.59	79.40	3 409.12	3.95	78.90	644.87	5.03	73.19	1 028.594	6.66	81.05	5.14
11 249.74 to 13 484.76	7.50	68.97	5.14	84.54	3 794.47	4.23	83.12	684.34	5.79	78.98	1 183.076	4.15	85.20	3.18
13 484.76 to 18 296.01	10.38	79.35	5.53	90.07	4 095.35	5.26	88.38	854.49	8.33	87.31	1 701.871	4.70	89.90	3.61
> 18 296.01	20.65	100.00	9.93	100.00	7 374.00	11.62	100.00	1 894.05	12.69	100.00	2 602.924	10.10	100.00	7.79

Table A.3.2. Banco Postal services and products by semi-deciles of GDP per capita (current values, BRL), year 2005

Semi-decile GDP p.c	Population		Social security payments (#)			Social security paymentss (BRL)			Domestic remittances (#)			Nodomestic remittances (#)			Microcredits (#)			E-loans (#)			Loans (#)		
	%	cumul.	%	cumul.	average	%	cumul.	average	%	cumul.	average	%	cumul.	average	%	cumul.	average	%	cumul.	average	%	cumul.	average
< 1975.72	2.49	2.49	4.46	4.46	691.946	4.07	4.07	201 988	0.82	0.82	11.60	0.00	0.00	0.00	3.94	3.94	15.73	4.34	4.34	17.51	6.93	6.93	153.55
1 975.72 to 2 236.23	2.55	5.05	3.11	7.57	482.626	2.83	6.90	140 214	1.26	2.07	17.87	0.00	0.00	0.00	4.01	7.94	16.01	4.14	8.48	16.71	5.72	12.65	126.65
2 236.23 to 2 457.8	2.46	7.51	3.31	10.88	515.509	3.07	9.97	152 841	1.34	3.41	19.08	0.00	0.00	0.00	7.38	15.32	29.60	3.98	1Z46	16.12	6.62	19.27	147.05
2. 457.8 to 2 686.05	2.63	10.14	3.62	14.50	561.032	3.37	13.34	167 231	1.62	5.03	23.07	0.02	0.02	0.00	4.30	19.62	17.17	4.81	17.26	19.40	6.15	25.42	136.12
2 686.05 to 2 948.25	2.56	12.70	3.56	18.05	549.756	3.27	16.61	161 586	2.18	7.21	30.85	0.10	0.12	0.01	4.14	23.76	16.47	4.28	21.54	17.20	6.19	31.61	136.53
2 948.25 to 3 266.09	2.74	15.43	3.41	21.46	530.783	3.18	19.78	158 021	3.76	10.97	53.68	0.02	0.15	0.00	6.09	29.84	24.40	5.63	27.17	22.82	5.89	37.50	130.90
3 266.09 to 3 782.46	3.23	18.67	4.78	26.24	738.821	4.47	24.25	220 762	6.05	17.02	85.76	0.00	0.15	0.00	5.28	35.12	21.01	5.96	33.13	23.96	5.91	43.41	130.41
3 782.46 to 4 413.16	2.93	21.60	4.17	30.41	648.921	3.95	28.20	196 798	2.80	19.82	39.90	0.27	0.41	0.04	5.05	40.17	20.25	7.17	40.30	29.05	4.77	48.17	105.92
4 413.16 to 5 035.39	3.29	24.89	4.65	35.06	721.975	4.51	32.71	223 666	2.51	22.33	35.69	0.24	0.66	0.04	5.09	45.26	20.33	7.49	47.78	30.22	5.87	54.04	130.01
5 035.39 to 5 657.74	3.76	28.66	4.84	39.90	750.115	4.77	37.48	236 801	2.65	24.98	37.66	1.19	1.84	0.18	5.71	50.97	22.82	6.24	54.03	25.21	4.53	58.57	100.27
5 657.74 to 6 267.37	3.61	32.27	4.66	44.56	723.46	4.58	42.06	227 227	3.27	28.24	46.48	1.46	3.30	0.22	4.79	55.76	19.13	5.16	59.18	20.81	4.05	62.62	89.73
6 267.37 to 6 846.34	4.45	36.72	5.02	49.59	776.599	5.09	47.15	251 472	3.83	32.07	54.23	1.99	5.29	0.29	3.73	59.48	14.84	4.92	64.10	19.77	3.94	66.57	87.00
6 846.34 to 7 480.5	3.18	39.90	4.76	54.34	738.061	4.80	51.95	238 252	3.80	35.87	54.08	1.38	6.67	0.21	2.80	62.29	11.20	4.96	69.06	20.03	4.16	70.72	92.08
7 480.5 to 8 139.71	4.73	44.63	5.44	59.78	843.842	5.52	57.46	273 802	3.92	39.80	55.77	4.42	11.09	0.65	4.46	66.75	17.83	4.77	73.83	19.25	4.30	75.03	95.30
8 139.71 to 8 872.64	5.76	50.39	5.20	64.98	806.482	5.22	62.68	258 823	5.85	45.65	83.22	6.21	17.31	0.92	5.58	72.33	22.29	4.14	77.97	16.73	4.29	79.31	94.90
8 872.64 to 9 889.17	5.49	55.88	8.51	73.49	1320.4	8.55	71.24	423 541	5.13	50.77	72.92	3.18	20.49	0.47	4.97	77.30	19.86	4.48	82.46	18.10	4.66	83.97	103.10
9 889.17 to 11 249.74	5.60	61.47	6.24	79.73	971.329	6.63	77.86	330 131	4.63	55.40	66.08	8.96	29.44	1.33	4.59	81.88	18.39	3.82	86.28	15.48	3.80	87.77	84.44
11 249.74 to 13 484.76	7.50	68.97	7.78	87.51	1 202.61	8.34	86.20	411 420	5.91	61.32	83.81	8.40	37.84	1.24	5.35	87.24	21.32	4.36	90.64	17.54	3.45	91.22	76.16
13 484.76 to 18 296.01	10.38	79.35	6.98	94.49	1 082.15	7.76	93.95	384 254	7.15	68.47	101.73	12.14	49.98	1.80	6.64	93.87	26.51	4.44	95.08	17.93	449	95.71	99.42
> 18 296.01	20.65	100.00	5.51	100.00	858.664	6.05	100.00	301 153	31.53	100.00	449.95	50.02	100.00	7.44	6.13	100.00	24.57	4.92	100.00	19.94	4.29	100.00	95.33

Tables A.4 to A.4.3. Causal effects of Banco Postal on local development outcome

Table A.4. ATT for the whole sample

Outcome variable	Treated (i)	Controls (ii)	Diff. (iii)	S.E.	T-stat
Number of new firms	201.041	1 63.357	37.683	17.467	(2.16)[b]
Growth of average firms' employees	0.665	0.184	0.480	0.319	(1.5)[a]
New employees	1 381.21	1 209.49	171.72	133.04	(1.29)[a]
Growth in share salaried	0.026	0.015	0.011	0.005	(2.06[b]
Number of new bank agencies	0.138	0.088	0.050	0.029	(1.73)[b]
Number of new correspondents	2.919	2.608	0.311	0.260	1.190
Growth of real GDP (2005)	0.034	0.038	-0.004	0.005	-0.780

Table A.4.1 ATT for only the those municipality unbanked in 2001

Outcome variable	Treated (i)	Controls (ii)	Diff. (iii)	S.E.	T-stat
Number of new firms	26.830	27.338	-0.509	1.913	-0.270
Growth of average firms' employees	1.213	0.490	0.723	0.809	0.890
New employees	263.75	186.27	77.48	86.17	0.90
Growth in share salaried	0.038	0.019	0.019	0.011	(1.76)[b]
Number of new bank agencies	0.135	0.270	-0.135	0.026	(-5.19) [c]
Number of new correspondents	0.370	0.438	-0.068	0.049	(-1.39)[a]
Growth of real GDP (2005)	0.045	0.045	-0.001	0.008	-0.070

Table A.4.2 An for municipality with 1 to 5 banks in 2001

Outcome variable	Treated (i)	Controls (ii)	Diff. (iii)	S.E.	T-stat
Number of new firms	136.477	127.420	9.057	8.452	1.070
Growth of average firms' employees	0.347	0.345	0.001	0.132	0.010
New employees	860.73	796.08	64.65	61.74	1.05
Growth in share salaried	0.020	0.018	0.002	0.005	0.410
Number of new bank agencies	0.051	0.011	0.040	0.025	(1.63)[a]
Number of new correspondents	1.881	1.868	0.013	0.148	0.090
Growth of real GDP (2005)	0.023	0.026	-0.003	0.007	-0.390

Table A.4.3 ATT for municipality with more than 5 banks in 2001

Outcome variable	Treated (i)	Controls (ii)	Diff. (iii)	S.E.	T-stat
Number of new firms	1 091.218	970.135	121.083	155.615	0.780
Growth of average firms' employees	0.267	0.209	0.059	0.137	0.430
New employees	8 014.35	7 127.62	886.74	1 227.55	0.72
Growth in share salaried	0.012	0.006	0.005	0.006	0.950
Number of new bank agencies	0.553	0.142	0.411	0.297	(1.39)[a]
Number of new correspondents	14.963	17.220	-2.257	2.439	-0.930
Growth of real GDP (2005)	0.047	0.034	0.013	0.013	0.950

Note: Diff. = Treated - Controls. Significance levels: "a" significant at 10%; "b" significant at 5%; "c" significant at 1%.

Tables A.5 to A.5.3. Causal effects of Banco Postal on outcome regional specification

Table A.5. ATT for the whole sample

Outcome variable	Treated (i)	Controls (ii)	Diff. (iii)	S.E.	T-stat
Number of new firms	199.758	170.527	29.231	19.158	(1.53)[a]
Growth of average firms' employees	0.664	0.358	0.306	0.324	0.940
New employees	1 341.31	1 296.51	44.80	128.72	0.35
Growth in share salaried	0.664	0.358	0.306	0.324	0.940
Number of new bank agencies	0.026	0.024	0.001	0.005	0.250
Number of new correspondents	2.684	2.494	0.190	0.235	0.810
Growth of real GDP (2005)	0.034	0.031	0.003	0.005	0.640

Table A.5.1 ATT for only the those municipality unbanked in 2001

Outcome variable	Treated (i)	Controls (ii)	Diff. (iii)	S.E.	T-stat
Number of new firms	26.886	29.345	-2.459	2.138	-1.150
Growth in average firms' employees	1.204	0.484	0.720	0.796	0.900
New employees	263.69	209.40	54.29	86.23	0.63
Growth in share salaried	0.038	0.035	0.002	0.011	0.220
Number of new bank agencies	0.136	0.248	-0.112	0.026	(-4.28)[b]
Number of new correspondents	0.371	0.337	0.034	0.046	0.730
Growth of real GDP (2005)	0.045	0.036	0.009	0.008	1.170

Table A.5.2 An for municipality with 1 to 5 banks in 2001

Outcome variable	Treated (i)	Controls (ii)	Diff. (iii)	S.E.	T-stat
Number of new firms	136.477	116.386	20.091	7.979	(2.52)[c]
Growth of average firms' employees	0.347	0.276	0.071	0.133	0.53
New employees	860.73	720.84	139.89	66.77	(2.1)[b]
Growth in share salaried	0.020	0.014	0.005	0.005	1.12
Number of new bank agencies	0.050	0.025	0.025	0.023	1.11
Number of new correspondents	1.881	2.100	-0.219	0.151	-1.45
Growth of real GDP (2005)	0.023	0.030	-0.007	0.007	-1.04

Table A.5.3 ATT for municipality with more than 5 banks in 2001

Outcome variable	Treated (i)	Controls (ii)	Diff. (iii)	S.E.	T-stat
Number of new firms	1 072.453	1 327.475	-255.022	205.140	-1.240
Growth of average firms' employees	0.243	0.055	0.188	0.133	(1.42)[a]
New employees	8 041.67	9 226.28	-1 184.61	1 599.91	-0.74
Growth in share salaried	0.010	0.011	-0.001	0.005	-0.310
Number of new bank agencies	0.453	0.569	-0.116	0.337	-0.340
Number of new correspondents	16.373	17.254	-0.881	2.714	-0.320
Growth of real GDP (2005)	0.053.	0.036	0.016	0.014	1.180

Note: 1. Diff. = Treated - Controls. 2. Significance Levels : [a]significant at 10%; [b]significant at 5%; [c]significant at 1%.

APPENDIX 2: EVALUATING TRADE INCLUSION POLICIES

Exporta Fácil and other simplified exports: panel data econometrics

First, an Arellano-Bond dynamic panel regression was run which, the authors' believe, is the strongest specification for this model: it integrated a lagged version of the dependent variable (RE only exporters), and by differentiation, controls for a potential omitted variable bias across municipalities. It also enables to control for a possible measurement error in the number of RE as representative of the total non-DSE exporters, due to informal exporting of very small shipments (see the detailed discussion in Ansón and Caron, 2008). Finally, to test the robustness of this specification, a robust fixed-effect estimate is computed.

Arellano-Bond dynamic panel data Model:

$\#$ of RE only exporters$_{it}$ $= \alpha$*REonly exporters$_{it-1}$
$+$ β*DSE only exporters$_{it}$ $+$ γ*DSE_RE exporters^{it} $+$ δ*export determinants$_{it}$ $+$ ε* time dummies $+$ error term
Index i: denotes the Brazilian municipalities with at least some RE exporting activity.
Index t: denotes the 7 years between 1999 and 2005.
Export determinants are: population, GDP, and sectoral shares.

Tables A.6. Results of the Arellano-Bond dynamic panel regression

Method	1999-2005 Arellano-Bond	1999-2005 FE Robust OLS	1999-2000 FE Robust OLS
Number of DSE only exporters	-0.16456345 0.1582	-0.11501908 0.2588	-0.57685459 0.2421
Number of DSE/RE exporters	-0.51993349[b] 0	-0.56503157 0	-0.55795517[b] 0
Lagged RE (for A-Bond)	0.24340964 0.15	...	...
GDP	-4.75E-07 0.07	-6.84E-07 0.0767	1.75E-06 0.0609
Population	0.00006715[b] 0.0086	0.00009013 0.0009	-0.00001445 0.5919
Share of services sector	0.37850448 0.3826	-0.89737784 0.1021	0.59895791 0.6746
Share of industrial sector	0.55102175 0.3049	-1.2050131 0.0318	0.78656581 0.5015
2000 dummy	...	0.18550803 0.1582	0.28739596[b] 0.0004
2001 dummy	...	0.62081448[b] 0	...
2002 dummy	0.30472384[b] 0	0.56220518[b] 0	...
2003 dummy	-0.11038443 0.2117	0.60332394[b] 0	...
2004 dummy	0.20316633 0.1206	1.1536661[b] 0	...
2005 dummy	-0.57515873[b] 0.0002	0.68907535[b] 0	...
Constant	0.33028347[b] 0	3.5285014 0.0472	8.9662712[b] 0.0001
Number of observations	**8329**	**11365**	**3031**
Number of groups	**2170**	**2289**	**1687**

Note: Significance levels : "a" significant at 5%; "b" significant at 1%.

NOTES

[1] The terms the Post, postal services, post offices, the postal network and the postal sector are equivalent in this chapter, except when otherwise indicated.

[2] http://www.febraban-star.org.br/documentos/pdfs/Banco_Postal.pdf

[3] Kumar et al.: "Expanding Bank Outreach through Retail Partnerships. World Bank Working Paper No. 85", 2006; also see Kumar (2004 and 2005).

[4] World Bank (2007)

[5] SEBRAE (2007)

[6] The legislative act is referred to as the Instrução Normativa SRF no 155, de 22 de dezembro de 1999 http://www.receita.fazenda.gov.br/Legislacao/Ins/Ant2001/1999/in15599.htm

[7] World Savings Banks Institute and European Savings Bank Group, Perspectives No. 47 (October 2004).

[8] Withdrawals refer to shelter withdrawals in BP. However, BP customers can access their savings by other means, mainly through Bradesco facilities, at ATMs, via Internet and by telephone.

[9] E-loans are loans for which a BP customer can apply via the Internet.

[10] Dummies are variables that take the value 1 if the observation corresponds to a specific region, and the value 0 if not.

[11] The extensive margin means at the « number of » level while the intensive margin means at the « value of » level.

[12] The possibility of taking into account possible measurement errors is a well-known property of the Arellano-Bond estimation method.

SERVICES OWNERSHIP AND ACCESS TO SAFE WATER: WATER NATIONALIZATION IN URUGUAY

XI

It is often argued that privatization results in the delivery of higher quality goods or services, as profit-driven firms facing stronger market competition will respond through productivity increases (Chong and Lopez de Silanes, 2005). On the other hand, critiques of privatization argue, at least in the case of natural monopolies, such as water services, this may not be observed. Due to the lack of competition in the case of natural monopolies, the regulation of privatized firms will be crucial to ensure an increase in the quality of services. In the absence of adequate regulation, quality could fall as profit-driven privatized firms attempt to extract greater profits from consumers. The objective of this chapter is to explore the impact on the quality of water after Uruguay's nationalization of water services in 2004. As a proxy for the quality of water, this study applies child mortality rates caused by water-related diseases. An interesting feature of focusing on nationalization rather than privatization is that it avoids selection bias or cherry-picking by firms or governments. Nationalization in Uruguay affected all previously privatized firms. Results suggest that the change in ownership in 2004 led to a decline of water-related child mortality, casting doubts on the benefits of the earlier privatization of water services in Uruguay.

1. INTRODUCTION

In the 1990s privatization of water services was seen by some as a potential solution to the poor performance of publicly owned water monopolies that left more than 1 billion people in developing countries without access to clean and safe water, exposed to water shortages, diseases, and trapped in poverty (Segerfledt, 2005). In the early 1990s many countries in Eastern Europe and Latin America engaged in the privatization of water services, with some Asian and African countries following suit in the mid and late 1990s (Hall et al. 2010). However, the share of public water companies is still large.[1] Moreover, over the last decade the share has increased due to the backlash that followed after large foreign multinationals, won bids for privatized water services, focused on profits rather than the quality of services. High prices, low investments and poor performance on leakage were observed in many cities that privatized their water services in the 1990s.

Uruguay is a recent example of this reversal. An amendment to the Constitution of Uruguay passed in 2004 declared water "part of the public state domain", making the private provision of water illegal.[2] This led to the nationalization of two water and sewage suppliers in the Province of Maldonado that were privatized in 1993 and 2000. The private water companies that operated in the Province of Canelones since the 1940s also came under the control of the public monopoly.

The apparent reasons for Uruguay's nationalization of water companies were no different from the ones observed in other countries including Bolivia, Argentina, and Brazil – privatization of water services did not deliver on its promises.[3] Private companies became deeply unpopular due to the low or falling quality of water they supplied, as well as the high prices they charged. A series of highly publicized episodes of low quality water provided by Uragua and Aguas de la Costa (subsidiaries of Spanish water companies Aguas de Barcelona and Aquas de Bilbao) led the Uruguay Minister of Finance to request Uragua leave the country, in the middle of a financial crisis.

It is of interest to note that two of the largest privatized water companies were foreign owned, and their nationalization consequently implied the imposition of a new barrier to trade in services (mode 3 which captures establishment by foreign companies in GATS's terminology). Thus, Uruguay's water nationalization project in 2005 fits within the broader objective of UNCTADs project of assessing the impact of trade barriers in services. Rather than looking at liberalization of trade in services, this chapter considers the impact of the imposition of new barriers to trade in services, focusing on social impacts rather than economic outcomes.

More specifically, this chapter explores whether, as expected by the proponents of nationalization of water services in Uruguay, there has been an improvement in the access to safe and clean water following the nationalization of private water providers. As a proxy for access to safe and clean water, water-related child mortality rates which are determined not only by the quality of water, but also sewage access, water tariffs, and overall rate of growth in household connections are applied. Arguably, public health issues, and child mortality in particular, associated with water ownership are more important goals than low prices or greater access.[4]

The existing literature tends to show that water privatization has ambiguous effects on child mortality rates. One study (across different world cities) found that government involvement in providing water services, especially locally, significantly reduced child mortality, but it also found that private or parastatal provision of sewage connections was associated with lower child mortality (Shi 2000). However, problems of selection bias and endogeneity were difficult to address in a cross section setup. Still another study, employing a panel setup, illustrated that in Argentinean municipalities where water services were privatized the incidence of child mortality from water-related disease declined significantly, (whereas the incidence of child mortality for other reasons remained stagnant) thus providing indirect evidence of improvements in water quality and access (Galiani, Gertler and Schargrodsky 2005). Nevertheless, it is noteworthy that the same critiques as those observed in Uruguay in the late 1990s and early 2000s were also evident in Argentina's press (high prices, highly publicized cases of water provided by private companies being unfit for human consumption, or the fact that these private companies only honoured half of their investment commitments).[5]

The case of Uruguay is interesting as, contrary to existing studies, it allows identification of the impact not through the privatization but rather the nationalization of water services. If ownership matters, the impact of reforms should be observed in both directions. This is interesting since the decision to nationalize could

be considered as exogenous to each region as it was taken for the country as a whole, and therefore is not subject to selection bias. As long as the determinants of the decision to privatize are not serially correlated it would comprise a reliable identification strategy.

The empirical methodology that was followed is similar to the one in Galiani, Gertler, and Schargrodsky (2005). Using panel data around the nationalization episode, an attempt is made to identify differences in water-related child mortality between regions that privatized their water suppliers (and later nationalized them) and those that did not, using a difference-in-difference estimator.

The results across different specifications tend to weakly suggest that after the nationalization of previously privatized water companies child mortality rates declined conditional on district and year specific fixed effects. Interestingly, the nationalization of water companies had a differential impact on water-related child mortality and non-water-related child mortality suggesting that the correlation between privatization of water companies and water-related child mortality is not spurious. Indeed, once a control for overall child mortality at the district level was set up, a positive and statistically significant impact of private water companies on child mortality was found. Moreover, this suggests that when looking at the impact of privatization of water companies on child mortality, it is crucial to observe the causes of death. In the dataset provided by the Uruguay Ministry of Public Health the precise types of infectious disease that led to deaths were identified thus allowing for disentanglement between water and non-water-related deaths. As shown in the empirical section, this appears to be very important.

To summarize, it was found that the public sector was just as competent if not more so in the running and maintaining of nationalized water companies at the beginning of the century in Uruguay. This finding is contrary to existing evidence generally showing privatization leads to lower levels of child mortality. This finding could perhaps be due to badly implemented privatization in Uruguay which was not accompanied by adequate regulations, or perhaps a public company that was more efficient in attaining public health objectives than those in other countries. Another reason for this finding may be that the time-span since the nationalization of the private water companies may not have been sufficiently long enough to observe statistically significant impacts. Still, a further reason could be that this study's calculation of water-related child mortality may be more precise than those of previous studies. Nevertheless, empirical results for the episode of water nationalization in Uruguay suggest that privatization is not the silver bullet that can lead the way toward better access to clean and safe water.

The reminder of the chapter is organized as follows. Section II describes the functioning of the water system in Uruguay. Section III provides descriptive statistics regarding child mortality in Canelones and Maldonado which are the two regions where privatized water companies operated. Section IV presents the empirical methodology. Section V presents the results. Section VI concludes.

2. THE WATER SYSTEM IN URUGUAY

At the turn of this century water and sewage services in Uruguay were provided by fifteen private companies and the publicly-owned company Obras Sanitarias del Estado (OSE). OSE had the exclusive water provision monopoly in the capital city – Montevideo and almost all of the national territory accounting for more than 90 per cent of connections. The private sector was composed of three big companies (Uragua, Aguas Corrientes El Pinar and Aguas de la Costa) and approximately twelve water providers with less than 500 connections each. These small providers were cooperatives founded by residents to provide water services in areas that OSE did not reach or reached with poor quality water.

In 2000, Uragua started to provide water and sewage services in urban and sub-urban areas of Maldonado. Maldonado had 150,000 inhabitants out of a total of 3,300,000 in Uruguay. Aragua's concession was west of the Maldonado stream with the exception of the city of Aigua. More specifically, Uragua served the capital of Maldonado (50,417 inhabitants), San Carlos (23,878), Pan de Azúcar (6,969), Piriápolis (7,579), Cerros Azules, Nueva Carrara, Pueblo Gerona, west of Rivulet Solís, Silver River, Highway 9 North. The services covered the cities of Maldonado, the international well-known Punta del Este (7,298 inhabitants)[6] and Piriápolis in the Province of Maldonado.

Uragua was owned by Aguas de Bilbao Vizcaia, Iberdorla, Kartera 1, a Spanish water provider. In 2004 Uragua was in litigation with OSE due to breach of contract. Following the 2004 amendment to the Constitution of Uruguay, Urugua reached an accord with the Government of Uruguay and had all its assets

transferred to OSE in 2005.

Aguas Corrientes El Pinar was a privately, but nationally-owned company. It was created in 1946 – six years before the creation of OSE – with the objective of fostering land sales in the El Pinar area that required connections to water and sewage services. Up until the 1990s it served less than 1,000 clients, but by the time of the nationalization it served approximately 5,000 clients due in large part to the rapid development of the area. Interestingly only 12 persons worked full time in Aguas Corrientes El Pinar. The connection fee was around $200 and the average consumption was $10.

Not only did Aguas Corrientes el Pinar provide services in El Pinar, but also in the adjacent areas of San Cristóbal, El Palmar, Médanos de Solymar, Lomas de Solymar, Autodromo, and Colinas de Solymar in the Province of Canelones. Canelones is the second largest province with 500,000 inhabitants. The population in El Pinar and Lomás de Solymar stood around 33,000. Aguas Corrientes el Pinar was nationalized in December 2006 and its assets were transferred to OSE.

The third largest private company in Uruguay was Aguas de la Costa. Ownership of the company was shared between S.T.A Ingenerios and Benecio S.A. (local companies) holding 10 per cent. The remaining 80 per cent belonged to the Spanish company Aguas de Barcelona, a subsidiary of Suez Lyonaisse des Eaux. Aguas de la Costa signed the concession in 1993 for twenty-five years and serviced the wealthier areas of La Barra, Manantiales and José Ignacio next to Punta del Este in Maldonado, to the east of Maldonado stream. The company had around 3,100 cus-

Figure 1. Map of Maldonado by judicial section

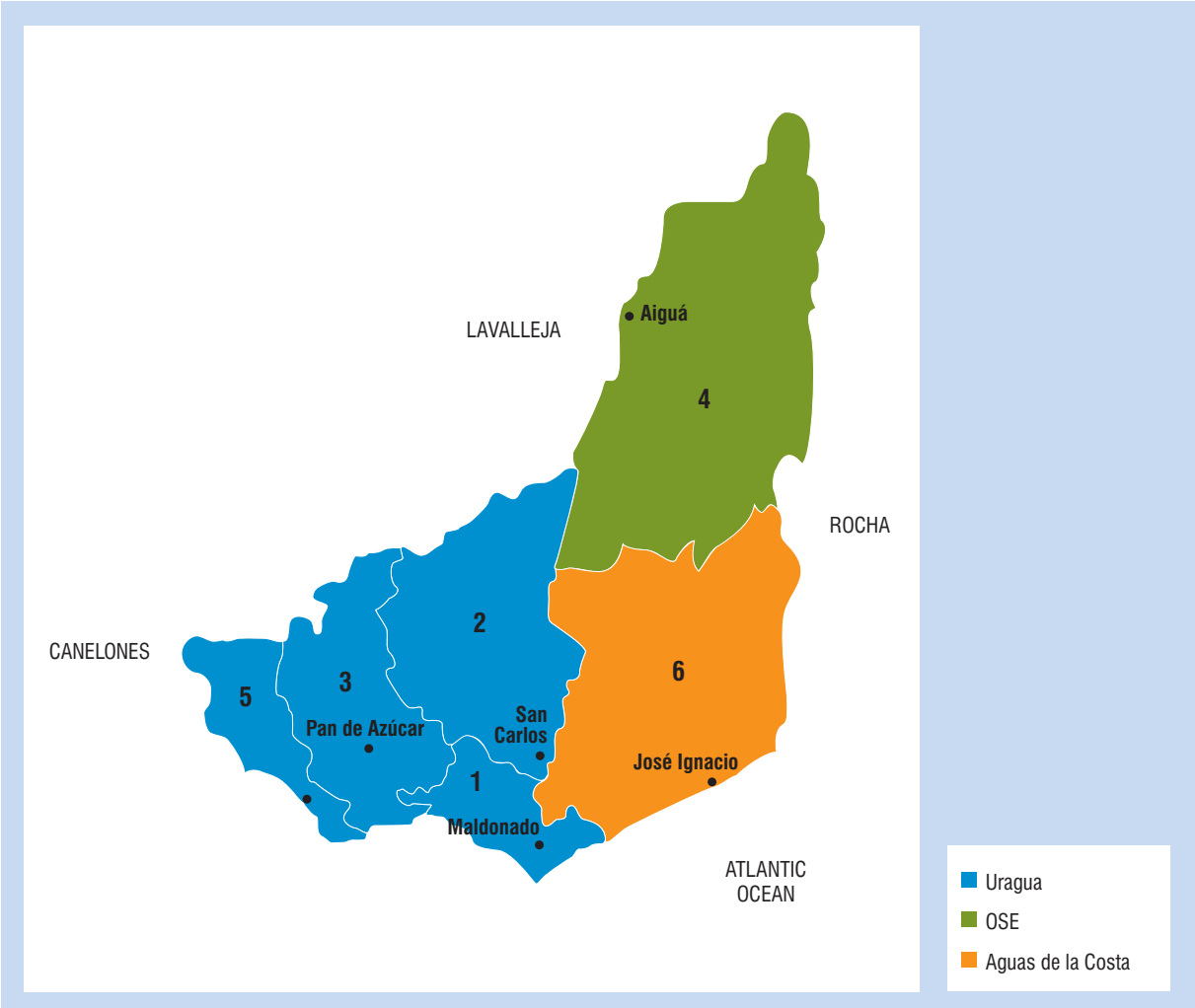
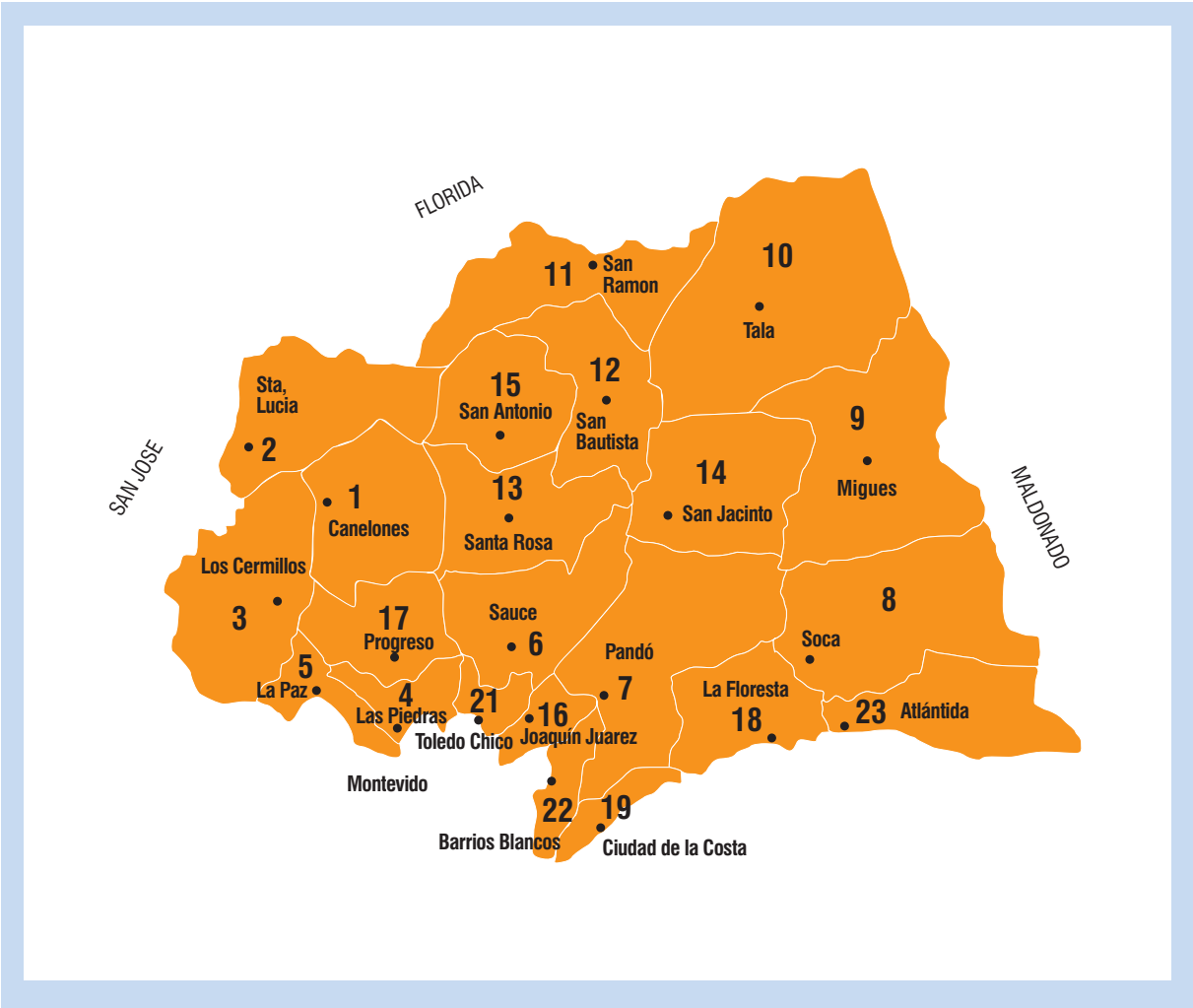


Figure 2. Map of Canelones by judicial section



tomers and the connection fee for water and sewage was $2,000 and $1,000 for water only. The company also provided a special rate for low income households. The average rate for water consumption ranged between $40 and $100 per year. After reaching agreement with the Government of Uruguay, the company left in 2005 and all its assets were transferred to OSE.

In 2000, the only city in Maldonado served by the publicly-owned OSE was Aigua with 2,676 inhabitants, while by 2006 OSE was the sole provider of water services in Maldonado.

Figures 1 and 2 provide maps of Maldonado and Canelones to better understand the location of privately-owned water companies in those two provinces. Figure 1 shows the Province of Maldonado by judicial section. Judicial sections 1, 2, 3 and 5 were served by Uragua while judicial section 6 was served by Aguas de la Costa. Judicial section 4 containing the city of Aigua was not privatized and thus served by OSE. Figure 2 shows the Province of Canelones also by judicial section. Judicial section 19 was served principally by Aguas Corrientes el Pinar. The rest of the judicial sections of Canelones were served by OSE.

3. CHILD MORTALITY IN MALDONADO AND CANELONES

The data on child mortality by judicial section and cause of death were taken from the Uruguay Ministry of Public Health (Dirección General de la Salud-Departamento de Información Poblacional-Estadísticas Vitales).

An important characteristic of Uruguay's health infrastructure tends to be concentrated in Montevideo, the capital. Children's health is no exception and the largest public children hospital (Pereira Rosell) is also located in the capital. Therefore, it is common for children in need of serious treatment from around the country to be admitted to Pereira Rosell for better care. If a child died at Pereira Rosell, public mortality statistics recorded the death as having occurred in Montevideo. In order to avoid this bias and provide a clearer picture, the Ministry of Public Health was asked for and provided the deceased child's judicial section based on the mother's residence.

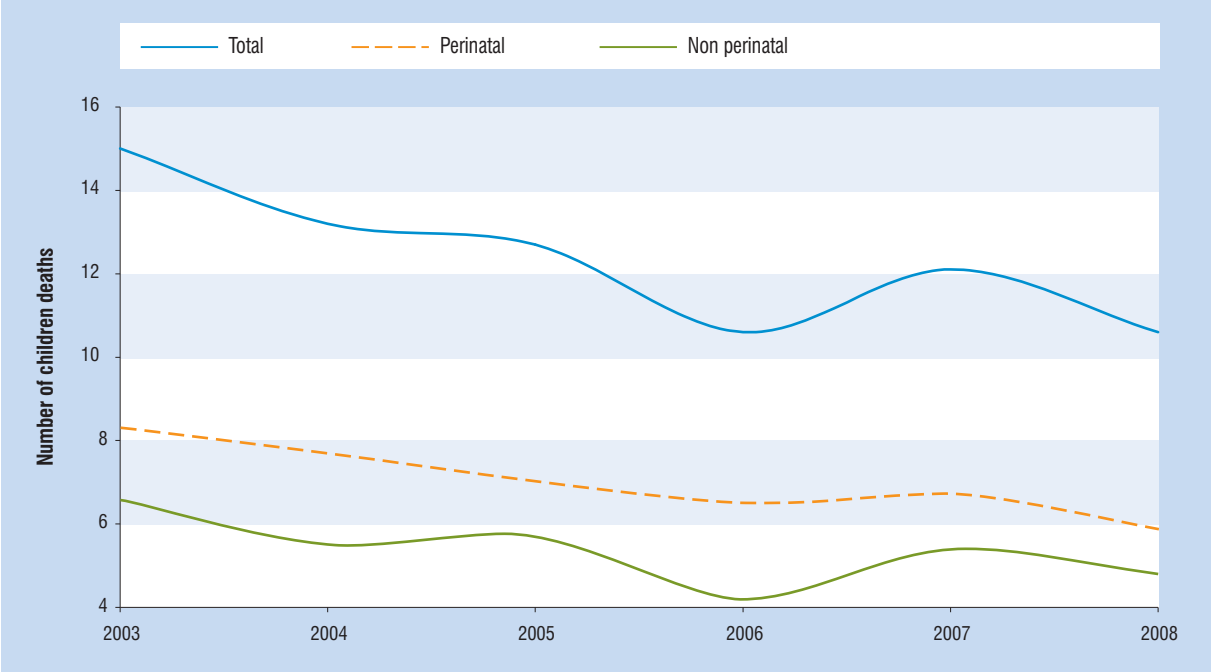
Another interesting aspect of the dataset is that it contains detailed information on the cause of death. Unlike other studies (Galiani et al 2005) that define all deaths caused by infectious and parasite diseases and perinatal death as water-related, this chapter, includes information from the official death certificates identifying exact cause of death. This allows for a more precise identification of the type of infectious disease, thus excluding child deaths caused by infectious diseases not water-related.[7] This could be done with relatively more precision in the case of non-perinatal deaths, that is, those occurring between the age of 5 weeks and 1 year. In the case of perinatal deaths, occurring within the first 4 weeks of life, identification as to the exact cause of death is often difficult.

The evolution of child mortality at the national level during the nationalization period of water companies is illustrated in figure 1. It also presents the evolution of perinatal and non-perinatal deaths. There was a downward trend in child mortality rates between 2003 and 2006, followed by a significant increase in 2007, and by a decline in 2008, which left child mortality above its trend level. It is interesting to note that during this period the average GDP growth was on average 7.0 per cent and ranged from 2.2 per cent in 2003 to 11.8 per cent in 2004, rendering the cyclical evolution of child mortality difficult to be completely explained by higher GDP growth.

Figure 1 shows aggregate child mortality figures at the national level, whereas water nationalization only affects a small number of provinces. In order to explore this heterogeneity, figures 2 and 3 illustrate the evolution of child mortality in each of the concerned provinces.

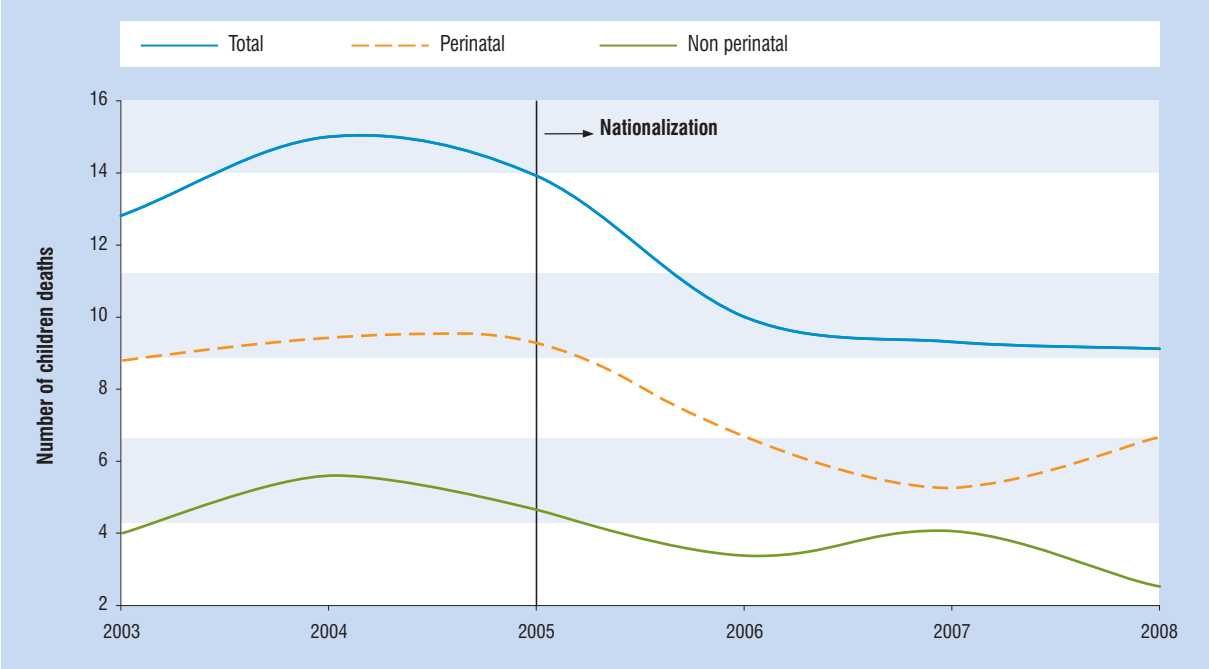
Figure 2 shows the evolution of child mortality for the Province of Maldonado. An important increase in child mortality was observed in 2004, when both perinatal mortality and non-perinatal mortality

Figure 3. Child mortality rate in Uruguay per 1,000 births



Source: Ministry of Public Health and Authors' computation.

Figure 4. Child mortality rate in Maldonado per 1,000 births



Source: Ministry of Public Health and Authors' computation.

increased substantially. Surprisingly this occurred during a period where GDP was growing fast and unemployment was falling. However, after this period and coinciding with the nationalization of water services, Maldonado experienced a downward trend in child mortality, albeit with a slight increase above trend, for non-perinatal deaths in 2007 and perinatal deaths in 2008.

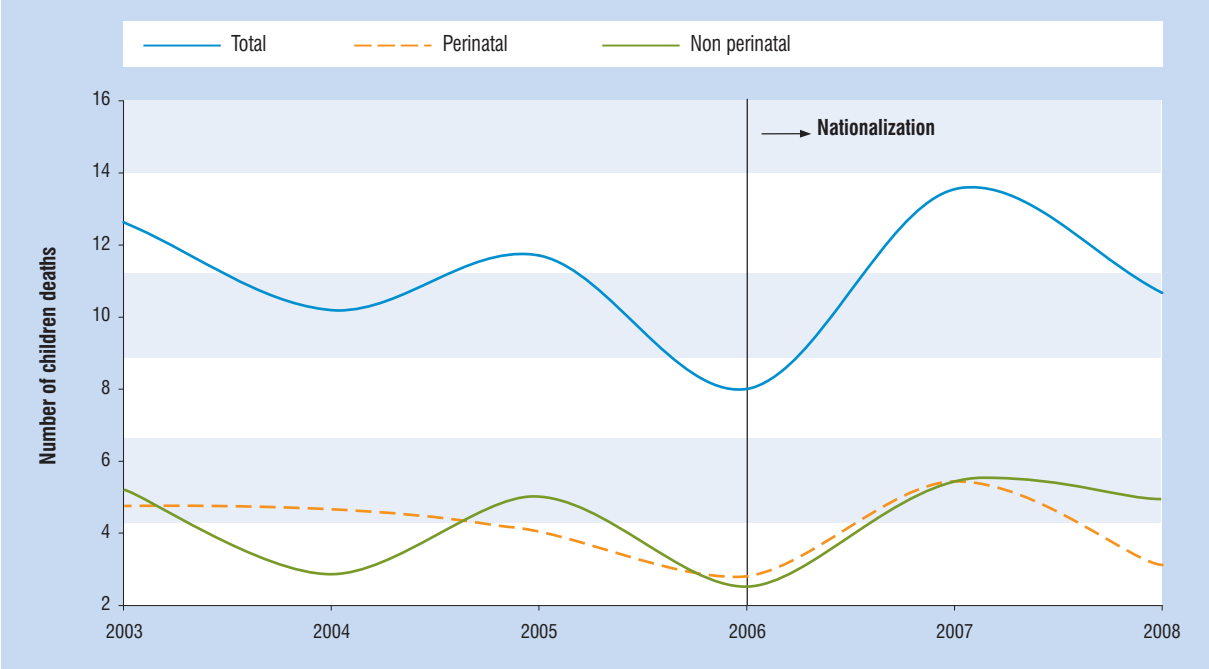
Figure 3 illustrates the evolution of child mortality in Canelones, where water companies were nationalized in 2006. Although a clear pattern is not evident, it can be inferred that Canelones followed the 2007 peak in child mortality observed at the national level, with a slight decline in 2008, but with child mortality rates above trend levels.

It can be inferred that child mortality followed different patterns in the two provinces whose water companies were nationalized and that the evolution in child mortality also differed from patterns observed at the national level (figures 1 to 3). Although obvious province specific factors may explain these results, this chapter only considers child mortality by judicial section previously serviced by private water companies, in order to provide further evidence of the role nationalization may have played.

Table 1 presents the evolution of child mortality rates in Maldonado according to the whether the judicial section was serviced by a private company or by the public monopoly, OSE, prior to nationalization.[8] It is clear that child mortality rates were higher in regions with private service providers, both before and after nationalization. However, although child mortality rates tend to be lower after nationalization it is believed these rates followed a time trend.

Table 2 presents similar findings for the Province of Canelones. Important differences in child mortality rates are observed for the period 2004 to 2008, according to the type of water company ownership. Contrary to Maldonado, child mortality rates were higher in regions serviced by the public monopoly, OSE. The nationalization of water in 2006 does not seem to have had a significant effect on child mortality rates in those regions once served by private companies. However, there is an increase in child mortality rates after nationalization in those judicial districts that had always been serviced by the public monopoly. This may suggest that after privatization the public company in Canelones was spread too thin across the whole region which led to a reduction in the quality of water in other areas.

Figure 5. Child mortality rate in Canelones per 1,000 births



Source: Ministry of Public Health and Authors' computation.

The above figures represent total child mortality rates, and do not distinguish between deaths caused by water and non-water-related infectious diseases. In order to refine the analysis, tables 3 and 4 present water-related child mortality rates in Maldonado and Canelones by judicial district depending on whether the district was serviced by a private or a public company prior to nationalization.

The two tables seem to indicate a decline in water-related child deaths in judicial sections serviced by private companies after nationalization, whereas a difference was observed in judicial sections that were always serviced by the public monopoly, even though child mortality rates were very low in Maldonado (below 0.04 per 1,000 persons over the 2003 to 2008 period).

One concern from a statistical point of view with the figures reported in tables 3 and 4 is the small numbers of water-related deaths. In 2007, there were 12 deaths in Canelones and 4 deaths in Maldonado. For example, the increase of the mortality rate in Uragua judicial section 3, from 0 to 3.4 per 1,000 persons is explained by a single death (table 3). In order to mitigate this problem the robustness of the results are checked in the econometric section by further considering overall child mortality rates, including deaths lacking verified causes, and perinatal deaths. If indeed nationalization of water services was responsible for the change in water-related child mortality rates, then a similar trend in overall child mortality or perinatal deaths would not be observed.

Econometrically the large number of zeros and the count nature of the data have to be addressed to provide robust estimates. The econometric analysis will also allow to control for general trends in child mortality and other non-observables that could also affect changes in child mortality rates around the time of nationalization.

4. METHODOLOGY

The identification strategy follows a similar approach to that of Galiani et al (2005), with a search for systematic differences in changes in child mortality rates between regions that have privatized (or nationalized) and those that have not changed the ownership structure of water companies. The control groups consist of neighbouring judicial districts in Canelones and Maldonado.[9] The analysis consists of a total of 26 judicial sections for the period 2003 to 2008, resulting in 156 observations.

Table 1. Child mortality rate by 1,000 births in Maldonado

	2003	2004	2005	2006	2007	2008
Maldonado	12.8	15.0	13.9	10.0	9.3	9.1
Uragua 1	12.4	14.3	15.6	11.7	9.2	12.0
Uragua 2	19.1	21.0	13.8	8.0	6.6	2.5
Uragua 3	10.0	7.1	0.0	7.8	3.4	7.2
Aguas de la Costa	0.0	0.0	45.5	0.0	0.0	71.4
OSE	0.0	31.3	0.0	0.0	0.0	0.0

Source: Ministry of Public Heath.

Table 2. Child mortality rate by 1,000 births in Canelones

	2003	2004	2005	2006	2007	2008
Canelones	13.1	11.0	12.3	9.1	13.9	11.4
Canelones private water provider	6.4	10.9	14.2	10.4	10.3	6.9
Canelones OSE	14.6	11.0	11.9	8.9	14.7	12.2
Difference (Private - OSE)	-8.1	-0.1	2.3	1.5	-4.4	-5.2

Source: Ministry of Public Heath.

Table 3. Child mortality rate by water related diseases by 1,000 in Maldonado

	2003	2004	2005	2006	2007	2008
Maldonado	3.1	1.7	3.4	1.3	1.6	0.4
Uragua 1	3.4	2.0	4.5	1.9	1.8	0.7
Uragua 2	2.4	2.1	2.3	0.0	0.0	0.0
Uragua 3	3.3	0.0	0.0	0.0	3.4	0.0
Aguas de la Costa	0.0	0.0	0.0	0.0	0.0	0.0
OSE	0.0	0.0	0.0	0.0	0.0	0.0

Source: Ministry of Public Heath.

Table 4. Child mortality rate by water related diseases by 1,000 in Canelones

	2003	2004	2005	2006	2007	2008
Canelones	1.5	1.3	1.0	1.2	1.7	0.7
Canelones private water provider	0.7	0.7	2.4	0.8	0.0	0.0
Canelones OSE	1.7	1.4	0.7	1.3	2.0	0.8
Difference (Private - OSE)	-1.0	-0.7	1.7	-0.5	-2.0	-0.8

Source: Ministry of Public Heath.

As mentioned previously, the fact that nationalization was undertaken across the board and at different points in time allows for a better identification strategy, than for privatization where firms and governments choose which companies to privatize. In the case of nationalization, all previously privatized firms were included thereby mitigating issues of selection from contaminating the results. In the case of Uruguay's nationalization (of water companies during 2005 to 2006), this is particularly comforting, for Aguas Corrientes el Pinar in Canelones that was founded in 1946, and therefore unlikely that the determinants of "privatization" at the time could be correlated with the water nationalization decision.

In Maldonado privatization was more recent. Aguas de la Costa and Uragua were privatized in 1993 and 2000 respectively. If there was selection in the privatization decision at the time, the endogenous determinants of privatization would also bias the impact of nationalization on child mortality estimates. For example, if the Government of Uruguay had decided to privatize companies in judicial districts more profitable and with better prospects, in order to maximize short-term financial benefits from the privatization. These would likely be districts in which child mortality was also low. In such a scenario, child mortality rates would be lower in regions where water companies were first privatized and then later nationalized, although there is no causal impact going from privatization or nationalization to child mortality. This can be explained in two ways. First, if child mortality rates in Maldonado were considered prior to and after nationalization it would seem as though the rates were higher in judicial districts where water companies were privatized. It would thus seem as though judicial districts with the highest child mortality rates were given to the water companies. Second, the panel nature of this study's dataset allows for control of general trends in child mortality using year fixed effects.

More precisely, the econometric model is the following (Equation 1):

Equation 1

$$y_{it} = \phi D_{it} + \alpha_i + \lambda_t + x_{it}^T \beta + u_{it}$$

$$i = 1,.....,26 \qquad t = 2003,...,2008$$

where i is the judicial section, t is the year, yit is the child mortality rate by water-related diseases in province i in period t (or the number of child deaths when Poisson or negative binomial estimators are used); Dit is a dummy variable indicative of whether the water company in province i in period t is private; αi is a province i specific random or fixed effect depending on the estimator; λt is a year fixed effect; xit is a vector of control variables; and uit is a judicial section time-varying error (distributed independently across judicial sections and time and hopefully independently of αi and λt). The regression is structured to capture the effects of aggregate factors and judicial section specific responses to aggregate factors.

As control variables, in the above equation, average completed years of education, average household income per capita and the unemployment rate at the judicial section level are used. These three variables were expected to be correlated with child mortality rates and vary through time and judicial sections. Higher income and education would be negatively correlated with child mortality, as this would help households avoid diseases that could lead to the death of a child. On the other hand higher levels of unemployment (conditional on income and education) would tend to positively affect child mortality through the additional stress and tension it caused on the household. These variables are from the annual Uruguayan National Household Survey, Encuesta Continua de Hogares (ECH) conducted by the Instituto Nacional de Estadística (INE). Each survey wave contained a total of approximately 56,000 persons from about 18,000 households. The ECH was administered throughout the year with the purpose of generating an accurate picture of urban employment along with the socio-economic characteristics of that population. As data from the ECH for all of the judicial sections was lacking, the analysis used information from the closest judicial sections.

The parameter of interest is ϕ which measures the casual impact of the type of ownership (private versus public) of the water company on child mortality. A positive coefficient indicates that in judicial sections with private companies, child mortality rates are larger than other areas; conditional on year and judicial district fixed effects, as well as education, income per capita and unemployment rates at the judicial section level.

Because child mortality rates by water-related diseases are a zero-inflated continuous variable, due to the important number of judicial sectors that report zero child mortality, estimating the equation by ordinary least squares (OLS) would yield biased and inconsistent estimates of the impact of ownership

on child mortality by water-related diseases. One way to address this problem is to estimate equation 1 as a Tobit panel data model with random individual effects, thus avoiding incidental parameter problem with non-linear fixed effect estimators, which would also yield biased estimates.

Results are also provided that include a judicial section specific time trend to account for the possibility that different judicial sections follow different trends due to other factors unrelated to water privatization. Nevertheless these results may lead to a spurious correlation between water privatization and child mortality (Equation 2):

Equation 2

$$y_{it} = \phi D_{it} + \alpha_i + \gamma_i \text{trend} + \lambda_t + x_{it}^T \beta + u_{it}$$

$$i = 1,.....,26 \qquad t = 2003,...,2008$$

Where γi trend is a judicial section specific time trend and therefore is not perfectly correlated with the year or judicial section fixed effects.

The preferred set of results used either a Poisson estimator to take into account the count nature of child deaths and the high number of zeros in the data (Santos and Tenreyro, 2006), or a Negative Binomial estimator which may be preferred to the Poisson estimator in the presence of over-dispersion in child mortality (a non-constant ratio of variance over conditional mean).[10] This is a more suitable estimator if measurement error is likely to be different in judicial districts with higher child mortality rates. An additional advantage of the Poisson and Negative Binomial estimator is that a conditional fixed effect Poisson and Negative Binomial estimator model exists allowing for the introduction of judicial district fixed effects. This identifies the different coefficient over the judicial district for which there is a change in the dependent variable for a given period (that is, for example, judicial districts without a single water related death for the period 2003 to 2008 will be dropped from the sample). As discussed earlier, this is not possible for the Tobit estimator as sufficient statistics were not available to allow fixed effects to be conditioned out of the likelihood.

5. RESULTS

Table 5 shows descriptive statistics for the data used in the analysis. Due to the low quantity of births in some judicial section in Maldonado and Canelones, a very high child mortality rate in some judicial sections was observed. Therefore, a re-estimate of the model without the judicial section outliers is required.

Table 6 presents the simple correlation coefficients for the variables used in the econometric analysis. The total Child mortality rate is highly correlated with perinatal and non-perinatal deaths, but seems to be orthogonal to child mortality rates caused by water, suggesting that the use of the two other as proxies may be questioned. It is also of interest to note the high negative correlation between household per capita income and unemployment rates, as well as the high positive correlation between education and per capita income.

Results of the panel Tobit estimation with random effects are provided in table 7. The results for all of the private water companies in Uruguay, for the case of Maldonado private companies and without the judicial section outliers are presented.[11]

Table 5. Descriptive statistics

Variable	Observations	Mean	Standard deviation	Min	Max
Private water provider	156.00	0.10	0.30	0.00	1.00
Perinatal	156.00	10.58	27.82	0.00	250.00
Non perinatal	156.00	11.26	52.51	0.00	500.00
Total child moratlity rate	156.00	21.84	70.43	0.00	625.00
Child moratlity rate by water	156.00	1.38	2.54	0.00	13.70
Education	156.00	7.98	1.14	5.70	11.15
Unemployment rate	156.00	0.13	0.04	0.05	0.25
Household per capita income	156.00	2 808.90	730.96	1 250.77	5 226.69

Source: Ministry of Public Heath.

Table 6. Correlation coefficients

Private water provider	1							
Perinatal	-0.02	1						
Non perinatal	-0.05	0.49	1					
Total child moratlity rate	-0.04	0.76	0.9	1				
Child moratlity rate by water	0.02	-0.06	0.0	-0.05	1			
Education	0.08	0.33	0.2	0.31	0.02	1		
Unemployment rate	0.36	-0.05	-0.1	-0.05	0.02	-0.22	1	
Household per capita income	0.01	0.28	0.2	0.26	-0.01	0.81	-0.34	1

Statistically significant impact of private ownership on child mortality across the different samples was not present. Moreover, none of the explanatory variables seem to have had a statistically significant impact. This may be due to the fact that they were highly collinear (income per capita, education and unemployment rates at the judicial strict level tend to move together) as seen in table 6.

Due to potential multi-collinearity, estimates which do not include these three control variables are provided (table 7a). Results remained unchanged. The coefficient on private ownership is always positive and relatively large at around 2 per cent, but it is never statistically significant even at the 10 per cent level. Thus, the nationalization of water companies does not seem to have had a systematic impact in terms of child mortality rates.

Part of the estimated lack of impact could be due to the fact that there are time varying judicial district specific unobservable variables that are correlated with the nationalization of water companies in those regions (such as investments in health infrastructure, but also software like health related education programmes). Estimates of equation 2 partly correct for this by including judicial section specific time trends (table 8).

Again, all coefficients on "Private Water Provider" are positive and relatively large, although statistically insignificant, suggesting that there is no systematic impact of ownership on child mortality. The control variables do not seem to do an adequate job in explaining child mortality rates – this could be explained by the fact that the judicial district time trends are already explaining a lot of the time varying judicial district determinants. Thus a specification is also reported as in equation 2 but without the three control variables (table 8a).

Interestingly in two of the four samples, the coefficient on private water provision becomes statistically significant at 10 per cent. This is not the case for the sub-sample of Maldonado with and without outliers, suggesting that the statistically significant coefficient is driven by the Canelones observations. Nevertheless, these weak but statistically significant coefficients suggest, if anything, the nationalization of water companies may have led to a reduction of child mortality in the districts that were affected by nationalization.

As pointed out earlier (to account for the count nature of the child death) estimates using Poisson and Negative Binomial estimators are provided to explain the number of child deaths rather than child mortality rates, as well as the use of total number of births as a control variable (table 9).[12] It should be noted that the Poisson model is nested within the Negative Binomial model. When the estimated overdispersion parameter (alpha) is zero, the conditional mean is equal to the conditional variance and the negative binomial model reduces to the Poisson model (Cameron and Trivedi, 1998).

A positive and statistically significant impact of privatization on the number of child deaths in the two samples was found. The Poisson and Negative Binomial estimates were identical due to the fact that the point estimate of the overdispersion parameter was equal to zero, suggesting that the conditional mean is equal to the conditional variance in these two samples.

In order to ascertain whether these statistically significant coefficients were not driven by an unobservable correlated with private provision of water, such as better health or infrastructure, the same regression as that in table 9 is run, over the full sample. The only difference in the regression is that

Table 7. Panel tobit random effects with time effects
Dependent variable: Child mortality rate by water-related diseases

	Sample			
	(1)	(2)	(3)	(4)
Variables	**All**	**All without outliers**	**Maldonado**	**Maldonado without outliers**
Private water provider	2.422 (1.967)	1.823 (1.939)	1.827 (2.344)	1.447 (2.246)
Education	0.122 (1.137)	0.444 (1.100)	0.304 (1.207)	0.621 (1.155)
Unemployment rate	1.617 (20.11)	-2.123 (19.20)	1.115 (21.68)	-4.789 (20.67)
Household per capita income	-9.74e-05 (0.00179)	0.000166 (0.00173)	-0.000140 (0.00197)	0.000410 (0.00190)
Constant	-3.370 (6.747)	-5.296 (6.550)	-4.595 (7.194)	-6.705 (6.918)
Observations	**156.0**	**152.0**	**150.0**	**146.0**
Log likelihood	**-235.1**	**-233.5**	**-223.5**	**-221.8**

Table 7a. Panel tobit random effects with time effects
Dependent variable: Child mortality rate by water-related diseases

	Sample			
	(1)	(2)	(3)	(4)
Variables	**All**	**All without outliers**	**Maldonado**	**Maldonado without outliers**
Private water provider	2.523 (1.802)	2.205 (1.752)	1.996 (2.112)	1.710 (2.058)
Constant	-2.417 (1.371)[a]	-2.131 (1.355)	-2.509 (1.457)[a]	-2.220 (1.439)
Observations	**156.0**	**152.0**	**150.0**	**146.0**
Log likelihood	**-235.1**	**-233.8**	**-223.6**	**-222.4**

Note: Standard errors in parentheses. "a" significant at 10%; "b" significant at 5%, "c" significant at 1%.

total child mortality rates and non-water-related child mortality (including perinatal mortality and deaths without known causes) were used, instead of water-related child mortality rates. There was no reason to expect a systematic impact of the privatization of water companies on total child mortality or non-water-related child mortality (again controlling for the number of births). Table 10 reports the results.

As expected private provision of water services seems not to have had a statistically significant impact on total and non-water-related child mortality, (taken as the difference between total child mortality and water-related mortality) when using Poisson or a Negative Binomial estimator.[13] This highlights the importance of correctly measuring water-related child mortality as it may not move in the same direction as overall child mortality which will have all sorts of other determinants. The other determinants may be correlated with the privatization or nationalization of water services and therefore lead to spurious conclusions regarding the impact of privatization on child mortality.

A final robustness check of the results includes non-water related child deaths as an explanatory variable to the specification previously reported (table 9). Indeed, non water related child mortality may be correlated with other determinants of water-related child mortality, making it desirable to have it as a control variable when explaining water-related child mortality. In this manner the privatization of water services would not be attributable to what may be a

Table 8. Panel tobit random effects with time effects and judicial section time trend
Dependent variable: Child mortality rate by water-related diseases

	Sample			
	(1)	(2)	(3)	(4)
Variables	**All**	**All without outliers**	**Maldonado**	**Maldonado without outliers**
Private water provider	2.788 (2.100)	2.788 (2.100)	2.582 (2.522)	2.582 (2.521)
Education	0.264 (1.518)	0.264 (1.518)	0.512 (1.610)	0.513 (1.610)
Unemployment rate	-1.823 (24.01)	-1.826 (24.01)	-0.779 (25.49)	-0.782 (25.49)
Household per capita income	0.00138 (0.00220)	0.00138 (0.00220)	0.00174 (0.00250)	0.00174 (0.00250)
Constant	-5.213 (8.971)	-5.215 (8.972)	-8.027 (9.558)	-8.030 (9.557)
Observations	**156.0**	**152.0**	**150.0**	**146.0**
Log likelihood	**-206.8**	**-206.8**	**-196.2**	**-196.2**

Table 8a. Panel tobit random effects with time effects and judicial section time trend
Dependent variable: Child mortality rate by water-related diseases

	Sample			
	(1)	(2)	(3)	(4)
Variables	**All**	**All without outliers**	**Maldonado**	**Maldonado without outliers**
Private water provider	2.912 (1.673)[a]	2.912 (1.673)[a]	2.494 (1.934)	2.494 (1.933)
Constant	-0.0997 (1.227)	-0.0995 (1.227)	-0.0464 (1.298)	-0.0462 (1.298)
Observations	**156.0**	**152.0**	**150.0**	**146.0**
Log likelihood	**-207.5**	**-207.5**	**-197.2**	**-197.2**

Note: Standard errors in parentheses. "a" significant at 10%; "b" significant at 5%, "c" significant at 1%.

Table 9. Poisson and negative binomial fixed effects with time effects
Dependent variable: Child mortality by. Water-related diseases

	Poisson		Negative binomial	
	(1)	(2)	(3)	(4)
Variables	**All**	**Maldonado**	**All**	**Maldonado**
Private water provider	1.028 (0.476)[b]	0.897 (0.492)[a]	1.028 (0.476)[b]	0.897 (0.492)[a]
Observations	**120.0**	**114.0**	**120.0**	**114.0**
Log likelihood	**-80.1**	**-75.5**	**-80.1**	**-75.5**

Note: Standard errors in parentheses. "a" significant at 10%; "b" significant at 5%, "c" significant at 1%.

more general decline in child mortality due to other factors. If the statistically significant results (table 9) are robust to the inclusion of non-water related child mortality as a control variable then evidence that the nationalization of water services in Uruguay led to lower rates of child mortality would exist. Results are reported in table 11.

Again the Poisson and Negative Binomial estimates are identical indicating that the overdispersion point estimate (alpha) is equal to zero. Also, results suggest across all samples and estimators that higher levels of non-water related child deaths are not correlated with higher levels of water-related child mortality, as previously indicated in table 6.[14] Thus, there does not seem to be common determinants of water-related child mortality and non-water-related child mortality. More interestingly, the coefficient on private water provider remains positive in all four specifications. Moreover, the point estimates are not statistically different from those reported in table 9, confirming earlier finding that the nationalization of water services may have led to a decline in child mortality.

6. CONCLUSIONS

One of the strictest barriers to trade in services that can be imposed by an importing country is the imposition of prohibiting foreign companies locating within its boundaries, especially when the only mode of delivery of services is through investments in proximity to the customer (mode 3 delivery in the jargon of services trade). To all intents and purposes the Government of Uruguay imposed such prohibition when it nationalized water companies by amending the Constitution in 2004. It declared all water sources belonged in and to the public domain. An important question from a policy perspective is whether this reform had a positive or negative impact on the performance of the service provider and the quality of the service it provided.

Supporters of trade liberalization in services often argue that with privatization come more profitable firms and a better quality of services. Uruguay's nationalization of water services provides a natural experiment to assess the impact of such a reform. Contrary to most existing literature, it will be possible to identify

Table 10. Poisson and negative binomial fixed effects with time effects
Dependent variable: Total child deaths. Total or non-water-related child deaths

	Poisson		Negative binomial	
	(1)	(2)	(3)	(4)
Variables	Total	Non-water-related	Total	Non-water-related
Private water provider	0.199 (0.160)	0.078 (0.171)	0.228 (0.177)	0.119 (0.189)
Observations	**155.0**	**155.0**	**155.0**	**155.0**
Log likelihood	**-238.9**	**-230.6**	**-233.5**	**-224.9**

Table 11. Poisson and negative binomial fixed effects with time effects
Dependent variable: Child deaths by. Water-related diseases

	Poisson		Negative binomial	
	(1)	(2)	(3)	(4)
Variables	Total	Maldonado	Total	Maldonado
Private water provider	1.001 (.447)[b]	0.881 (0.493)[a]	1.001 (.447)[b]	0.881 (0.493)[a]
Non-water related child deaths	0.024 (0.027)	0.019 (0.028)	0.024 (0.027)	0.019 (0.028)
Observations	**120.0**	**114.0**	**120.0**	**114.0**
Log likelihood	**-79.7**	**-75.3**	**-79.7**	**-75.3**

Note: Standard errors in parentheses. "a" significant at 10%; "b" significant at 5%, "c" significant at 1%.

the impact of the reform not through the privatization of public firms, but rather through the nationalization of water services. This is an interesting aspect of the case study because nationalization suffers potentially less than privatization from selection problems, that is, governments and private firms select which public companies should be privatized. In the case of the nationalization of water services in Uruguay all existing private companies were nationalized, which facilitates identifying the impact of the reform on the quality of the service provided without having to worry whether the Government and private firms chose the best (or the worst) firms for privatization.

The focus is on child mortality as a proxy for the quality of services provided. Although more direct measures could be applied to gauge the performance of water companies other than child mortality, such as water quality, sewage access, water tariffs, and rate of growth in household connections, they are not always easier to observe, (even if all were determinants of child mortality). Thus, by focusing on child mortality, the impact of the reform in all these variables is taken into account. Moreover, reductions in child mortality are arguably a more important objective from a public policy perspective than water tariffs or sewage access.

Using an estimator that corrects for the large number of zeros in the dataset, as well as the count data aspect of child mortality, the nationalization of water companies in Uruguay was found to lead to a decline in water-related child mortality. Interestingly, the nationalization is orthogonal to total child mortality or non-water-related child mortality, suggesting that the impact found for water-related child mortality was not being driven by some spurious correlation.

This result contrasts with existing evidence for Argentina's privatization of water services (Galiani et al 2004), which found that privatization of water services leads to a decline in child mortality. Future research should try to disentangle the determinants of these two different outcomes in order to further understand why privatization did not have the expected impact in Uruguay.

Potential explanations for these differences may rest on: any diverse regulations imposed during privatization or nationalization (investment requested, universal services); different functioning of regulatory bodies: badly designed contracts and bidding processes; and so on. A detailed examination of any such differences could help to understand what works and what does not work in terms of water privatization. Furthermore, examining differences in the functioning of public companies, (external funding, and boards of directors, amongst others) could help to explain why in some countries public providers of water services seem to do better than in other countries.

Finally, the results in this chapter suggest that the focus on private versus public ownership of natural monopolies such as water providers may be misleading. The institutional environment under which the natural monopoly operates may be much more important. In Uruguay, at least, public operators provided a service of equal, if not better, quality than the previous private firms.

NOTES

[1] According to Hall et al (2010) water services are owned and run by the public sector in 90 per cent of the largest 400 cities of the world.

[2] In the Netherlands water privatization was also made illegal.

[3] The reason for the failure of privatization is not necessarily inherent to privatization, but may be also explained by poorly designed contracts (in terms of required investments) or non-adequate regulatory bodies. These are also often associated with problems of corruption (see Chong and Lopez-de-Silanes, 2005).

[4] According to the World Bank access to piped sewerage is particularly low in Uruguay at only 53 per cent. This compares badly with other Latin American countries such as Chile, Colombia, Mexico and some comparable States in Brazil.

[5] Gamper, Khan and Timmins (2007) and Galdo and Bertha, (2005) also find an import effect of water access on child mortality in Brazil and Ecuador, but these studies do not focus on the impact of ownership on child mortality.

[6] Only the national population is used and not the tourist population, which can reach hundreds of thousands during the summer.

[7] The following causes of death are included as being water-related: myotonic disorders, bacterial sepsis of newborn, unspecified, necrotizing enterocolitis fetus and necrotizing enterocolitis of the new birth septicemia, unspecified, meningitis, unspecified encephalitis, myelitis and encephalomyelitis, unspecified, bacterial meningitis, unspecified, congenital viral hepatitis, sepsis of new birth by other staphylococcus, and other unspecified, septicemia due to candida.

[8] For presentation purposes, judicial section 5 is excluded, which was served by Uragua from the disaggregation because it only includes a few small cities with no child mortality during the period. Nevertheless, this information is obviously used in the econometric exercise later on.

[9] More precisely, the judicial sections with private water companies located in Maldonado are judicial sections 1 to 3, 5 and 6, and in Canelones is judicial section 19. As control groups, neighbours judicial sections that did not privatize: judicial section 4 in Maldonado, and judicial sections 1 to 7, 10, 11, 13, 14, 16, 17, 18 and 34 in Canelones are used. Moreover, judicial section 1 is used as a control in Maldonado's neighbouring Province of Lavalleja and judicial sections 1, 3, 4 and 5 in the Maldonado's neighbouring Province Rocha.

[10] A characteristic of the Poisson distribution is that its mean equals its variance, and as seen later in Table 5 the unconditional variance of child mortality variables is usually more than twice as large as the unconditional mean suggesting that a Negative Binomial estimator may be more appropriate than a Poisson estimator.

[11] Outliers are defined as those judicial districts with large child mortality, that is, above 200 per thousand births.

[12] The "exposure" is used as an option in stata that conditions the results on the ln (births) with a coefficient set to 1.

[13] The Poisson and Negative Binomial estimates are different suggesting that the point estimate of the overdispersion parameter (alpha) is not equal to zero, that is, the conditional mean is not equal to the conditional variance when explaining either total or non-water related child deaths.

[14] The same results are obtained if non-water related child mortality as a control is used. Therefore, this result is not due to the fact that by construction water related child mortality is part of total child mortality.

ROAD INFRASTRUCTURE AND AGRICULTURAL CONTRACTING SERVICES IMPACT ON RURAL PRODUCTION IN ARGENTINA

XII

The main objective of this Chapter is to understand whether the construction or maintenance of roads improves productivity by way of enabling farmer access to agricultural services. To facilitate such an understanding the links between the provision of road infrastructure and contracting services on productivity in Argentina's agricultural sector are examined. The findings lead to the conclusion that both road infrastructure and contracting services have a positive, large and statistically significant effect on agricultural productivity. Specifically, those farmers affected by the road investment are 17 per cent more productive in expected value than those farmers unaffected by such investment. Moreover, farmers who hire agricultural services have productivity 12 per cent higher than those who do not hire agricultural services. However, the results do not support the existence of complementarities between them as each has a direct and differential impact on the rural sector in Argentina.

1. INTRODUCTION

Since 1995, the Argentine farming sector has made significant progress. The volume of agricultural production (wheat, maize, soybean and sunflower) doubled between 1990 and 2005, increasing from 35 million tons to 70 million tons. Although the cultivated land area was augmented by only 40 per cent, most of the expansion of the sector is attributed to increases in productivity. Agricultural exports grew by a staggering 150 per cent during this same period.

Agriculture is a major economic sector, particularly when the whole supply chain is taken into account. Increases in farming productivity are associated with aggregate welfare gains and overall poverty reduction. Thus, expansion and productivity gains in the agricultural sector are typically associated with spillovers to the rest of the economy and, in consequence, the welfare gains and poverty impacts can be significantly boosted.

Recent literature[1] has considered the following set of factors to explain the evolution of the agricultural sector: technology adoption at the farm level including transgenic seed, direct drilling systems,[2] application of agrochemicals and fertilizers, amongst others; as well as organizational changes such as double cropping,[3]and agricultural contracting services (outsourcing agriculture).

This chapter focuses on the latter. Recent studies have highlighted a new form of organization for farms. Many farms in the Province of Buenos Aires have adopted new organizational changes that are characterized by an ownership separation of two of the main productive factors – land and capital. In these new organizational arrangements, the contractor or capital owner provides machinery and agricultural services to the farmer or land owner. Agricultural services include land ploughing, disking, sowing, crop protection, and harvesting.[4] The contracting of agricultural services enables the farmer or land owner to avoid acquiring capital goods that may end up representing a significant portion of production costs. This implies that it is important to have both, good market access for produced farm goods (grains, meat), as well as the means to reach the contractors and through them access to capital (machinery).

Argentina's adoption of these new types of arrangements has generated an increase in the capital intensity of the farming sector. Between 2002 and 2005, there was a significant increase of agricultural machinery imports – a 280 per cent increase in value, and a 153 per cent increase in physical units. Furthermore, 61 per cent of this increase was due to machinery imports. This fact uncovers a role for trade as imports of capital goods complement the adoption of modern production arrangements, allowing for small landowners to achieve the optimum scale of production without large capital outlays on fixed assets. Therefore, agricultural services contractors, in addition to allowing the incorporation of technology in the farming sector, also had an important role in one of the determinants of domestic investment – imported machinery.

Much less attention has been given to the role carried out by investment in road infrastructure. The sparse literature recognizes that road investment generates a positive impact on economic growth and reduces poverty. Investment in road infrastructure may reduce production and transaction costs, promoting trade and facilitating labour division and specialization – key elements for a sustained economic growth (Gannon and Liu 1997). The positive effect of the road construction is directly linked with better access of producers to reach goods markets.

The main objective of this chapter is to explore the links between the provision of road infrastructure and contracting services on productivity in Argentina's agricultural sector. Of particularly interest is understanding whether road construction or maintenance improves productivity by enabling farmers to access agricultural services. To this end, data panel methods are utilized. The data is derived from the national agricultural survey (*Encuesta Nacional Agropecuaria* – ENA). This survey provides panel data on approximately 1,800 farming and livestock holdings (*explotaciones agropecuarias* – EAPs), for the period 1993 to 2003.

It should be noted that the analysis in this chapter is not at the household level but rather at the farm level – as such the data utilized is composed of a survey of firms that produce agricultural goods. The structure of farming suggests that an increase in farm income can have a direct impact on household income. For example according to the National Agricultural Census 2002 only 5 per cent of farms were incorporated under the corporate form (joint stock company or limited liability company), while the rest were managed by individuals.

It was found that both road infrastructure and contracting services have a positive, large and statistically significant effect on agricultural productivity. Specifically, those farmers affected by the road investment are 17 per cent more productive in expected value than those unaffected farmers. Moreover, those farmers hiring agricultural services have productivity 12 per cent higher than farmers not hiring. However, the results do not support the existence of complementarities between them as each has a direct and differential impact on the rural sector in Argentina

The chapter is organized as follows. Section 2 presents a brief literature review. Section 3, describes how the variables used to evaluate the impact were constructed and performs a data analysis of road construction and improvement in the Province of Buenos Aires. Section 4 presents the main econometric analysis and results. Section 5 concludes.

2. LITERATURE REVIEW

The analytical literature on the effects of different infrastructure projects on economic and social variables is diverse, not only with respect to type of approach (macroeconomic versus microeconomic) but also with respect to analytical method (cost-benefit studies versus regressions with control groups).

Investment in infrastructure[5] is a very important factor in a country's development because of the impact it has on the remaining economic activities. These effects include the reduction of production costs and the increment of productivity, and access to new markets and better life conditions (Fiel, 1998). Moreover, investment in road infrastructure allows for the reduction of transaction costs, promoting trade and facilitating labour division and specialization – all key elements for a sustained economic development (Gannon and Liu, 1997).

Regarding the relation between infrastructure and development at the macroeconomic level, the more direct mechanism by which investment affects growth is by allowing the development of different productive activities. Indirectly, investment can boost labour and capital productivity, by way of increments in market competition or access to new technologies. However, the specialized literature also states that growth can generate greater investment in infrastructure. Thus, the causality relation between these two economic variables is important. Empirical evidence shows results supporting both directions.

One study holds that investment in infrastructure determines private investment and growth (Aschaeur, 1989 – a pioneer in measuring the impact of investment on growth at a national aggregate level).[6] Another study (Ford and Poret, 1991) holds – after adopting the same data as Aschaeur, but re-estimating it for a longer time series – that although results can be confirmed for the initial time span they certainly could not be confirmed for a larger time span.[7] Still another study identifies several links between infrastructure investment and growth that could occur simultaneously (Binswanger et.al., 1993). It is also possible that a crowding-out effect of public investment on private investment takes place. Nevertheless, studies show that this effect is very improbable in rural areas (Blejer and Kan, 1984; Creightney, 1983; and Jalan and Ravallion, 1997) due to the high complementary degree between both types of investment.

Considering only investment in road infrastructure, Queiroz and Gautam (1992) find evidence of investment preceding economic growth. Binswanger et al. (1993) reach a similar conclusion, identifying that the lack of roads is a significant constraint on the supply response of agriculture.

The studies on the effects of infrastructure investment from a microeconomic point of view are very varied.

Concerning the agricultural sector, Fosu et al. (1995) analyse the effects of public infrastructure on rural poverty and development, distinguishing between direct and indirect effects. The former refers to the fact that increments in infrastructure raise output, displacing production possibilities and marginal cost curve, increasing rate of return of private investment in rural activities. The indirect effect is related to changes in the structure of relative price of goods and inputs, reducing transaction costs faced by producers, and affecting allocation of resources within the agricultural activities.

Recently, Khandker et al. (2006) studied the impact of projects for rural road construction, using panel data for households in Bangladesh. They found evidence that investment in rural roads significantly reduces poverty, due to higher agricultural output and wages lower transport and input costs as well as higher prices for the goods produced by the farms. Similar results were found by Ahmed and Hossain (1990). Levy (1996), compares the situation before

and after the rehabilitation of roads in Morocco with the situation in areas where roads were not subject to improvement, finding that road rehabilitation generated significant increases in agricultural output and important changes in its composition and in the employment of inputs, among other relevant results.[8]

The advantage of these works is to control systematically for the most important covariates, in order to isolate the impact of improvements in rural infrastructure, basically by comparing the results obtained by the respective group after the implementation of the improvement versus realised results by the control group (those who were not benefited by the improvement).

Cuánto (2000) presents several indicators of the benefits of rural road rehabilitation and maintenance for Peru, based on data for households originated in surveys aimed to evaluate the rural roads programme (Programa de Caminos Rurales) between 1996 and 1999. This compares beneficiaries located in regions with rehabilitated roads against other beneficiaries located in areas with similar roads but not having undergone rehabilitation.

Specifically, the analysis considers the impact of road construction on: i) infrastructure and transport services; ii) access to public services; iii) productive activities; iv) employment, migration and poverty; and v) the environment. The results indicate significant reductions in transportation costs, resulting from reductions in travel times and lower freight rates. Investment in roads also leads to improvements in access to health services, although no sizeable positive impact on education is recorded. The impacts on agricultural variables are mixed – productivity increases are recorded in some crops but not in others. Finally, the study does not find significant impacts on poverty reduction.[9]

Escobal and Ponce (2003), using the same dataset and making use of potential controls to evaluate the impact of road rehabilitation on households subject to intervention, observe increases in income after the implementation of the improvements. They find that non-agricultural wages are the main source explaining the impact of the improvement in the short run.

Conversely, Lockshin and Yemtsov (2003) evaluate the effect of various community level infrastructure rehabilitation projects undertaken in rural Georgia, combining household and community surveys in a panel data structure. They find that road improvements do generate welfare gains for the poor.

The channels through which infrastructure investment can reduce poverty had been extensively studied. In addition to the previously cited works from Gannon and Liu (1997), Khandker et al. (2006), and Lockshin and Yemtsov (2003), the Escobal and Torero (2004) study considers the impact of different infrastructure services on households of rural areas of Peru. They find that the greater the access to infrastructure facilitates the development of productive activities, thus raising a household's income, by one of the following ways: more worked hours; higher activity diversification; or changes in the yields of these activities. The rise in income stimulates poverty reduction and, consequently, a welfare increase in rural areas.

Two additional studies by Verner (2006) and Lopez and Anríquez (2002) are also of interest. The Verner study utilizes the rural household survey of Argentina and finds that the incomes of agricultural producers are positively related by access to paved roads. Similarly, the López and Anríquez study assess the impact of agricultural growth on poverty in Chile and finds a positive relationship between agricultural production and poverty reduction.

Another study (Lódola 2008) found that the recent growth of grain production in Argentina resulted from a new form of organization, where the agricultural services providers play an important role in enabling cattle farmers to diversify risks by also producing agricultural goods, thus transforming into mixed farms. The study also finds that the emergence of rural contractors in the countryside has facilitated double cropping, expanded the agricultural frontier, and fundamentally improved land use efficiency through technological change. The same study shows that the probability of renting agriculture services increases as the size of farms increase, indicating this may be a way of acquiring the optimal range of production.

The relationship between farmers and rural contractors began in the early twentieth century, resulting from an influx of immigrants to Argentina leasing agricultural land, leading to the creation of landless capital holders. Thus, short term contracts coupled with the field rotation was the outstanding feature of the period (Llovet 1988).

Therefore, this long association linking agricultural producers to agriculture service contractors has strengthened the agricultural sector in Argentina.

It is also relevant in assessing the impact of road investment in rural areas, since they could be responsible for increased agricultural production as they provide for the hiring of agricultural services.

In summary, the literature review shows evidence that improving infrastructure results in a positive responses in agricultural production. In some cases, this results in poverty reduction and welfare gains for traditionally low income groups due to higher wages in agricultural activities (at least in the short term).

Lastly, regarding the estimation method employed, it is worth emphasizing that one of the main criticisms toward traditional estimation methods that apply an internal rate of return approach is that they do not capture distributional effects on the reference population. Moreover, the long-term nature of the effects of road investment implies that such effects cannot be efficiently assessed by cross section data. Therefore, panel data methods are of higher quality to measure the impact of road development for the reason that they can capture and compute the effects in different moments of time. It is also possible to control such effects by applying different economic variables that can affect them either in space or time. Consequently, in order to evaluate the impact of road infrastructure on agricultural output this study employs panel data provided by a survey of rural producers between 1995 and 2003.

3. THE DATA

3.1. Road investment in Buenos Aires

Information pertaining to construction,[10] surfacing and re-surfacing,[11] repair,[12] remodelling and signalling of roads, in the Province of Buenos Aires was provided by the *Dirección Provincial de Vialidad of the Ministerio de Infraestructura, Vivienda y Servicios Públicos*.

This information refers only to works undertaken to roads under provincial jurisdiction, and consequently, does not include all road works carried out, for example, on national roads that cross provincial territory.

During the period 1997 to 1999, there were 387 road works carried out at the provincial level (126 in 1997, 136 in 1998 and 125 in 1999). Of these works, 60 per cent corresponded to road surfacing, 16 per cent to road construction, 9 per cent to re-surfacing and 7 per cent to repairs, and the remaining 8 per cent corresponded to road signalling and, or remodelling.

In addition, these road works conducted in inner city streets and avenues, as well as on access roads into cities. Inner city streets can be considered as urban works, while access roads into cities can be considered non-urban or rural works.[13] Based on these categories, table 1 shows that during the period under consideration the number of works carried out in urban areas are more numerous than the works undertaken in rural regions.

Table 1. Road works carried out by year and area

Year	Urban area %	Rural area %	Total %
1997	76.2	23.8	100.0
1998	77.9	22.1	100.0
1999	65.6	34.4	100.0
Total	**71.8**	**28.2**	**100.0**

Source: Authors' calculations.

Of the 387 road works carried out in the 1997 to 199 period, 108, or 28 per cent, were carried out in rural areas. Of these works, road surfacing was the primary task completed, accounting for 46 per cent of total works (table 2). However, when urban and rural works were analysed jointly, construction, re-surfacing and road repairs became the primary tasks completed.

Rural areas of the Province of Buenos Aires had surfacing, re-surfacing and repair works carried out between 1997 and 1999. Those road works that could not be assigned to the provincial territory due to scarce geographic specification were excluded from the data set. Road access works leading to industrial parks, educational establishments, recreational spaces, airdromes and parking lots were also excluded. As a result of these exclusions, only 40 road works carried out in rural areas, that might have some kind of impact over the agricultural producers in the province, were identified. Some of these works can affect more than one region, as explained below.

The regions or analysis domains[14] affected by road works are presented in table 3. In 1997, the domains most by the greatest number of works were domain I (cattle eastern zone) and domain VII (southern agricultural zone). In 1999 the two first domain I and II experienced the greatest number of road works. In 1998, domain IV (north-western mixed zone) and VII (southern agricultural zone), had the overwhelming

Table 2. Distribution of road works carried out in non-urban areas, by year and type

Year	Construction %	Surfacing %	Re-surfacing %	Repairs %	Others %	Total %
1997	3.3	50.0	23.3	3.3	20.0	100.0
1998	20.0	46.7	13.3	10.0	10.0	100.0
1999	11.6	46.5	18.6	18.6	4.7	100.0
Total	**11.0**	**45.7**	**15.0**	**11.8**	**16.5**	**100.0**

Source: Authors' calculations.

Table 3. Distribution of the identified road works in rural areas, by year and domain

Year	Domain							Total %
	I. Eastern cattle %	II. North eastern cattle %	III. Northen agricultural %	IV. North central mixed %	V. North central mixed %	VI. South central mixed %	VII. Southern agricultural %	
1997	20.8	12.5	4.2	0.0	20.8	8.3	33.3	100.0
1998	0.0	0.0	14.3	42.9	0.0	0.0	42.9	100.0
1999	34.6	34.6	7.7	7.7	7.7	0.0	7.7	100.0
Total	**22.5**	**15.0**	**6.3**	**11.3**	**12.5**	**6.3**	**26.3**	**100.0**

Source: Authors' calculations.

majority of with 86 per cent of total road works. Considering the four years jointly, the cattle eastern and the southern agricultural zones account for 49 per cent of total rural road works.

3.2. The National Agricultural Survey

The ENA survey, carried out by the Argentine Statistical Office (INDEC), has national coverage and annual periodicity that gathers data on, among other variables, livestock, agricultural production and forages as well as cultural practices. Data also contains information on size of the agricultural holdings, land tenure regime and use of land (area used to grow crops, harvested surface and production by type of crop). Since 2000 ENA collected data, albeit intermittently, on other activities such as agricultural contracting service and cultural practices, but not continuously

The reference unit is the farm (*explotación agropecuaria*), defined as a unit of organization for production whose area is not less than 500 square metres, located within provincial limits, producing agricultural goods, livestock and forestry goods supplied through the market. The EAP is defined independently of the non-contiguous number of parcels that compounds it.

In order to build a sample for ENA[15], a certain number of segments are randomly extracted within each stratum. All farms, wholly or partially included in a selected segment, are interviewed. The segment is a perfectly delimitated area in the geographic space

Nevertheless, as there are several producers in each segment, it becomes a statistical unit that is exempt from the action of individual production strategies. Moreover, it also presents certain advantages due to the mobility of farmers, whose consequent land division or concentration has gradual impact over time.[16]

Given all these considerations, and the fact that the identification of a given agricultural holding, in time, is complex due to changes in yearly codification, adequate evaluation of policy impacts was problematic. To offset this problem "segment" is used as the unit of measurement to gauge impacts from investment in road infrastructure, or the provision of services in agriculture.

3.3. The construction of key variables

This section, focuses on the definition of the different interest variables employed in this chapter in order to: a) explain variables related with the quantification of agricultural production of the analysis unit (segment), and the improvement of access to inputs and services

(transgenic seeds, direct drilling systems, agricultural contracting services); b) specify how the areas affected by road works were identified.

The output of a given segment was measured through the gross value of output generated at each moment of time. This indicator was constructed with information of agricultural output (cereals and oilseeds), livestock (bovine, sheep, pigs and goats) and forages, surveyed by the ENA.[17]

By multiplying agricultural output in each year by a set of prices[18] corresponding to 1995 prices, the value of agricultural of output at constant prices of 1995 was calculated. This calculation guarantees inter-annual comparisons reflect only changes in produced quantities. The same method was used to obtain the gross production value of livestock[19] and of forages.[20] To complete the calculation, the output value of agriculture, livestock and forages were added up to obtain the segment's gross value of output.

Regarding the variables related with inputs and services demanded by the farming sector, ENA provides data on the number of hectares affected by work done by contractors of agriculture services or farmed with direct drilling systems. Therefore, the econometric analysis measures contracting services by the number of total hectares, at the segment level, affected by these services.

To determine segments potentially affected by the road works the following procedure was employed. A map of the Province of Buenos Aires containing data of different roads and the location and identification of the segments surveyed by ENA, was utilized. Secondly, all road works (construction, surfacing, resurfacing and repairs characterized as carried out between two geographical points) were located on the map. Once located, the extreme points of each road works were selected, and an "influence area" was established, considering 30 kilometres to each side of both points and joining the four vertices so determined. In this way, every segment included inside the delimited area was classified as "affected" by the works. Moreover, if any segments were in close proximity the influence area (but not inside it), and if the works were the only way of communication with the rest of the road network, they were also considered affected. The influence area for bridge works was determined in a similar fashion, with the sole difference being the influence zone was delimited within a ratio of 30 kilometres.

Table 4 shows the quantity of segments affected by the construction of rural roads in 1997, 1998 and 1999. The affected surface varies between 6 per cent and 13 per cent of the total surface included in the survey sample.

This econometric analysis in this section compares various outcomes before and after road investment. It should be noted that the reference period for the National Agricultural Survey corresponds to agricultural campaigns between 1 July of the year prior to the survey and 30 June during the year of the survey. Thus, in analysing works developed in 1997, the requisite surveys are from 1996 to 1999 (containing data for 1 July, 1998 to 30 June, 1999.

Table 4. Number of segments and affected surface, by road works and year

Year	Number of affected segments			Surface of affected segments					
	1997 works	1998 works	1999 works	1997 works		1998 works		1999 works	
				ha	%	ha	%	ha	%
1995	59	28	49	173 535.00	8	166 677.00	7	147 496.00	7
1996	62	32	49	184 288.00	8	195 478.00	8	151 287.00	6
1997	88	46	67	256 956.00	10	221 230.00	8	177 709.00	7
1998	55	19	44	181 429.00	10	119 814.00	7	126 506.00	7
1999	95	54	75	233 233.00	9	250 265.00	10	190 243.00	7
2000	91	53	74	247 048.00	10	244 892.00	10	187 699.00	8
2001	90	55	70	249 704.00	10	255 086.00	10	192 221.00	8
2003	92	56	70	257 762.00	10	317 015.00	13	191 473.00	8

Source: Authors' calculations based on ENA.

4. ROAD INFRASTRUCTURE, CONTRACTING SERVICES AND AGRICULTURAL OUTPUT

This section presents econometric analysis of the impact of roads and agricultural contracting services, as well as their interaction on agricultural productivity.

The hypothesis is based on the basic claim of this chapter: that road infrastructure affect productivity in agriculture. This claim is intuitive and quantitative evidence is provided to support. Given such evidence, some of the mechanisms behind this impact are explored, particularly the belief that one of those mechanisms is the facilitation of agricultural services. To support this, consideration is directed toward whether the use of those services affects agricultural productivity and then analyse if this is in part due to road construction. Finally, complementarities between road construction and agricultural services are explored to examine if the impacts on agricultural productivity are greater in those farms having benefitted by the presence of both road services and agricultural services.

The analysis evaluates the impact of road works carried out between 1997 and 1999, requiring a comparison of data from the 1995 and 1996 ENA surveys and from the 2001 and 2003 ENA surveys.

4.1. The effect of road on output

By conducting an econometric analysis of the hypothesis a test of the impact of road constructions on the agricultural output and productivity is possible. The first regression model is equation 1:

Equation 1

$$\ln y_{it} = \beta_0 + x'_{it}\beta_1 + \beta_2 Road_i + \beta_3 P_t + \beta_4 (Road_i * P_t) + \varepsilon_{it}$$

Where the dependent variable is the logarithm of the gross value of output (and the log of gross value per hectare) for each segment i in the year t. x'it is a vector of controls that includes the following variables: lTotSurf, that denotes the logarithm of the total area of the segment, measured in hectares; AgrProp indicates the proportion of hectares used for agriculture; and seven regional dummy variables that represent regions composed by a group of contiguous municipal jurisdictions that have a similar behaviour on the main agricultural variables as well as the weather; dom1 (eastern cattle zone), dom2 (north-eastern cattle zone), dom3 (northern agricultural zone), dom4 (north-western mixed zone), dom5 (north-central mixed zone), dom6 (south-central mixed zone), dom7 (southern agricultural zone). These dummy variables also capture the productive specialization of each zone (agricultural, cattle or mixed). The variable dom8 (south-western mixed zone) was used to compare the results of the rest of the dummy variables. As the south-western mixed zone region is one of lowest productive performers it is expected that the coefficients for all the other regional dummy variables have a positive sign. When fixed-effects model are estimated, these regional dummies are replaced by segment dummies. The error term is denoted by ε_{it}.

The variable Roadi is a dummy variable equal to 1 when the segment i is affected by the construction or improvement of rural roads in any of the years of the period under study (1996 to 1999), and 0 otherwise. The variable Pt equals 0 if the data corresponds to the moment before the construction of roads, and 1 if it corresponds to surveys after the road services. The coefficient of interest is β4, the inraction effect (Roadi * Pt). In the table results that follow, this is referred to as "effect" and measures the impact of road investments on the dependent variable (in this case, agricultural output) of the segments affected by provincial road works carried out, in relation to what may have happened if these segments had not benefited by the policy.

This regression is applied on a panel of segments for the years 1995, 1996, 2001 and 2003, taking into account all road works undertaken during the period 1997 to 1999.

Obtained results for the impact of both components of the agricultural investment (road investment and contracting services) on agricultural output (measured by gross value of output) are presented in table 5.

Table 5 presents model results. The first model including all works (construction and improvement). The second model only analyses the effect of construction works (the variable road is activated only when rural road construction and surfacing take place). In the third model, this variable takes a value of 1 when the works consists of re-surfacing or repairs of a previously existent road. This differentiation undertakes to capture with greater precision the effect of the construction of new roads, that is, the direct impact of a strong quality improvement in terms of access to farm holdings.[21]

Table 5. Impact of rural road investment on output

Variable	All works		Only construction works		Only repair works	
	Gross value output (in log)	Productivity (in log)	Gross value output (in log)	Productivity (in log)	Gross value output (in log)	Productivity (in log)
	Random effects		Random effects		Random effects	
Road	-0.417[b] (0.19)	-0.193[b] (0.10)	-0.550[a] (0.21)	-0.299[a] (0.11)	0,0966 (0.29)	0.124 (0.15)
P	-0.136 (0.11)	-0.0161 (0.05)	-0.0733 (0.10)	0.00207 (0.04)	-0.0234 (0.10)	0.0367 (0.04)
Effect	0.375[b] (0.18)	0.153[c] (0.08)	0.371[c] (0.21)	0.186[b] (0.09)	0.183 (0.24)	0.0331 (0.10)
ITotSurf	1.086[a] (0.07)	0.0588[c] (0.03)	1.086[a] (0.07)	0.0572[c] (0.03)	1.103[a] (0.07)	0.0677[b] (0.03)
AgrProp	1.978[a] (0.28)	1.464[a] (0.14)	1.965[a] (0.28)	1.463[a] (0.14)	1.960[a] (0.28)	1.454[a] (0.14)
dom1	1.863[a] (0.43)	1.457[a] (0.23)	1.824[a] (0.42)	1.441[a] (0.22)	1.702[a] (0.43)	1,362[a] (0.23)
dom2	1.965[a] (0.50)	1.630[a] (0.26)	1.762[a] (0.48)	1.523[a] (0.25)	1.649[a] (0.53)	1.432[a] (0.28)
dom3	1.919[a] (0.53)	1.722[a] (0.28)	1.929[a] (0.53)	1.728[a] (0.28)	1.845[a] (0.53)	1.680[a] (0.28)
dom4	1.852[a] (0.43)	1.630[a] (0.22)	1.903[a] (0.43)	1.659[a] (0.22)	1.809[a] (0.43)	1.609[a] (0.22)
dom5	1.591[a] (0.43)	1.417[a] (0.23)	1.604[a] (0.43)	1.423[a] (0.23)	1.575[a] (0.44)	1.408[a] (0.23)
dom6	1.621[a] (0.45)	1.381[a] (0.24)	1.633[a] (0.45)	1.385[a] (0.24)	1.629[a] (0.45)	1.385[a] (0.24)
dom7	1.649[a] (0.46)	1.387[a] (0.24)	1.658[a] (0.45)	1.393[a] (0.24)	1.562[a] (0.46)	1.338[a] (0.24)
Constant	2.577[a] (0.77)	3.166[a] (0.39)	2.555[a] (0.76)	3.173[a] (0.39)	2.353[a] (0.76)	3.051[a] (0.39)
Observations	**756.0000**	**756.0000**	**756.0000**	**756.0000**	**756.0000**	**756.0000**
Number of nsegmento	**189.0000**	**189.0000**	**189.0000**	**189.0000**	**189.0000**	**189.0000**
R-sq: within	**0.1300**	**0.0900**	**0.1252**	**0.0900**	**0.1214**	**0.0800**
between	**0.6563**	**0.5125**	**0.6606**	**0.5202**	**0.6533**	**0.5098**
overall	**0.4852**	**0.3804**	**0.4874**	**0.3859**	**0.4814**	**0.3768**

Source: Authors' calculations.
Note: Standard errors in parentheses "a" p<0.01, "b" p<0.05, "c" p<0.1.

The results for the model considering all kinds of works (first two columns in Table 5) show that the coefficient of the variable effect has the expected sign. Therefore, estimates suggest that road works generally have a positive effect on agricultural output of affected segments. According to this model the benefited segments produced almost 45 per cent more in expected value[22] than segments not affected by the works.

The controls variables such as segment size and the proportion of hectares dedicated to agricultural activities affect positively the gross value of output. Also the coefficients of the regional variables correspond to the productive conditions of each

region. The value of output of domain 2 (north-eastern mixed area) is higher in expected value, than the output value of domain 8[23]. In terms of relevance, this region is followed, by domain 3 (northern agricultural zone), domain 4 (north-western mixed area) and domain 7 (agricultural southern area).

There is also verification of a positive effect of construction works on agricultural productivity. Specifically, affected segments are 17 per cent more productive in expected value than unaffected segments.

Likewise, in the model that only takes into account construction works (third and fourth column of table 5), the estimated coefficient of the variable effect is similar in relation with first model results. According to the random effects model, the affected segments produced, in expected value, almost 45 per cent more than non-benefited segments. If only road improvement works are considered (the last two columns in table 5), the obtained results suggest that the impact of road infrastructure is not statistically different from zero.

Based on the results, it can be concluded that road investment has a significant impact on agricultural output. Moreover, construction of new roads increases farming output, while the improvement of the road network does not seem to have any effect over output.

4.2. The effect of services on output

The following explores some of the mechanisms behind the link between road investment and productivity. In particular, if portions of the effects are due to the facilitation of agricultural contracting services.

To evaluate the effect of agricultural contracting services on agricultural output and productivity the same panel data designed to ascertain the impact of road infrastructure on agricultural variables is used. The following regression, equation 2, evaluates the impact of agricultural contracting services:

Equation 2

$$\ln y_{it} = \beta_0 + x'_{it}\beta_1 + \beta_2 Services_i + \varepsilon_{it}$$

Where the dependent variable is the logarithm of the gross value of output (and log of gross value per hectare) for each segment i in the year t. x'it is the same matrix of control variables of equation 1 plus a new variable (direct drilling) that takes the value 1 when this type of production system is employed. This variable is included as a proxy in order to capture the technological change implemented by producers.

In order to estimate the importance of agricultural contracting services, the dummy (services) takes the value 1 when farms of the segment demand contracting services and 0 in other cases. The coefficient of this variable is the measure of the effect of agricultural contracting services on output and productivity. It should be noted that none of the variables related to road construction are included in this model, primarily to explore the simple correlation between agricultural productivity and agricultural services.

Table 6. Impact of agricultural contracting services on output

Variable	Gross value output (in log)		Productivity (in log)
	Random effects		Random effects
Services	0.336[a] (0.11)	0.321[a] (0.11)	0.116[b] (0.05)
ITotSurf	1.095[a] (0.07)	1.091[a] (0.07)	0.0580[c] (0.03)
AgrProd	1.854[a] (0.28)	1.836[a] (0.28)	1.395[a] (0.14)
dom1	1.684[a] (0.41)	1.670[a] (0.41)	1.354[a] (0.21)
dom2	1.711[a] (0.47)	1.694[a] (0.47)	1.486[a] (0.25)
dom3	1.811[a] (0.52)	1.798[a] (0.52)	1.651[a] (0.27)
dom4	1.709[a] (0.42)	1.693[a] (0.42)	1.542[a] (0.22)
dom5	1.492[a] (0.43)	1.473[a] (0.43)	1.348[a] (0.22)
dom6	1.535[a] (0.45)	1.522[a] (0.44)	1.326[a] (0.23)
dom7	1.511[a] (0.45)	1.495[a] (0.44)	1.300[a] (0.23)
Direct drilling	...	0.0522 (0.11)	0.0701 (0.05)
Constant	2.278[a] (0.75)	2.324[a] (0.75)	3.118[a] (0.38)
Observations	**756.0000**	**756.0000**	**756.0000**
Number of nsegmento	**189.0000**	**189.0000**	**189.0000**
R-sq: within	**0.1276**	**0.1271**	**0.0900**
between	**0.6614**	**0.6623**	**0.5206**
overall	**0.4890**	**0.4890**	**0.3859**

Source: Authors' calculations.

Note: Standard errors in parentheses "a" p<0.01, "b" p<0.05, "c" p<0.1.

Table 7. Impact of the road investment on agricultural contracting services

Variable	All works	Only construction works	Only repair works
	Services		
	Random effects		
Road	0.035 (0.05)	0.0394 (0.06)	0.0237 (0.08)
P	0.258[a] (0.04)	0.266[b] (0.03)	0.248[b] (0.03)
Effect	-0.00698 (0.06)	-0.0488 (0.07)	0.0485 (0.08)
ITotSurf	0.00775 (0.02)	0.00707 (0.02)	0.00644 (0.02)
AgrProp	0.279[a] (0.08)	0.274[a] (0.08)	0.272[b] (0.08)
dom1	0.183[c] (0.10)	0.196[c] (0.10)	0.184[c] (0.10)
dom2	0.243[b] (0.12)	0.270[b] (0.12)	0.226[c] (0.13)
dom3	0.153 (0.13)	0.163 (0.13)	01.61 (01.3)
dom4	0.266[b] (0.10)	0.273[a] (0.10)	0.28[a] (0.10)
dom5	0.240[b] (0.11)	0.244[b] (0.11)	0.243[b] (0.11)
dom6	0.273[b] (0.11)	0.275[b] (0.11)	0.276[b] (0.11)
dom7	0.209[c] (0.11)	0.218[b] (0.11)	0.216[c] (0.11)
Constant	0.217 (0.19)	0.219 (0.19)	0.235 (0.19)
Observations	**756.000**	**756.000**	**756.0000**
Number of nsegmento	**189.000**	**189.000**	**189.0000**
R-sq: within	**0.140**	**0.140**	**0.1322**
between	**0.121**	**0.119**	**0.1220**
overall	**0.128**	**0.128**	**0.1280**

Source: Authors' calculations.

Note: Standard errors in parentheses "a" p<0.01, "b" p<0.05, "c" p<0.1.

According to estimates presented in table 6, agricultural contracting services have a positive effect not only on production but also on agricultural productivity. Specifically, segments that contracted services had increases in expected value of 38 per cent over the segments not requiring such services. For their part, contracting segments are 12 per cent more productive in expected value than those without contracts.

It is important to note that even controlling for direct drilling, which is an important indicator of technological level reached by each producer, an effect of services on agricultural output is evident. The remaining controlling variables have the expected results, implying the same effects as in the previous section.

4.3. The mechanisms: contracting services, road investment, and agricultural output

This section considers whether the level of contractual services utilized in farm production is affected by the construction of roads. Equation 3 is a modified version of the regression model:

Equation 3

$$Services_{it} = \beta_0 + x'_{it}\beta_1 + \beta_2 Road_i + \beta_3 P_t + \beta_4 (Road_i * P_t) + \varepsilon_{it}$$

The definition of all variables is the same as used previously. Table 7 summarizes the results obtained when evaluating the effect of infrastructure investment on procurement of agricultural services. Results indicate that investment in road infrastructure has no sizeable effect on the hiring of agricultural machinery (that is, the variable effect is not statistically different from zero), suggesting that services are not the main channel via which road construction affect agricultural outputs in Argentina.

In order to further investigate this conclusion, scrutiny is focused on whether road construction shows up significantly in the above regression model, once the use of agricultural contracting services is kept constant. This is done by considering the slightly different version of the regression model in equation 4 where the variables remain the same as before.

Equation 4

$$\ln y_{it} = \beta_0 + x'_{it}\beta_1 + \beta_2 Road_i + \beta_3 P_t + \beta_4 (Road_i * P_t) + \beta_5 Services_{it} + \varepsilon_{it}$$

Eq. (4)

Estimates under this new configuration, presented in Table 8, first indicate that there is an effect of investment in roads on agricultural production even when controlling for the existence of services. Therefore it can be argued that in line with the absence of an indirect channel through which the works impact on agricultural production, there is a direct additive effect of investment on agricultural production.

Table 8. Impact of both channels of investment on agricultural output

Variable	All works	Only construction works	Only repair works
	Gross value output (in log)		
	Random effects		
Road	-0.436[b] (0,18)	-0.562[a] (0,20)	0,0676 (0,28)
P	-0.373[b] (0,15)	-0.276[b] (0,14)	-0.272[b] (0,14)
Effect	0,0618 (0,34)	-0,252 (0,41)	0,338 (0,50)
Services	0.308[b] (0,12)	0.308[a] (0,12)	0.352[a] (0,12)
ITotSurf	1.065[a] (0,07)	1.067[a] (0,07)	1.080[a] (0,07)
AgrProp	1.754[a] (0,29)	1.746[a] (0,28)	1.747[a] (0,29)
doml	1.729[a] (0,41)	1.696[a] (0,40)	1.550[a] (0,42)
dom2	1.780[a] (0,48)	1.607[a] (0,46)	1.474[a] (0,52)
dom3	1.816[a] (0,52)	1.828[a] (0,51)	1.714[a] (0,52)
dom4	1.681[a] (0,42)	1.748[a] (0,41)	1.614[a] (0,42)
dom5	1.432[a] (0,42)	1.478[a] (0,42)	1.384[a] (0,43)
dom6	1.462[a] (0,44)	1.491[a] (0,43)	1.448[a] (0,45)
dom7	1.496[a] (0,44)	1.519[a] (0,44)	1.399[a] (0,45)
Direct drilling	0,246 (0,15)	0,199 (0,16)	0.254[c] (0,15)
Joint	0,394 (0,33)	0.769[c] (0,42)	-0,16 (0,51)
Constant	2.786[a] (0,76)	2.712[a] (0,74)	2.560[a] (0,76)
Observations	**756.0000**	**756.0000**	**756.0000**
Number of nsegmento	**189.0000**	**189.0000**	**189.0000**
R-sq: within	**0.1400**	**0.1400**	**0.1300**
between	**0.6748**	**0.6826**	**0.6679**
overall	**0.5004**	**0.5048**	**0.4940**

Source: Authors' calculations.

Note: Standard errors in parentheses "a" p<0.01, "b" p<0.05, "c" p<0.1.

It is also worth mentioning that in quantitative terms the impact of works on rural roads is very similar in this model to those presented above, which reinforced the fact of the existence of a direct channel as a means of transmission. In addition services are also being relevant to explain the agricultural production in those sectors affected by the works.

Specifically, the results founded for the model of equation 4, show that segments affected by the works produced in expected value by 49% rather than unaffected.

Finally, note that the results from models that exploit the differentiation by type of work (construction or repair) are the same as above. That is, the construction of new roads has a much higher impact than the road repairs.

Having found evidence of the impact of infrastructure and agricultural contracting services on agricultural production in the province, which take place independently, one additional issue to study is whether there are complementary effects between the two forms of production improvements. The purpose of this analysis is to determine whether a joint effect between the services and works that will generate increases in agricultural production. To do this, we add a dummy (JOINT) that takes the value 1 when both SERVICES and EFFECT are equal to one. The model is:

Equation 5

$$\ln y_{it} = \beta_0 + x'_{it}\beta_1 + \beta_2 Road_i + \beta_3 P_t + \beta_4 (Road_i * P_t) + \varepsilon$$

As we show in table 9, the results do not support the existence of a joint effect, or complementarities, between investment in roads and contracting services.

5. CONCLUSION

The main objective of this chapter aimed to quantify the impact of construction and improvement of rural roads in the Province of Buenos Aires on agricultural productivity. Evidence supported that road construction has a positive, large, and statistically significant impact on agricultural outcomes in Argentina. Specifically, the affected segments are 17 per cent more productive in expected value than the unaffected segments.

The analysis attempted to distinguish some of the mechanisms through which this relationship functions. In particular, focus was directed on whether the provision of road infrastructure affected agricultural productivity by way of facilitating of

Table 9. Impact of rural road investment and contracting services on output

Variable	All works		Only construction works		Only repair works	
	Gross value output (in log)	Productivity (in log)	Gross value output (in log)	Productivity (in log)	Gross value output (in log)	Productivity (in log)
	Random effects		Random effects		Random effects	
Road	-0.432[b] (0.18)	-0.442[b] (0.18)	-0.567[a] (0.20)	-0.567[a] (0.20)	0.0876 (0.28)	0.0705 (0.28)
P	-0.232[b] (0.11)	-0.400[a] (0.15)	-0.174[c] (0.10)	-0.321[b] (0.14)	-0.114 (0.10)	-0.271[b] (0.14)
Effect	0.377[b] (0.18)	0.399[b] (0.18)	0.389[c] (0.21)	0.391[c] (0.21)	0.166 (0.24)	0.199 (0.24)
Services	0.376[a] (0.11)	0.353[a] (0.11)	0.380[a] (0.11)	0.359[a] (0.11)	0.366[a] (0.11)	0.345[a] (0.11)
lTotSurf	1.080[a] (0.07)	1.062[a] (0.07)	1.079[a] (0.07)	1.063[a] (0.07)	1.097[a] (0.07)	1.080[a] (0.07)
AgrProp	1.853[a] (0.28)	1.756[a] (0.29)	1.841[a] (0.28)	1.749[a] (0.29)	1.842[a] (0.28)	1.747[a] (0.29)
doml	1.788[a] (0.42)	1.708[a] (0.42)	1.743[a] (0.41)	1.670[a] (0.41)	1.628[a] (0.42)	1.552[a] (0.42)
dom2	1.867[a] (0.49)	1.772[a] (0.49)	1.652[a] (0.47)	1.565[a] (0.47)	1.558[a] (0.52)	1.469[a] (0.52)
dom3	1.865[a] (0.53)	1.791[a] (0.52)	1.871[a] (0.52)	1.803[a] (0.52)	1.789[a] (0.53)	1.719[a] (0.52)
dom4	1.751[a] (0.42)	1.656[a] (0.42)	1.798[a] (0.42)	1.712[a] (0.42)	1.706[a] (0.42)	1.616[a] (0.42)
dom5	1.496[a] (0.43)	1.395[a] (0.43)	1.506[a] (0.43)	1.414[a] (0.42)	1.481[a] (0.43)	1.386[a] (0.43)
dom6	1.521[a] (0.45)	1.436[a] (0.44)	1.530[a] (0.44)	1.453[a] (0.44)	1.530[a] (0.45)	1.450[a] (0.44)
dom7	1.574[a] (0.45)	1.483[a] (0.44)	1.578[a] (0.45)	1.494[a] (0.44)	1.486[a] (0.45)	1.399[a] (0.45)
Direct drilling	...	0.268[c] (0.15)	...	0.248 (0.15)	...	0.256[c] (0.15)
Constant	2.536[a] (0.75)	2.806[a] (0.76)	2.513[a] (0.75)	2.757[a] (0.75)	2.306[a] (0.75)	2.562[a] (0.76)
Observations	**756.0000**	**756.0000**	**756.0000**	**756.0000**	**756.0000**	**756.0000**
Number of nsegmento	**189.0000**	**189.0000**	**189.0000**	**189.0000**	**189.0000**	**189.0000**
R-sq: within	**0.1400**	**0.1400**	**0.1300**	**0.13000**	**0.13000**	**0.1295**
between	**0.6660**	**0.6700**	**0.6700**	**0.6753**	**0.6626**	**0.6677**
overall	**0.4948**	**0.4980**	**0.4900**	**0.5000**	**0.4905**	**0.4938**

Source: Authors' calculations.
Note: Standard errors in parentheses "a" p<0.01, "b" p<0.05, "c" p<0.1.

agricultural services, including access to credit, capital, and technology. Evidence illustrated that this is not the case and that the type of agricultural services just described had a positive impact on agriculture (those who hire agricultural services have productivity 12 per cent greater than those who do not hire agricultural services); the availability of those services is not strongly affected by the construction of roads. This is somewhat surprising, because, in principle, the improvement and construction of roads should facilitate access of machines and should facilitate interaction between services providers and farm producers. However, evidence to support this argument was unable to be generated. It seems

that, in Argentina, roads and agricultural contractual services work well in terms of boosting agricultural production, but work independently. This result suggests that infrastructure functions much along the direct lines highlighted in other papers, namely by way of reductions in transport costs, reduced travel times and lower freight rates.

Moreover, even though both variables have a statistically significant impact on agricultural production and productivity, the evidence indicates that road construction increases agricultural productivity more than it fosters the procurement of agricultural services. This is observed in the case where both variables are analysed together (table 9) as well as when they are included separately (tables 5 and 8).

Thus, arguably, policies aimed at improving agricultural production and the income (or well-being) in rural areas could be successful by targeting road infrastructure and the provision of agricultural services. Investment in road construction and improvement of roads is thus a natural policy-option, as is facilitating access to agricultural services by smaller producers, either by means of tax policies or strong and equitable rules of law.

APPENDIX: ANALYSIS DOMAINS

In the case of the Province of Buenos Aires the analysis domains for which the Agricultural National Survey provides representative estimations are the following:

Eastern cattle zone (1): Ayacucho, Castelli, Chascomús, Dolores, General Belgrano, General Guido, General Madariaga, General Lavalle, La Costa, Las Flores, Magdalena, Maipú, Mar Chiquita, Pila, Pinamar, Rauch, Tordillo y Villa Gesell.

North-eastern cattle zone (2): Berisso, Brandsen, Campana, Cañuelas, Escobar, Exaltación de la Cruz, General Las Heras, General Paz, General Rodriguez, La Plata, Lobos, Luján, Marcos Paz, Mercedes, Monte, Navarro, Pilar, San Andrés de Giles, San Vicente, Suipacha y Zárate.

Northern agricultural zone (3): Arrecifes, Baradero, Capitán Sarmiento, Carmen de Areco, Colón, Chacabuco, General Arenales, Junín, Pergamino, Ramallo, Rojas, Salto, San Antonio de Areco, San Nicolás y San Pedro.

North-western mixed zone (4): Adolfo Alsina, Carlos Tejedor, Florentino Ameghino, General Pinto, General Villegas, Guaminí, Leandro N. Alem, Lincoln, Pehuajó, Pellegrini, Rivadavia, Salliqueló, Trenque Lauquén y Tres Lomas.

North central mixed zone (5): Alberti, Bolívar, Bragado, Carlos Casares, Chivilcoy, Daireaux, General Alvear, General Viamonte, Hipólito Yrigoyen, Nueve de Julio, Roque Perez, Saladillo, Tapalqué y Venticinco de Mayo.

South central mixed zone (6): Azul, Benito Juárez, General Lamadrid, Laprida, Olavarría y Tandil.

Southern agricultural zone (7): Adolfo Gonzales Chaves, Bahía Blanca, Balcarce, Coronel Rosales, Coronel Dorrego, Coronel Pringles, Coronel Suárez, General Alvarado, General Pueyrredón, Lobería, Monte Hermoso, Necochea, Saavedra, San Cayetano, Tornquist y Tres Arroyos.

South-western mixed zone (8): Patagones, Puán y Villarino.

NOTES

[1] For example Bisang, R. (2008)

[2] Production technology is characterized mainly by the absence of tillage and the presence of a plant residue cover on the ground. The same can be produced with minimal impact on decreasing soil erosion risks. This technology allows for production without degrading soil, and in many cases improving the physical, chemical and biological characteristics of it.

[3] Planting two species in the same field in the same year; for example, wheat is sown between May and October and soybeans between November and April.

[4] Agricultural services in this work include what the UN Central Product Classification labels services incidental to agriculture: these ``are services rendered on a fee or contract basis, mostly performed at the site where the agricultural production is done, e.g. services providing agricultural machinery with drivers and crew; harvesting and related services; services of farm labour contractors.''

[5] It is worth noting that the term infrastructure investment includes not only new works, but also repairs, maintenance and widening of existing ones.

[6] They obtain product elasticity with respect to infrastructure investment of 0.39.

[7] Munell (1992), Tatom (1993) and Gramlich (1994), among others, had criticized Aschaeur's estimates, due to endogeneity problems derived of the reciprocal effects between the development of infrastructure and the growth of the economy's aggregate product. While investment in infrastructure can contribute to the increment of an economy's output, economic growth provokes a growing demand of transport and infrastructure services that, through a rise in the rates of return, leads to an expansion of capital stock.

[8] The data used in the work is based in surveys of rural producers and regional and local governments.

[9] Further work done by the same agency in 2004 confirmed these findings and established that the impacts of road improvements are straightforward on transportation conditions and access to basic services, while they are smaller on productive, employment levels and reducing poverty..

[10] The term construction includes roads or accesses that join two or more geographic points in the province, and other road works such as bridges or pluvial drainages.

[11] Surfacing and re-surfacing works consist of the asphalt of roads, highways, streets, and avenues.

[12] Repairs include the improvement of roads, asphalted surfaces, among other types of road rehabilitation.

[13] This term will be employed to make reference to those works that are the object of study. However, it should be clear that this category does not only include the works carried out in rural areas, but also works undertaken in boundary zones between urban and rural areas.

[14] The definition of the geographic space included by each domain can be consulted in the appendix.

[15] Sample selection is based on the stratification of the reference units, according to the use of the land. Thus, the ENA reports representative estimations for each zone or analysis domain. Each domain is composed by a group of contiguous municipal jurisdictions that have a similar behaviour regarding the principal variables (crops and livestock). The analysis domains corresponding to the Province of Buenos Aires are detailed in the appendix.

[16] For example, in the hypothetical case that a agricultural holding is subdivided between one year and the following, maintaining constant its global output, the segments' production would not show any activity changes, while the analysis of the EAPs could exhibit modifications, depending on which holding is selected as reference point.

[17] The survey collects information in tons of each crop produced in all the agricultural campaigns.

[18] The prices of the different crops were obtained from the Secretaría de Agricultura, Ganadería, Pesca y Alimentación and from the Bolsa de Cereales de Buenos Aires.

[19] In the particular case of bovine and sheep, the ENA presents decomposition by age and gender, allowing a precise valuation of output. However, this decomposition is not available for pigs and goats. Thus, the value of output for these two species was estimated by an average price for 1995.

[20] The source of information used to valuate output was the publication *Márgenes Agropecuarios*.

[21] The results of the regressions for the three models indicate that the estimated coefficients are jointly significant at a 1 per cent significance level. Moreover, in all the models the null hypothesis of absence of fixed effects is rejected at the usual significance levels, suggesting that non-observable heterogeneity is a statistical relevant factor. The results of the Hausman test confirm the validity of the random effects estimates. Thus, both fixed and random effects estimates are consistent. Lastly, null of absence of random effects is rejected in the Breusch-Pagan test.

[22] This value (0.45) comes from the correct interpretation of the regression coefficient in a log-in (0,375), which must be transformed as follows: e^{x}-1 ($e^{0,375}$-1 =0.45)

[23] This result is logical since the area corresponding to the region known as "domain 2" is one that has the best land for agricultural production in the country, while in contrast the region used for the comparison base is the one with lower agricultural skills. This in turn is reflected in land value for domain 2, the average price per hectare in 2002 was $1,100 against $487 that land in domain 8 fetched.

CHILD LABOUR AND SERVICES FDI: EVIDENCE FROM VIET NAM

XIII

The objective of this chapter is to examine the impact of services foreign direct investment (FDI) on child labour in Viet Nam. Starting with the reforms in the late 1980s, Viet Nam experienced an economic boom which led to an important decline in poverty and child labour. Over the past decade, Viet Nam has witnessed a drastic acceleration of the structural transition away from agriculture and into manufacturing and services. This chapter merges repeated household surveys and enterprise surveys to explore and gauge the contribution of foreign firms in services and manufacturing in relation to the decline in child labour. It was found that while higher demand for labour by domestic firms tends to increase child labour, the entry of FDI in both the manufacturing and services sectors have contributed to reduce the labour supply of children. A foreign firm's marginal impact of entry in the service sector on child labour supply is larger than the marginal impact of foreign entry in the manufacturing sector. However, the overall impact of FDI services on child labour has so far been smaller than the impact of manufacturing FDI. This is partly due to the fact that FDI in services has been much smaller than in manufacturing, but the growing importance of the former suggests that the impact of FDI on the reduction of child labour supply is becoming larger.

1. INTRODUCTION

Critics of globalization argue that openness often comes with the exploitation of workers in developing countries where worker protection is weaker. As multinational firms relocate to markets with less robust labour standards, governments may be tempted to diminish their labour standards through legislation in order to attract more FDI. This chapter considers whether FDI may create incentive for children to enter or increase their participation in the workplace. Well publicized cases, in the 1990s, of children being exploited by multinational companies in developing countries fuelled this view.[1] There is however evidence that FDI firms tend to pay higher wages than domestic firms (Lipsey et al., 2007). FDI firms tend also to produce more complex goods, usually demanding more specialized, adult labour. Finally, foreign firms serving international markets are more exposed to media than domestic firms. As such foreign firm, whose bottom line may be adversely affected by bad publicity steer away from hiring children.

Services trade liberalization can generate important employment and efficiency gains in developing countries, and thus represent an important driver of economic growth. Economic growth, in turn, is a major determinant of poverty reduction. However, many observers argue that the poor are less likely to benefit from such openness as are the non-poor. Such distributional outcomes might hamper the poverty reducing impacts of liberalization (Nicita, 2006). The effects of integration into the world economy on poverty reduction depend crucially on the extent to which the poor benefit from new employment opportunities as a result of FDI and increased export activities. If the poor are marginalized, either because they live far from the most dynamic areas or they lack relevant skills, then the overall effects of trade liberalization on the poor can be small. There can even be negative effects in the short to medium term if liberalization puts pressure on the poor households' production system, introducing sudden variations on both prices and availability of inputs.

This chapter analyses the effects of a particular outcome of services trade liberalization, that is, FDI in services, on a crucial indicator of households' welfare – work and education choices of children. Viet Nam is the target country of this analysis as it has an extremely rapid transition from a very closed to a very open economy, through industrial policies strongly focussed on the attraction of FDI. The activities of foreign companies are a primary component of services trade liberalization. They alone account for approximately 50 per cent of all transactions falling under the GATS (WTO, International Trade Statistics, Geneva: WTO, 2005 p. 8.). Labour supply and education investments of children and teenagers are a relevant indicator of households' living standards and exposure to external shocks, reflecting different adjustment capacities of poor and non-poor households. Studying the effects of FDI on the labour supply of children can also help with understanding the dynamic effects of openness, as long term impact on growth clearly depends on how human capital investments adjust.

The empirical work relies on three waves of household data surveys and enterprise data surveys data for the period 2002 to 2006. The two datasets are matched at the level of the 64 Vietnamese provinces. Household data surveys are nationally representative and detailed. Enterprise data surveys provide accurate information on the distribution and composition of wage earning opportunities throughout Viet Nam, as they cover all the business entities keeping business accounts and registered under Vietnamese Law. The correlation between changes in the number of foreign owned firms in local labour markets and child employment are identified due primarily to the large heterogeneity in exposure to foreign investment across provinces and over time.

These data revealed that higher rates of FDI entries in the provinces are associated with a reduction in children's labour supply (10 to 14 year olds). The composition of FDI investments is also important. The marginal effect of entry by foreign firms in the services sector is larger than in the manufacturing sector, suggesting that the move toward more services FDI will be associated with a stronger reduction in child labour supply. However, to date, FDI on manufacturing has had a greater effect than on services, due to higher levels of FDI on mining and on low-skill manufacturing (textile and food processing) in provinces with higher rates of child labour.

While it is difficult to conclude that higher FDI's have a strong causal effect on child labour, the findings support the view that FDI are on average "high quality" employers in rapidly industrializing environments. This finding is important as child labour seems to increase in those provinces that are industrializing at a faster rate. In this second phase of the Vietnamese transition, a rapid reallocation of family labour across activi-

ties was observed, with family members substituting household production for labour supply outside the household. Given the still modest absorption capacities of the new firms and the consequent rise in unemployment, this substitution amounts to trading-off a low-earning, relatively secure source of income – household farming – with a higher earning, but more uncertain, income source – wage labour. Even if all family members leaving agriculture manage to be hired in new firms, more pressure will be placed on children to take up the slack from the resulting scarcity of the labour available for household production. This household adjustment in the labour supply is more pronounced among poor families, who lack resources to hire outside labour for household production.

On the other hand, as previously pointed out, when new economic opportunities become available through FDI, child labour supply seems to decline. This could be explained by a relative decline in the relative wage offered to children in provinces where FDI is prominent (due perhaps to a stronger reluctance by foreign firms to hire child labour). Moreover, the income effect associated with higher wages paid to adults allows them move beyond their minimum income needs, (such as in Basu, K. and H. Zarghamee, 2009) thus reducing the reliance on child labour income.

Another finding, uncovered by the analysis, is that the greater number foreign firms into services increases school enrolment rates of 6 to 19 year olds. This increase in school enrolment is linked to the higher skill production outputs of FDI firms. As FDI in the services sector tends to require more educated labour, the current liberalization process and the consequent increase in the weight of FDI in services could have an impact on expected returns to higher education discouraging education drop-outs in the future.[2]

The remainder of the chapter is organized along 4 further sections. The next section – section 2 – reviews the literature on FDI, within household labour supply and child labour. Section 3 presents the firm-level and household data used in the chapter, and discusses the large heterogeneities in education and working choices of children across income groups and Vietnamese provinces. Section 4 examines the methodology and the empirical results. Section 5 concludes.

2. FDI AND CHILD LABOUR: A REVIEW OF THE EVIDENCE

While the enforcement of child labour laws may not be as strong as in other parts of the world, Viet Nam experienced a rapid decline in child labour in the 1990s (Edmonds and Turk, 2002). This decrease in labour market participation of the young has been mainly attributed to Viet Nam's rapid economic growth (which is also consistent with the dominant view among economists). Indeed, there is now consensus in economic literature that the main cause of child labour is poverty (see Edmonds, 2008 or Basu, Das and Dutta, 2009).

In Becker's view of time allocation within households, putting children to work is seen as a rational household decision (Becker, 1981), as poverty and lack of opportunities push children into the labour force. This view makes economists very sceptical of regulations that impose the elimination of child labour. According to economic historians (see Nardinelli 1990) the elimination of child labour in Europe and in the United States of America in the nineteenth and early twentieth century had as much to do with child labour legislation as technological progress and growth making it possible for households not to send their children to work. Thus, when considering policies aimed at eliminating child labour it is necessary to focus on policies that eliminate the dependency of poor households on children's income – the reason why children are working. This requires policies that would lead to an increase in income for poor households. Conditional cash transfers, such as Progresa in Mexico, seem to be an effective tool.[3] But policies simply forbidding the utilization of child labour such as consumer boycotts or trade sanctions may be counterproductive. Indeed, they may result in a displacement of child labour from companies hit by boycotts or sanctions to other firms, where employment can actually be more dangerous. They can also increase child labour in other firms, as lower wages for child labour associated with these polices (as demand declines) may actually result in a stronger need for sending children to the workplace. In other words, lower wages for child labour may imply that more children are sent to work in order to meet the minimum income needs of the family (see Basu and Zarghamee, 2009).[4]

The rapid increase in FDI experienced by Viet Nam in the 1990s is in principle an engine of growth which

contributed in improving poor households' income (see UNCTAD, 2008). This income effect could also facilitate in reducing child labour. Moreover, consumer activism and government legislation in OECD countries has left multinational firms reluctant of hiring child labour.[5] This reluctance may also lead to further reducing child labour.

However, as previously pointed out, these types of decisions may backfire and lead to more, not less child labour, as a reduction in child labour demand may actually lead to an increase in child labour in equilibrium in order to match the income needs of poor families. Therefore, FDI will generally lead to a reduction in child labour as it progresses economic opportunities for local workers. Paradoxically FDI may also inadvertently lead to an increase in child labour if accompanied by measures that prevent child employment by multinationals, as child workers reallocate into other sectors or are forced to enter the labour market.

A second channel by which FDI might affect child labour is the induced change in employment choices of the adults. In fact, for a given level of household income, children of the self-employed have higher labour market participation rates than children of the salaried workers (see Parick and Sadoulet, 2006). In developing countries, owners of micro-enterprises rely heavily on labour inputs from their families, as family workers are not only cheaper but also more flexible. If FDI increases mobility from self-employment to salaried work, a negative relationship between FDI and child labour could be reinforced. However, if adult workers hired by multinationals are replaced at their home enterprise by their spouses and children, FDI may again inadvertently increase child labour through this channel.

As child labour tends to come primarily from poor and relatively uneducated families, it is important to consider the effect of FDI on wage inequality in host countries. Foreign direct investment and outsourcing by multinational firms can raise relative demand for skilled labour, increasing wage inequality. Feenstra and Hanson (1997) found that capital transfer by American firms accounted for the bulk of the increase in the skilled labour share of the total wage bill that occurred in Mexico in the late 1980s. If the incomes of the wealthy and skilled increases while the incomes of the poor remains stagnant, rising prices in the consumption basket might affect the purchasing power of those at higher risk of poverty, potentially increasing child labour.[6] On the other hand, even though wage inequality increases an increase in the absolute wage of unskilled workers may be observed suggesting that FDI leads to a decline in child labour through the impact of FDI on absolute wages. In order to check whether this is an important mechanism in the empirical analysis results with and without controls for wages are reported.

An important consideration of the survey of existing literature is that whether rapid increase in FDI leads to a reduction or an increase in child labour is an empirical question. Cross country evidence provided by Newmayer and Soysa (2005) in a sample of 145 countries suggests that FDI categorically leads to a reduction in child labour. However, there could be quite significant (observed and unobserved) heterogeneity in the relationship between FDI and child labour. For example, FDI from non-OECD countries may have a different impact than FDI from OECD countries, simply because the latter is more likely to be subject to consumer activism, or because host countries vary in their enforcement of child labour laws.

Moreover, Newmayer and Soysa (2005) do not address the endogeneity problem, which could potentially lead to significant biases. For example, FDI may be attracted to countries with higher skill endowments (see Blonigen et al, 2007), and countries with higher skill endowments tend to be richer and have less child labour for reasons that have little to do with FDI. Davies and Voy (2009) address this issue in a cross-country setup and show that the negative relationship between FDI and child labour disappears once they instrument and control for GDP per capita, suggesting that the main channel through which FDI affects child labour is through its impact on GDP per capita. This confirms the micro-economic view that what affects the rates of child labour is level of household income. It also raises the question of whether the decision of multinationals not to employ children has any impact on the child labour employment by other firms. Their results suggest that the decision would only lead to a reallocation effect from foreign to domestic firms (in the non tradable sector). But their aggregate cross country approach does not allow them to disentangle the mechanism. In order to deepen understanding of the complex links between FDI and child labour, a different identification strategy based on merged micro-data for enterprises and families over multiple years is put forth. The possible simultaneity between FDI inflows and labour supply choices is significantly mini-

mized given that a large number of location and family characteristics, such as the prevalence of agricultural activities in the regions, the household income and education, are controlled for. By using fixed effects at the level of provinces, the relationship between changes in labour supply of children and changes in FDI are focussed on. Thus, time-invariant, province-level unobservable characteristics are controlled for that might affect both the extent of child-labour and the attractiveness of the place where the household is located. Regarding reverse causality concerns, it should be noted that the concerned time period is characterized by large increases in FDI inflows, (as a consequence of, amongst other things, drastic liberalization of FDI entry in the country) and large redistribution of the foreign investments within the country (through industrial park and special economic zone policies). In this context, it is unlikely that changes in household behaviour are a significant determinant of location choices by foreign firms.

3. FDI, STRUCTURAL CHANGES AND LABOUR SUPPLY IN VIET NAM: DESCRIPTIVE EVIDENCE

This section provides descriptive information on the industrialization process and labour market choices of families in Viet Nam from 2000 to 2006.

Data

Two complementary sources of data are used. The first source is the annual enterprise survey of the General Statistical Office of Viet Nam, of all establishments. The enterprise data are collected annually for all sectors and industries registered under Vietnamese law. Accordingly, the coverage of the survey includes almost all enterprises in 29 sectors and industries in three industrial groups (4 sectors in mining and quarrying, 23 in manufacturing, and 2 in electricity, gas and water supply), providing a wide range of information on the property structure of enterprises, output, capital stock, investment, employment, location, wages, sales, and so forth. Three waves of the surveys that collect information on enterprises' ownership, productive factors (labour, capital, assets) and business results in 2002, 2004 and 2006 are used. Information on the number, ownership and characteristics of enterprises which started their activity between 2001 and 2006 is derived from the data. This information is used to construct the main explanatory variables in the models.

The second source of data consists of repeated household and community surveys for 2002, 2004 and 2006, called the Vietnam Household Living Standard Surveys (VHLSS). The data are representative at the national and provincial level, including detailed community level questionnaires only for the communes in rural areas. The household survey contains information on the number of household members, age, income, employment, school attendance, level of education of the household head, overall household expenditure and income, as well as the locality where the household lives. The number of sampled households in VHLSS 2002, 2004 and 2006 was 29,533, 9,188, and 9,189, respectively. Around 4,000 thousand families are observed longitudinally for two waves, while a more limited sample of around 1,900 households is observed over all the three waves.

The situation of foreign and domestic enterprises

The *Doi Moi* (renovation) policies in Viet Nam brought about remarkable results in terms of economic growth and poverty reduction. Over two decades (1986-2006), GDP growth hovers around 7.5 per cent per year on average and export growth nearly 20 per cent. The strong growth posted by the Vietnamese economy has sent poverty rates tumbling since the 1990s. The poverty headcount has been slashed from 58 per cent in 1993 to 16 per cent in 2006. The number of people below the food poverty line also declined from 25 per cent to 7 per cent during this period (Nguyen, 2009).

There is extensive literature describing the Vietnamese transition in the 1990s. This section supplements the literature by describing the rapid evolution of Viet Nam in the first years of 2000. This second phase of the Vietnamese transition was marked by a pronounced industrialization, in part sustained by a new surge of FDI after the trough between 1997 and 1999. The region that experienced the greatest decrease in child labour was the Red River Delta – the economic centre of northern Viet Nam. As noted by Mai (2004), most of the FDI in the River Delta region was channelled toward services.[7]

Although manufacturing has traditionally attracted an important share of FDI, recent reforms associated with Viet Nam's WTO accession have significantly increased the share of services FDI. This started with accession negotiations in 1995 and culminated

with the adoption of the Law on Investment in 2005. Hurdles for services FDI are still relatively important (most of the 14 sectors subject to conditional approval are services sectors: see Law on Investment 59-2005-QH11). However, according to Doanh (2002), services FDI (hotels, restaurants, transportation and communication and other service industries such as insurance) account for 22 per cent of the total projects and 40 per cent of the total committed capital in 2002.

A large share of FDI comes from non-OECD sources, implying that legal restrictions in source countries regarding employment in the host country, common for OECD countries, may not be such a binding constraint in Viet Nam.

The most compelling indicator of the structural change in Viet Nam is the decreasing share of employment in agriculture. In 2006, 73 per cent of the total population of 83 million people lived in rural areas (UNFPA, 2008). The number of rural households in Viet Nam was 9.74 million, a decrease of 950,000 households (8.9 per cent) compared with 2001. This reduction results from continuous population growth, (1.21 per cent in 2006) associated with low productivity growth of agriculture and progressive conversion of land for the development of industrial zones. According to MONRE figures, 162 industrial zones were approved by the Government of Viet Nam in 2004, of which 68 were already in operation and 44 were in the process of establishment (Viet Hung, 2007). A high proportion of industrial zone land was converted from agricultural use (76 per cent) and large numbers of rural households were effected (408,698 individuals according to MONRE figures quoted in Ngo Viet Hung, 2007). While many rural households are diversifying their income sources by engaging in wage earning, they still keep their farmland as a stable income source (Thinh, 2009).

The maps in figure 1 show the evolution of the share of FDI employees over total enterprise's employees in 2002, 2004 and 2006. As can be seen, the number of provinces with no FDI employment (in white) diminishes during this period, suggesting that FDI investments are spreading outside the most dynamic areas of the Red River Delta (the Hanoi region in the north) and of the Mekong Delta and south-east regions (where Ho Chi Minh city is located). The tendency for new investments has been to locate more in neighbouring areas due to increasing costs of operating in the two major cities. It is interesting to observe that Hai Duong Province, in the Red River Delta most affected by agricultural land loss to the development of industrial parks, also had the largest increases in FDI employment. In Hai Duong, the proportion of employees in FDI firms was 7.6 per cent in the enterprise survey of 2002, 16.1 per cent in the survey of 2004, and 28.1 per cent in the survey of 2006 (Enterprise Survey data, 2002/2004/2006).

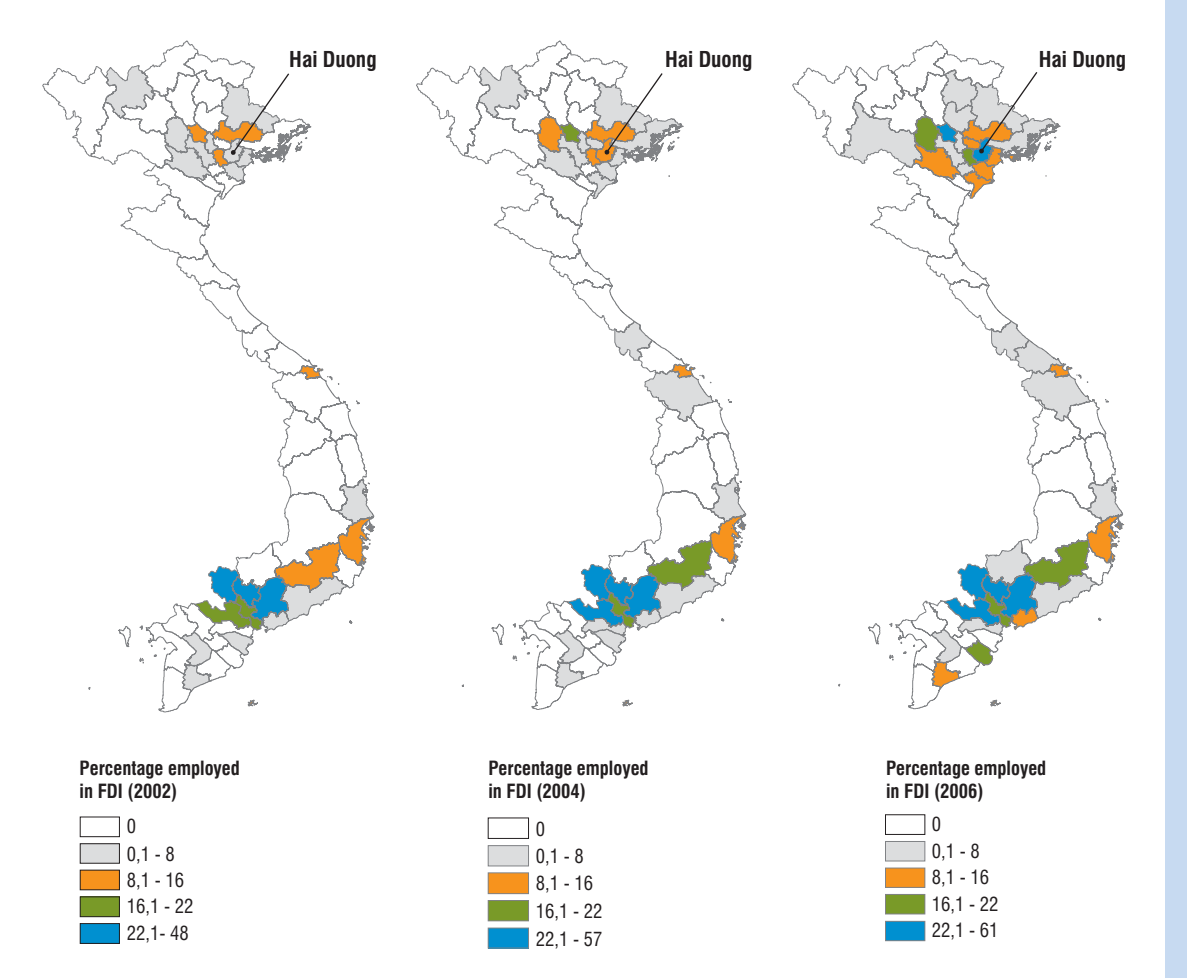
Table 1 provides descriptive statistics on the firms surveyed by the three enterprise surveys. For each year, the first column refers to province-level averages for each and every formal enterprise, while the second column refers to average values for those enterprises located in the two major cities of Hanoi and Ho Chi Minh. A relatively conservative definition of the services sector was adopted that does not include those enterprises whose primary activity is construction, wholesale and retail sales.[8]

As expected, the overall number of firms and the number of FDI firms is much larger in the two cities. However, the increase over time in industrial presence is very similar in both the full and city sample, suggesting no increase in concentration around the main metropolis. The number of FDI firms in the services sector is very modest, even if the FDI presence in this sector increased more rapidly than average. The situation is similar if only foreign firms entering the market in the two years preceding the survey are considered. The entry of FDI enterprises in the service sector is proportionally greater between 2004 and 2006, with an approximate four-fold increase. Foreign firms in the service sectors are smaller, (lower turnover and less employees) and tend to pay higher wages.[9]

The introduction of the New Law on Enterprises in 1999 and the introduction of the first Competition Law of Viet Nam in 2005 gave a drastic acceleration to the privatization process (equitisation). There is a trend toward privatization of all small and medium State Owned Enterprises, with the largest and strategic firms remaining 100 per cent public. WTO accession in 2007 further accelerated the equitisation process, even if most sources agree that the objective of full public disengagement by 2010 will not be met.[10]

The average enterprise size (indicated by turnover and employees per firm) based outside large cities in 2002 was greater. Recently, the trend is toward a marked decrease in firm size, in particular outside large cities. This trend may reflect both the elevated dynamism of the private sector under new regulations and the increased level of formalization of small businesses (increasingly captured in enterprise surveys).

Figure 1. Proportion of employees in foreign owned firms for the 2002, 2004 and 2006 surveys



Note: The Vietnamese provinces are assigned darker colors as the ratio of employees in FDI firms over the total number of employees in the surveyed firms increases. Authors' elaboration using the Viet Nam enterprise surveys of 2002, 2004 and 2006.

Real wages at 2000 prices are consistently higher in FDI firms than in national firms. Even if wages across all enterprises continue to increase faster than in the FDI firms, employees in FDI firms seem to enjoy higher salaries (premiums), especially in the cities of Hanoi and Ho Chi Minh. It is difficult to gauge whether this premium is simply due to the fact that foreign-owned firms tend to be larger, better endowed with capital, operate in the most productive sectors or located in the richer provinces. Table 2 shows that FDI firms tend to pay more, even after controlling for observable differences in size, capital endowments, sector and location.

In table 2, column 1 presents a linear regression of the logarithm of average logarithm of the average wage (at 2000 prices) of the firm in 2006 on the logarithm of the number of employees, the logarithm of the capital value, 25 sector dummies,[11] province of location dummies, and two dummies for public and for foreign ownerships. Publicly owned firms seem to pay higher wages than privately owned firms, except when firms are foreign owned. Thus, the results of column 1 confirm that FDI firms tend to pay higher wages.

In order to assess the evolution of wage growth between domestic and foreign firms, column 2 (table 2) provides a first-difference regression estimated on the panel of firms present both in the 2004 and in the 2006 enterprise surveys. Confirming the earlier observation in the descriptive statistics – the wage growth between 2004 and 2006 was (slightly) lower

Table 1. Descriptive statistics of firms in Viet Nam, 2002-2004-2006 enterprise surveys

	2002		2004		2006	
	All	Hanoi & HCM	All	Hanoi & HCM	All	Hanoi & HCM
No. of firms/100	9.69	119.83	13.48	193.98	20.51	293.18
	(20.68)	(35.68)	(33.00)	(61.23)	(51.79)	(106.97)
No.of foreign owned firms/100	0.24	3.51	0.34	4.78	0.52	6.64
	(0.87)	(2.96)	(1.21)	(3.82)	(1.72)	(4.90)
No. of employees in foreign owned firms	127.68	1136.88	176.57	1589.33	233.34	1981.66
	(403.20)	(1453.66)	(557.37)	(1933.11)	(691.13)	(2 134.47)
No. of foreign owned firms in service sector	2.88	79.50	3.99	115.00	9.09	253.00
	(14.33)	(30.41)	(21.30)	(69.30)	(48.50)	(156.98)
Entry foreign owned in last 2 years	9.71	134.50	11.24	127.00	15.65	186.5
	(35.32)	(96.87)	(36.21)	(86.27)	(48.23)	(108.18)
Entry foreign owned in service sector in last 2 years	1.03	27.50	1.22	35.50	4.84	138
	(4.97)	(10.61)	(7.70)	(38.89)	(26.58)	(87.68)
Proportion state owned firms	0.06	0.04	0.06	0.02	0.01	0.01
	(0.18)	(0.03)	(0.21)	(0.02)	(0.01)	(0.01)
Proportion foreign owned firms	0.01	0.03	0.01	0.02	0.02	0.02
	(0.03)	(0.02)	(0.03)	(0.01)	(0.03)	(0.01)
Proportion firms in service sector	0.17	0.24	0.16	0.26	0.16	0.29
	(0.13)	(0.00)	(0.08)	(0.00)	(0.06)	(0.01)
Turnover/1000	16.28	2.49	6.76	2.08	1.56	2.42
	(118.79)	(0.24)	(43.14)	(0.04)	(1.66)	(0.66)
Employee per firm	525.02	69.26	170.70	54.53	45.76	46.13
	(3 574.77)	(7.18)	(940.77)	(3.82)	(22.70)	(5.83)
Yearly wage per worker (million VND)	8.57	14.34	9.45	13.26	11.06	16.49
	(3.21)	(5.54)	(2.16)	(2.17)	(2.36)	(2.44)
Yearly wage per worker in foreign owned	19.78	39.32	17.61	40.43	18.43	40.46
	(20.21)	(8.56)	(14.39)	(11.00)	(15.70)	(3.20)
Yearly wage per worker in service sector	10.48	24.58	10.99	16.30	12.57	18.86
	(5.13)	(15.94)	(2.42)	(2.58)	(2.69)	(4.30)
Number of observations	**62 908.00**		**91 755.00**		**131 168.00**	

Note: the statistics are province-level averages obtained from the Viet Nam Enterprise Surveys of 2002, 2004 and 2006. The survey covers all firms keeping business accounts and registered under Vietnamese Law. Standard deviations in parenthesis. Turnover and wages are millions of Vietnamese Dong (VND) calculated at 2000 prices.

among foreign owned firms. Interestingly, the FDI wage premium may be declining as privatization progresses.[12]

Even under the unrealistic assumption that foreign-owned firms completely push out local employers, the entry of FDI seems to lead to higher wage earnings. The positive correlation between FDI status and wages might also be explained by the selective hiring of foreign enterprises, preferring older and more skilled workers. Unfortunately, the enterprise survey lacks information on the average education and age level of the workers, which would allow for verification of this hypothesis.

Child labour and schooling in industrializing Viet Nam

Employment of children under the age of 15 is illegal in Viet Nam,[13] with some exceptions for 12 and 15 year olds where employment is restricted to a few activities specified by the Ministry of Labor, War Invalid and Social Affairs (MOLISA)[14] circular No 21/1999/TTBLDTBXH.[15] However, adequate enforcement of child labour laws is lacking, and punishment for those that infringe them is not always clearly defined. Child labour declined very quickly during the period of high economic growth of the 1990s, following the reforms of the late 1980s. However, child labour is a

Table 2. The earning premium in FDI industries

	Log (wages/ employee)	Δ Log (wages/ employee)
Log (number employees)	-0.107[a] (-0.0031)	...
Log (capital)	0.194[a] (-0.0023)	...
Public owned	0.141[a] (-0.016)	...
Foreign owned	0.332[a] (-0.015)	-0.0307[b] (-0.015)
Δ Log (number employees)	...	-0.148[a] (-0.006)
Δ Log (capital)	...	0.162[a] (-0.004)
Privatized	...	-0.109[a] (-0.016)
Constant	**1.253[a] (-0.029)**	**0.360[a] (-0.003)**
Sector fixed effects	**Yes**	**No**
Province fixed effects	**Yes**	**No**
Observations	**73 295.000**	**73 076.000**
R2	**0.363**	**0.043**

Note: "a" p<0.01, "b" p<0.05, "c" p<0.1, robust standard errors in parentheses. The sample is restricted to those enterprises observed both in the 2004 and in the 2006 waves of the enterprise surveys.

persistent phenomenon in an economy where farming and small household enterprises still dominate the income-generating activities of the population. UNICEF speculates that around 23 per cent of 5 and 15 year olds were working between 1999 and 2004, which is a staggering double the percentage number of children working in East Asia (http://www.unicef.org/protection/files/SOWC06_Table9.pdf).[16]

Table 3 presents summary statistics for the employment time of 10 to 14 year olds, for the whole population in the first column, for the lowest quintile of real expenditures in the second column, and for the highest quintile of real expenditures in the third column. Schooling attendance has increased by 3 percentage points on average between 2002 and 2006. However, the poorest quintiles school attendance decreased between the same period – 85 per cent attended school in 2002, compared to 82 per cent in 2006. All the variables relating to child labour market participation show an increase between 2002 and 2004. A large variation in per-capita expenditure did not exist over the period that might explain such an adjustment in child labour market participation. One factor behind such a trend is the new legislation banning labour market participation of children just prior to the 2001 survey. It is likely that the enforcement of this legislation was greater just after its approval, and that families interviewed for the 2002 survey underdeclared child work for the fear of incurring sanctions. In comparing 2004 with 2006 data, the most marked decrease is in the activities of the children in family farming. Child labour on household enterprises and for wage earnings is minimal, while 50 per cent of children are engaged in housework.

The most important point to emerge from these statistics is that further reduction in child labour in the second phase of the Vietnamese transition was not accompanied by a proportional increase in schooling activity. The dichotomy work or study is thus overly reductive in this rapidly evolving context, where economic shocks can clearly bring children into inactivity.[17]

Characteristics other than family income can also be important in determining whether children work or not. Table 4 provides descriptive data on characteristics of families having children under the age of fifteen, disaggregated by working status of the children. As can be seen, families with working children are larger, are more likely to come from ethnic minorities, and have significantly lower income. There are fewer families with working children in which the household head is engaged in services related occupations, and, as expected, child labour is strongly negatively correlated with the education of the household head.

In situations when the demand for child labour increases, strategic choices might be made within the household over which child should leave school or supply extra hours of work. Gender might represent an important discriminatory factor when making these decisions. [18]

4. INDUSTRIALIZATION, FDI AND CHILD EMPLOYMENT: METHODOLOGY AND EMPIRICAL RESULTS

This section explores the causal relationship between FDI and the way children spend their time. A straightforward empirical strategy is followed, whereby change in FDI entries between 2002 and 2006 is correlated with changes in child labour.

Table 3. Schooling and working activities of children in Viet Nam (2002-2006)

	2002			2004			2006		
	All	1st quintile	5th quintile	All	1st quintile	5th quintile	All	1st quintile	5th quintile
Attending school	0.90	0.85	0.98	0.93	0.85	0.97	0.93	0.82	0.97
	(0.30)	(0.36)	(0.14)	(0.26)	(0.36)	(0.16)	(0.25)	(0.39)	(0.17)
Working (all activities)	0.14	0.21	0.02	0.21	0.32	0.04	0.12	0.23	0.05
	(0.35)	(0.41)	(0.16)	(0.41)	(0.47)	(0.21)	(0.33)	(0.42)	(0.22)
Hours of work	3.01	4.50	0.49	3.51	5.63	0.67	2.16	4.42	0.94
	(9.12)	(10.56)	(4.11)	(8.74)	(10.37)	(3.92)	(7.19)	(10.04)	(4.80)
Agricultural work	0.12	0.19	0.02	0.19	0.30	0.03	0.11	0.22	0.04
	(0.32)	(0.39)	(0.12)	(0.39)	(0.46)	(0.17)	(0.32)	(0.41)	(0.20)
Work for wage	0.02	0.03	0.00	0.02	0.02	0.00	0.01	0.01	0.01
	(0.14)	(0.16)	(0.07)	(0.13)	(0.13)	(0.03)	(0.12)	(0.11)	(0.08)
Work for family business	0.02	0.01	0.01	0.02	0.01	0.02	0.01	0.00	0.01
	(0.12)	(0.12)	(0.08)	(0.13)	(0.10)	(0.13)	(0.09)	(0.07)	(0.07)
Work at home	0.44	0.50	0.28	0.54	0.61	0.44	0.50	0.55	0.41
	0.50)	(0.50)	(0.45)	(0.50)	(0.49)	(0.50)	(0.50)	(0.50)	(0.49)
Expenditure per capita (million VND, 2000 price)	7.83	7.32	8.99	7.99	7.34	8.97	8.21	7.38	8.95
	(0.53)	(0.24)	(0.34)	(0.53)	(0.23)	(0.35)	(0.51)	(0.22)	(0.32)

Note: Statistics refer to children ages 10-14, younger than the legal working age since 2001. Quintiles are based on the distribution of per-capita real expenditures in food and non-food items. Authors' calculation from Viet Nam VHLSS data for 2002, 2004 and 2006, using sampling weights. Standard deviations in parenthesis.

Although the detailed household data is used to control for household and child characteristics, the fundamental variation used to identify the impact of FDI is at the province level. The basic specification is given by Equation 1:

Equation 1

$$\ell_{c,h,p,t} = \alpha_p + \alpha_t + \beta FDI_{p,t\&t-1} + \gamma NOTFDI_{p,t\&t-1} + \lambda H_{c,p,t} + \delta C_{h,p,t} + \theta M_{m/p,t} + \mu_{c,h,m,p,t}$$

Where $\ell_{c,h,m,t}$ is either an indicator of the participation in the labour market by child *c* of household *h* living in commune *m* of province *p* at time *t*. A dichotomous variable is used to capture a child's participation in the labour market. The variable takes the value *1* if he or she works and *0* otherwise. FDI captures the number of entries by foreign firms in the province at year *t* and at *t-1*.

Although of most interest is the effect of new FDI in the services sector, a separate test is performed of the impact of FDI in the services sector and in the manufacturing sector. *NOTFDI* indicates the number of Vietnamese-owned firms created at year *t* and at *t-1*, and is a proxy for the process of domestic industrialization, advancing at different speeds in the different provinces. *H* is a matrix of household characteristics such as income and household head education. The *H* matrix also includes variables on the number of hours worked by household members other than the children, to capture possible substitution and complementarities in labour supply within the family. *C* is a matrix of child characteristics such as gender and age. *M* is a matrix of province and community characteristics, that is, the rural or urban status of the commune and the share of households employed in agriculture in the commune, the proportion of firms in service sectors in the province, the average real wage of workers in the province's enterprises.μ is an error term. Because the left-hand-side variable is dichotomous, a Logit estimator is used.

A positive β indicates the higher the entry of FDI firms in the province the higher the child labour participation, which would confirm the view critics have of Globalization. A negative coefficient suggests FDI helps to reduce child labour. There is particular interest in comparing the sign of β and γ, to explore

Table 4. Child labor and household characteristics (2006)

	No working child	Having working child	Total
Household size	4.82	5.51	4.87
Fraction of children under 16 year olds	0.36	0.42	0.36
Fraction of people older 60 year olds	0.06	0.04	0.06
Age of head	45.56	44.21	45.46
Ethnic minorities (yes=1)	0.13	0.40	0.15
Living in urban (yes=1)	0.26	0.07	0.25
Income per capita (million VND)	7.83	4.68	76.12
Expenditure per capita (thousand VND)	5.604	3.33	5.44
Head occupation			
Leaders/managers	2.44	1.74	2.39
Professionals/technicians	4.97	0.39	4.65
Clerks/service worker	3.69	2.17	3.58
Agriculture/forestry	45.31	70.63	47.06
Skilled workers/machinery	14.31	8.86	13.93
Unskilled workers	18.15	10.61	17.63
Not working	11.13	5.6	10.75
Education of head			
< Primary	24.43	42.79	25.7
Primary	26.23	24.62	26.11
Lower-secondary	26.74	25.22	26.63
Upper-secondary	8.49	3.99	8.18
Technical degree	9.43	3.38	9.01
Post-secondary	4.69	0.00	4.36
Number of observations	**5 109.00**	**443.00**	**5 552.00**

Note: Authors' calculation with VHLSS 2006 data, using sampling weights.

whether the demand for labour by foreign owned firms has different effects other than domestic firms on the way children spend their time.

Consideration is also given to whether different types of FDI may lead to different outcomes, for example to determine whether FDI in manufacturing have different impacts on child labour from FDI in services. The impact of FDI on child labour may also depend on whether domestic firms are in the manufacturing or services sectors, as this may affect the scope for displacement, in particular if manufacturing firms are exporting to OECD countries where consumer activism may hurt them if they employ child labour. [19]

Results are displayed in tables 5, 5a and 6. In the first column of table 5, individual data from 2002, 2004 and 2006 is pooled and regressed with the binary variable on child labour ("*Working*") on the number of new FDI firms in service in the province, as well as the individual, family and community characteristics explained above. In this pooled regression without province fixed effects, child labour and the number of services FDI firms in the province are positively correlated. As expected, child labour is more prevalent in communities with a larger share of households engaged in agricultural activities. The children from richer and more educated families have a significantly lower participation rate in the labour market. There is a significant gender bias, with female children supplying more labour. Interestingly, while larger families tend to have more children working, the propensity of children decreases with the number of teenagers in the household. This might indicate that child labour is a last-resort for families experiencing

increases in the demand for labour. Families first expand the supply of labour of the young and only if further labour-constrained decide to engage children below the legal working age. Controlling for real expenditures per-capita, child labour decreases with higher labour participation of adult household members (hours worked by 21 to 65 year olds), but increases with teenager hours worked. The latter result might reinforce the intuition of complex within-household interactions in labour supply, with families resorting to child labour when they have exhausted the availability of labour supply of older children.

The positive correlation between FDI in services and child labour in column 1 of table 6 may be spurious due to excluded province characteristics, most notably the province's degree of industrialization. As already pointed out, rapid industrialization may result in a high number of family members moving from farms and home workshops into factory work, thus increasing the demand for child labour for family farming and other household activities. In column 2 of table 6, a variable has been added to proxy the intensity of industrialization in a province, that is, the number of new enterprises created at *t and t-1*. It can be seen that the proxy for the entry of services FDI firms change signs, becoming negatively correlated with child labour, even if the variable is statistically significant only at the 15 per cent level. Interestingly, the entry of non-FDI firms is positively correlated with child labour and strongly statistically significant.

Other observed and unobserved province characteristics might also affect the correlation between FDI and child labour. The estimation results reported in column 2 of table 5 will thus be biased if there is selection into provinces by FDI firms which may select locations with characteristics correlated with child labour (good quality infrastructure or population density). Another source of selection bias might be regional development policies which may drive location of foreign firms into particular regions.

The availability of data over multiple years allows for the addition of province fixed-effects that capture observed and unobserved heterogeneity among provinces. As long as these unobservable determinants of firm location, correlated with child labour, are invariant during the 2002 to 2006 period, the inclusion of province fixed effects reduces the possible bias due the endogenous sorting of enterprises. In column 3 of table 5, we report results of a model with province fixed effects the entry of FDI firms in the services sector reduces the likelihood of child labour. The coefficient is greater in size and statistically significant at the 1 per cent level, suggesting that unobservable province characteristics bias the effect downwards in the specifications reported in columns 1 and 2. In column 3 of table 5 we also include the number of FDI entries in non-service sectors (mostly manufacturing and mining). This type of foreign investment tends to reduce the likelihood of child labour. At the margin, the effect of the entry of an additional foreign-owned firm in the service sector is greater than the effect of the entry of a foreign firm in the manufacturing sector. In fact, the predicted probability of working for children in the specification in column 3 of table 5 declines from 1 percentage point (from 9 per cent to 8 per cent) as the number of entries of foreign manufacturing firms increases from 1 to 12. An increase in the number of foreign owned firms in the services sector from 1 to 7 is enough to reduce the predicted probability of working of 1 percentage point (from 8.5 per cent to 7.5 per cent).

However, there are 5 times less foreign-owned firms in the services sector. This means that the effect of FDI in manufacturing on child labour is overall greater than the impact of FDI in services on child labour. This finding might be explained by the fact that provinces with higher incidence of child labour were less successful in attracting the relatively skill-intensive services sector FDI. As was seen previously, there has been an equal provincial distribution of more traditional FDI (textile, mining, food processing) throughout Viet Nam, as such including those provinces with larger and more rapidly decreasing rates of child labour. However, the province and the year fixed effects should, at least partly, control for these province-specific trends in child labour.

In the regression with province fixed effects, there is a general finding that increases in the overall proportion of firms (both FDI and domestic) in the services sector lead to a lower incidence of child labour. This finding can be explained by the relative skill intensity of services industries with respect to the mining, agricultural processing and manufacturing industries in Viet Nam. In column 4 of table 5 the average wage in each province is added as an additional regressor, in orders to check whether the main channel driving the negative correlation between FDI and child labour is the "earning effect", described in the previous section. Interestingly, the wage variable is not significant when included together with the FDI variable. This suggests

that other channels might be more important in explaining the main finding – most likely the fact that FDI industries increase the demand for skilled labour and provide more secure, high-quality jobs. The positive link between a rapid domestic industrialization process (proxied by the increase in non-FDI firm creation) and child labour deserves further reflection. Given that child labour is concentrated in agriculture and household activities, it could be deduced that a rapid diversification out of agriculture into wage labour would decrease the frequency of labour market participation of children. Things might work differently if labour market imperfections generated a positive association between industry creation and unemployment. As the expected earnings in industry are much greater than the earnings in agriculture, labour market incumbents (the young in particular) might be ready to leave agricultural work even at high risk of transitory unemployment. Teenager transition out of agriculture is highly relevant in the data (10 per cent decrease in agricultural participation of the 14-19 years old between 2004 and 2006), which is in all likelihood much higher than the absorption capacity of the new firms.

Shocks associated to transitory unemployment, and the parallel higher demand for child work due to teens leaving the household farm, might be particularly relevant for poor households. In fact, after more than 15 years of sustained growth, child labour seems mainly to persist in poor households exposed to negative income fluctuations. To explore this hypothesis, the number of new, non-FDI enterprises with the logarithm of real per capita expenditure of the household is interacted (column 5). The interaction term is negative and strongly statistically significant, indicating that the industrial transition is more likely to induce increased rates of child labour in poorer households. Interestingly, the interaction between expenditures and FDI entries is not statistically significant (result not shown). Successful attraction of FDI seems to partially compensate possible adjustment effects of rapid industrialization on child labour. A subsample of the families is followed over the three waves of the surveys, permitting to test whether the main result on child labour holds when controlling for household fixed effects (table 5, column 6). The advantage of including the fixed-effect at the household level is that some crucial unobservable characteristics, such as family-specific degree of aversion to child labour or exposure to risk, can be controlled. However, there are notable problems with the household fixed effect model. The major problem being that there is much less variation in child labour participation within the household, as many families might not have children in the relevant age range (10 to-14 year olds) in the three waves. One consequence is that the overall fit of the model is much worse and few variables are significant. Another important problem of the household-fixed effect specification is that attrition is likely to be non-random, those households disappearing from the panel being more likely to have moved to provinces with better living or earning conditions. As can be seen in table 5 (column 6), the signs on Service FDI and Non-FDI firms confirm the results previously discussed, but are not statistically significant as most of the other variables.

Table 5a tests the robustness of the results using different measures of child labour. A Tobit model on the number of hours worked per week by the children is estimated resulting once again in a significant negative correlation with the entry of foreign firms in the services sector (column 1) Binary variables equal to 1 are regressed (column 2, 3 and 4) if the child is respectively engaged in agricultural work, domestic work, and work for a household enterprise. If a child is not engaged in such types of work, binary levels are equal to 0. These results have been confirmed.

A relevant objection to the above results is that they show child labour tends to decrease with higher FDI entries, and do not imply that children substitute working with higher schooling. In fact, children might simply stop working, and spend more time in the playground. Table 7 inspects whether FDI entry in the service sector is also accompanied with higher schooling, and thus life-time improvements in capabilities of the young. The dependent variable is equal to 1 if those in schooling age – 6 to 19 year olds are currently attending school – otherwise the dependent variable is 0. Table 7 shows that schooling rates increase with the entry of FDI firms in the services sector, and decrease with the entry of Vietnamese enterprises (column 1). Column 2 presents the positive effect of FDI in services decreasing with the age of the young, most likely because some older teenagers are likely to search for employment in FDI enterprises. In column 3, the interaction between services FDI entry and log expenditure is not statistically significant. The positive effect of FDI entry is greater on female enrolment in school (column 4).

Table 5. Entry of FDI firms in the service sector and working status of the children

Dependent variable: working	1	2	3	4	5	6
			Logit			OLS
FDI service	0.0072[a] (0.002)	-0.0062 (0.006)	-0.0259[a] (0.01)	-0.0176[c] (0.009)	-0.0155 (0.01)	-0.0005 (0.001)
Domestics firms	...	0.0002[a] (0.00001)	0.0007[b] (0.00001)	0.0006[b] (0.00001)	0.0019[a] (0.001)	.00003 (.00004)
FDI manufacturing	...	...	-0.0116[b] (0.005)	...	...	-0.0001 (0.001)
Wage per worker	...	...	...	-0.002 (0.048)	-0.0012 (0.048)	-0.0094 (0.009)
Domestic[c] log expenditures	...	...	...	...	-0.0002[b] (0.00001)	...
Proportion in agriculture	5.2732[a] (0.241)	5.2857[a] (0.246)	4.7769[a] (0.268)	4.7866[a] (0.268)	4.7914[a] (0.268)	0.6495[a] (0.078)
Urban	0.1681 (0.108)	0.159 (0.108)	0.0741 (0.109)	0.0842 (0.107)	0.0877 (0.107)	...
Male	-0.1406[a] (0.049)	-0.1488[a] (0.049)	-0.1440[a] (0.051)	-0.1414[a] (0.051)	-0.1416[a] (0.051)	-0.0186 (0.013)
Hours worked by teens	0.0214[a] (0.002)	0.0213[a] (0.002)	0.0218[a] (0.002)	0.0218[a] (0.002)	0.0218[a] (0.002)	0.0009[c] (0.001)
Hours worked by adult	-0.0028[a] (0.001)	-0.0029[a] (0.001)	-0.0024[b] (0.001)	-0.0024[b] (0.001)	-0.0025[b] (0.001)	-0.0003 (0)
Number of children	0.1812[a] (0.041)	0.1634[a] (0.042)	0.1375[a] (0.043)	0.1378[a] (0.043)	0.1364[a] (0.043)	0.0242[c] (0.013)
Number of teens	-0.5239[a] (0.056)	-0.5178[a] (0.057)	-0.5275[a] (0.058)	-0.5260[a] (0.058)	-0.5265[a] (0.058)	0.0128 (0.017)
Age	0.5197[a] (0.02)	0.5213[a] (0.02)	0.5484[a] (0.02)	0.5477[a] (0.02)	0.5475[a] (0.02)	0.0599[a] (0.004)
Household size	0.0415[c] (0.024)	0.0443[c] (0.024)	0.0455[c] (0.026)	0.0447[c] (0.026)	0.0464[c] (0.026)	-0.0069 (0.012)
Education of the head	-0.0527[a] (0.01)	-0.0543[a] (0.01	-0.0862[a] (0.01)	-0.0861[a] (0.01)	-0.0866[a] (0.01)	...
Proportion of firms in service	0.1508 (0.514)	-0.045 (0.529)	-1.6223 (1.593)	-1.6272 (1.58)	-1.4489 (1.587)	0.0158 (0.275)
Log Expenditure	-0.3613[a] (0.075)	-0.3549[a] (0.076)	-0.4162[a] (0.08)	-0.4178[a] (0.08)	-0.3613[a] (0.084)	0.033 (0.027)
2004	0.5989[a] (0.074)	0.5968[a] (0.075)	0.6084[a] (0.08)	0.5879[a] (0.099)	0.5817[a] (0.099)	0.0537[a] (0.019)
2006	0.2661[a] (0.091)	0.2641[a] (0.091)	0.1564 (0.105)	0.1333 (0.178)	0.1101 (0.178)	-0.02 (0.037)
Constant	**-7.9947[a] (0.675)**	**-8.0509[a] (0.681)**	**-8.8021[a] (1.665)**	**-9.1830[a] (1.775)**	**-10.0083[a] (1.832)**	**-1.0289[a] (0.255)**
Province fixed effects	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Household fixed effects	**No**	**No**	**No**	**No**	**No**	**Yes**
Observations	**36 295.00**	**35 923.00**	**35 923.00**	**35 923.00**	**35 923.00**	**15 875.00**
(Pseudo R-squared)	**0.22**	**0.21**	**0.25**	**0.25**	**0.25**	**0.12**

Note: Robust standard errors in parentheses, corrected for within-cluster correlation at the family level. "a" p<0.01, "b" p<0.05, "c" p<0.1. Number of household fixed effects: 4 438. The sample is made of pooled data for 2002, 2004, 2006 on all the children aged 10-14. FDI service, Domestic Firms *are counts of enterprises starting operation in the province at "t" and "t-1".*

Table 5a. Entry of FDI firms in the service sector and type of working activity of the children

	Hours worked	Work in family agriculture	Work for wage	Work for family business
	1	2	3	4
	Tobit	Logit		
FDI service	-0.2155[b] (0.089)	-0.0161[c] (0.0083)	-0.0076[b] (0.0032)	-0.0238[c] (0.014)
Domestic Firms	0.0072[a] (0.002)	0.0006[a] (0.0002)	0.0003[a] (0.0001)	0.0010[b] (0.0004)
Wage per worker	0.1294 (0.374)	-0.0487[c] (0.0276)	-0.0428[b] (0.0178)	0.1049 (0.0903)
Proportion in agriculture	57.3150[a] (1.934)	5.9448[a] (0.1593)	0.5872[a] (0.0913)	-1.7990[a] (0.3376)
Urban	0.831 (0.84)	0.0947 (0.0662)	-0.1392[a] (0.0354)	-0.2122 (0.1511)
Male	-1.8745[a] (0.482)	-0.0662[c] (0.0368)	-0.5502[a] (0.0234)	-0.5793[a] (0.0962)
Hours worked by teens	0.3864[a] (0.017)	0.0174[a] (0.0011)	0.0024[a] (0.0008)	0.0181[a] (0.0024)
Hours worked by adult	-0.0015 (0.008)	-0.0042[a] (0.0006)	-0.0013[a] (0.0004)	0.0043[a] (0.0016)
Number of children	2.0847[a] (0.383)	0.1019[a] (0.0287)	0.0788[a] (0.0192)	0.2960[a] (0.082)
Number of teens	-8.9568[a] (0.549)	-0.4666[a] (0.0387)	-0.2111[a] (0.024)	-0.0928 (0.0998)
Age	8.2376[a] (0.194)	0.5130[a] (0.0143)	0.3790[a] (0.0086)	0.4754[a] (0.0362)
Household size	0.2379 (0.225)	0.0881[a] (0.0175)	-0.0928[a] (0.0113)	-0.2080[a] (0.0539)
Education of the head	-1.3432[a] (0.085)	-0.0803[a] (0.0066)	-0.0138[a] (0.0041)	-0.0723[a] (0.0148)
Proportion of firms in service	-23.1078[c] (11.818)	0.1771 (0.9064)	-1.9300[a] (0.5323)	-4.8302[b] (2.4407)
Log expenditure	-7.0218[a] (0.695)	-0.3599[a] (0.0519)	-0.3100[a] (0.0306)	-0.0975 (0.126)
2004	6.4840[a] (0.817)	0.7171[a] (0.0611)	0.3996[a] (0.0402)	-0.0508 (0.1575)
2006	-0.2292 (1.384)	0.4420[a] (0.1022)	0.3531[a] (0.065)	-1.3767[a] (0.3079)
Constant	**-120.2514[a] (14.225)**	**-9.8100[a] (1.2106)**	**-1.4915[a] (0.5722)**	**-14.2584[a] (3.0974)**
Province fixed effects	**Yes**	**Yes**	**Yes**	**Yes**
Observations	**35 923.0000**	**35 923.000**	**35 923.000**	**32 131.000**
Pseudo R-squared	**0.0996**	**0.278**	**0.125**	**0.142**

Note: Robust standard errors in parentheses, corrected for within-cluster correlation at the family level. "a" p<0.01, "b" p<0.05, "c" p<0.1. Number of household fixed effects: 4 438. The sample is made of pooled data for 2002, 2004, 2006 on all the children aged 10-14. FDI service, Domestic Firms *are counts of enterprises starting operation in the province at "t" and "t-1".*

Table 6. Entry of FDI firms in the service sector and schooling enrollments

Dependent variable: Attending school	1	2	3	4
	Logit			
FDI service	0.0084[c] (0.005)	0.0238[b] (0.01)	0.0257 (0.017)	0.0108[b] (0.005)
Domestic firms	-0.0003[a] (0.0001)	-0.0003[a] (0.0001)	-0.0003[a] (0.0001)	-0.0003[a] (0.0001)
FDI service[c] age	...	-0.0010[c] (0.001)	...	...
FDI service[c] expenditures	...	...	-0.0019 (0.002)	...
FD service[c] male	...	...	...	-0.0043[b] (0.002)
Domestic firms[c] expenditures	...	...	...	...
Wages	-0.0972[a] (0.027)	-0.0971[a] (0.027)	-0.0973[a] (0.027)	-0.0973[a] (0.027)
Proportion agriculture	-1.1532[a] (0.142)	-1.1517[a] (0.142)	-1.1506[a] (0.142)	-1.1527[a] (0.142)
Urban	-0.0423 (0.061)	-0.0421 (0.061)	-0.0409 (0.061)	-0.0424 (0.061)
Male	0.1563[a] (0.034)	0.1561[a] (0.034)	0.1563[a] (0.034	0.1632[a] (0.034)
Hours worked by adults	-0.0029[a] (0.0001)	-0.0030[a] (0.0001)	-0.0030[a] (0.0001)	-0.0030[a] (0.0001)
Number of children	-0.1298[a] (0.026)	-0.1300[a] (0.026)	-0.1297[a] (0.026)	-0.1298[a] (0.026)
Number of teens	-0.1217[a] (0.027)	-0.1224[a] (0.027)	-0.1219[a] (0.027)	-0.1218[a] (0.027)
Age	-0.5658[a] (0.009)	-0.5644[a] (0.009)	-0.5658[a] (0.009)	-0.5659[a] (0.009)
Household size	0.0662[a] (0.016)	0.0664[a] (0.016)	0.0664[a] (0.016)	0.0665[a] (0.016)
Education of the head	0.1352[a] (0.006)	0.1353[a] (0.006)	0.1352[a] (0.006)	0.1352[a] (0.006)
Proportion of service	0.4013 (0.97)	0.4046 (0.97)	0.4121 (0.97)	0.4004 (0.97)
Expenditures	1.2337[a] (0.051)	1.2338[a] (0.051)	1.2386[a] (0.052)	1.2345[a] (0.051)
2004	-0.0671 (0.058)	-0.0671 (0.058)	-0.0679 (0.058)	-0.0672 (0.058)
2006	-0.1783[c] (0.099)	-0.1783[c] (0.099)	-0.1810[c] (0.099)	-0.1786[c] (0.099)
Constant	**1.5634[c] (0.847)**	**1.5613[c] (0.849)**	**1.4717[c] (0.855)**	**1.5404[c] (0.847)**
Province fixed effects	**Yes**	**Yes**	**Yes**	**Yes**
Observations	**79 459.000**	**79 459.000**	**79 459.000**	**79 459.000**
Pseudo R-squared	**0.342**	**0.342**	**0.342**	**0.342**

Note: Robust standard errors in parentheses, corrected for within-cluster correlation at the family level. "a" p<0.01, "b" p<0.05, "c" p<0.1. The sample is made of pooled data for 2002, 2004, 2006 on all the individuals aged 6 to 19 years old. FDI service, Domestic Firms *are counts of enterprises starting operation in the province at "t" and "t-1".*

5. CONCLUSIONS

This chapter explored the impact of services FDI on child labour. Evidence was found that the entry of foreign owned firms is associated with a lower propensity of child labour, and associated with increased school enrolment rates. Contrary to the view held by critics of globalization, FDI seems to improve working conditions in a rapidly industrializing economy such as Viet Nam, and more importantly results in greater investment in the human capital of children. FDI in services has a stronger marginal effect on the reduction of child labour than FDI into manufacturing. However, because manufacturing FDI is much larger, the overall impact of manufacturing FDI is stronger than the impact of services FDI.

This finding is particularly relevant given that the industrialization process leads to dramatic adjustments in labour market participation and in the activities of Vietnamese households. While the persistence of child labour in Viet Nam deserves further monitoring, the current acceleration of trade liberalization in services seems to be contributing toward the improvement of the livelihood of the youngest in poor families, and therefore to the future growth of Viet Nam.

NOTES

[1] See for example the debate around the 1994 football world cup in the United States, where it was found that most footballs produced in the world were undertaken by foreign companies' subsidiaries that employed child labour. As an example, See Sydney Shanberg, "Six Cents an Hour: On the Playgrounds of America, Every Kids' Goal Is To Score. In Pakistan, Where Children Stitch Soccer Balls for Six Cents An Hour, The Goal is To Survive," *Life*, June, 1996, p. 38. The article's lead photograph showed 12-year-old Tariq surrounded by Nike soccer ball which he would spend most of a day stitching together for the grand sum of 60 cents. In a matter of weeks, activists all across Canada and the United States were standing in front of Nike outlets, holding up Tariq's photo.

[2] It cannot completely be ruled out that services FDI is more likely to occur in provinces with a more skilled labour force with higher income and therefore less child labour. Province fixed effects are controlled for, thus partly controlling for education of household head as well as its income.

[3] Progresa is the acronym for the Programa de Educación, Salud y Alimentación (the Education, Health, and Nutrition Program), introduced in 1997 by the Government of Mexico to develop the human capital of poor households. Progresa targets its benefits directly to the population in extreme poverty in rural areas, through cash transfers to the mothers of households.

[4] The income effect could be considered as dominating the substitution effect in child labour supply function, implying that at very low wages, child labour supply slopes downwards.

[5] For example the football scandal in Sialkot (Pakistan) led to the Atlanta Agreement in 1997, where the United States' Sporting Goods Manufacturers Association and the Sialkot Chamber of Commerce and Industry pledged to eliminate child labour from the stitching and production of soccer balls.

[6] In Viet Nam, overall CPI increased by approximately 23 per cent during the first 9 months of 2008. During this time, food and non-food CPIs increased by 36 per cent and 13 per cent, respectively (Nguyen, 2009). High inflation can have ambiguous impacts on the poor. The real consumption of the poor can be reduced by inflation. On the other hand, the poor are also producers who can experience increases in income due to inflation. Depending on the reason of inflation and the structure of the economy, the effect of price increases on poverty may be negative and positive.

[7] Haiphong, Viet Nam's main port, lies on a branch of the Delta. A major highway crosses the Delta and the coastal strip beyond, an important transportation route linking China and Viet Nam.

[8] In particular, firms considered as belonging to the services sector are those whose primary activity is in: transport, post, tourism, media, finance, professional, cleaning and support services, real-estate and renting services, education, health and social services.

[9] Moreover, FDI firms in services are more capital-intensive (higher asset value/number of employees' ratio). Interestingly, both services and non-services FDI firms tend to employ more women, but the proportion of female employees is higher in non-services foreign establishments.

[10] Viet Nam joined WTO in 2007 becoming its 150th member. This accession is something of an endorsement of a long process of trade reform and international integration, which started more than two decades before in 1986 with the launch of *Doi Moi* (Renovation).

[11] The 5-digit industry code of the enterprise survey were summarized under the following sector categories: agriculture, aquaculture, mining, food processing, textile, wood, manufacture, power, waste, construction, wholesale, retail, wholesale of textile and food, whole sale of minerals, transport, post, tourism, media, finance, professional service, renting, education, cleaning and low skill services, government, health, reparations, social services, water and sewer.

[12] A firm is considered to be privatized if it was under ownership of the central or of the local Government in 2004 and in a different ownership status (including joint public-private ownership) in 2006.

[13] Viet Nam was the first Asian country to sign the International Convention on the Rights of the Child in 1990 (ILO Convention 182 that replaced and strengthened ILO Convention 138 of 1973).

[14] MOLISA stands for the Ministry of Labour, War Invalid and Social Affairs.

[15] These are: acting performance, crafts and fine arts occupations (embroidering and wood carving), pottery glazing and painting, shell sawing, lacquer painting, and gifted athletes.

[16] According to UNICEF a child is considered to be involved in child labour activities when: (a) children 5 to 11 years of age did at least one hour of economic activity or at least 28 hours of domestic work during the week preceding the survey, and (b) children 12 to 14 years of age that during the week preceding the survey did at least 14 hours of economic activity or at least 42 hours of economic activity and domestic work combined.

[17] Since children tend to supply labour for family activities, important complementarities or substitution effects can link the work of children with the work of teenagers within the household. It is thus important to give a comparative look at the employment time of teenagers aged 15 (the minimum legal age for working) to 19, the age at which most young tend to start leaving their parent's household. School attendance for children in the poorest quintile never exceeded 40 per cent while attendance for children in the richest quintile was twice as high in 2002.

[18] There are significant differences in the schooling behaviours of boys and girls if the focus is on observation on the poor. There are large discontinuities in enrollment among families in the poorest quintile, with many boys from poor families leaving school at the age of 14, and many girls at the age of 15. Interestingly, enrolment seems to increase again for girls at the age of 16, probably indicating that there are many transitions into and out of school as the young adjust to income shocks or to changes in local labour markets.

[19] For example, the United States Trade and Development Act of 2000 restricts eligibility of GSP benefits to countries that the Secretary of Labor certifies as showing progress to eliminate the worst forms of child labor.