CEDLAS
Facultad de Ciencias Económicas
UNIVERSIDAD NACIONAL DE LA PLATA

DOCUMENTOS DE TRABAJO

Intergenerational Mobility in Latin America: The Multiple Facets of Social Status and the Role of Mothers

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Documento de Trabajo Nro. 323
Diciembre, 2023
ISSN 1853-0168
www.cedlas.econo.unlp.edu.ar

Cita sugerida: Ciaschi, N., M. Marchionni y G. Neidhöfer (2023). Intergenerational Mobility in Latin America: The Multiple Facets of Social Status and the Role of Mothers. Documentos de Trabajo del CEDLAS Nº 323, Diciembre, 2023, CEDLAS-Universidad Nacional de La Plata.

Intergenerational mobility in Latin America: the multiple facets of social status and the role of mothers

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October 16, 2023

In this paper we assess intergenerational mobility in terms of education and income rank in five Latin American countries—Brazil, Chile, Ecuador, Mexico, and Panama—by accounting for the education and occupation of both parents. Based on the method proposed by Lubotsky and Wittenberg (2006), we find that intergenerational persistence estimates increase by 26% to 50% when besides of the education of parents we consider also their occupation. The increase is particularly strong when education is more evenly distributed in the parents' generation. Furthermore, we evaluate the changing importance of each single proxy for parental background to explain intergenerational mobility patterns in each country and over time, and find that the relative importance of the characteristics of mothers have been increasing over the last decades, in line with rising women's average years of education and labor market participation. Interesting heterogeneities across countries and cohorts are observed.

JEL codes: D63, J62, O15. ***Keywords:*** Intergenerational Mobility, Education, Occupation, Mothers, Latin America.

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We are grateful to Lucila Berniell, Dolores De la Mata, and Leonardo Gasparini for their valuable comments, as well as participants of seminars and conferences in Buenos Aires, Córdoba, La Plata, and Montevideo. Any errors are our responsibility.

1 Introduction

Latin America has long been known for its high levels of intergenerational socioeconomic status persistence (e.g., Brunori et al., 2013; Ferreira et al., 2012; van der Weide et al., 2024). However, intergenerational persistence estimates for the region have mostly relied on education due to data limitations (e.g., Behrman et al., 2001; Daude and Robano, 2015; Hertz et al., 2008; Neidhöfer et al., 2018, 2023). While recent estimates show that educational mobility has improved in Latin America over the last decades, there may be additional dimensions of intergenerational transmission of advantage that are not captured by education alone.

Several contributions for developed countries find that other transmission mechanisms, such as job networks and relational capital, may play an important role besides education (e.g. Corak and Piraino, 2011; Rothstein, 2019; Franzini et al., 2020; Staiger, 2021). However, the importance of other dimensions of parental background in explaining intergenerational mobility remains an open question, particularly in developing countries (see Torche, 2014, 2021). In these countries, higher exposure to economic volatility can undermine the employment and income opportunities of individuals, especially of those coming from disadvantaged families (e.g. Schwandt and Von Wachter, 2019; Arellano-Bover, 2020; Von Wachter, 2020; Stuart, 2022). Indeed, recent contributions show that, beyond the increase in educational mobility, socioeconomic status measured by other indicators is quite persistent and intergenerational mobility trends are rather flat in Latin America (Neidhöfer et al., 2022).

In this study, we apply for the first time the methodology proposed by Lubotsky and Wittenberg (2006) to measure the overall association between parental background, measured by the education and occupation of both parents, and children's future outcomes in terms of education and income rank for several cohorts in five Latin American countries: Brazil, Chile, Ecuador, Mexico, and Panama. This approach enables to integrate various proxy measures of a latent variable–in this case parental background–into a unified framework. From an optimally weighted linear combination of multiple proxies for parental background, this approach generates the regression-based intergener-

ational persistence coefficients with the lowest attenuation bias, while relying on less assumptions than other methods, such as principal component analysis and two-sample two-stage least squares. To the best of our knowledge, intergenerational mobility estimates based on the approach proposed by Lubotsky and Wittenberg (2006) are only available for Sweden (Adermon et al., 2019) and the United States (Vosters, 2018). Also, Neidhöfer et al. (2018) present preliminary estimates for educational mobility in Latin America adopting this approach using the highest education and highest occupation among both parents as proxies for parental background.

This paper contributes in several ways to the literature. First, we extend the number of proxies used to measure parental background by including the education and occupation of both parents. The integration of different proxy measures for underlying socioeconomic status not only allows for a more comprehensive study of intergenerational mobility patterns. It also permits to study the relevance of each proxy in explaining intergenerational mobility estimates. Second, we provide novel summary indicators of intergenerational mobility in Latin America. Hereby, we go beyond measuring intergenerational mobility of education by exploring other indicators such as childrens' income rank (e.g. Chetty et al., 2014). Third, we perform the analysis for different cohorts over 50 years in five Latin American countries. Fourth, we compare the relative importance of each single dimension to explain the intergenerational persistence of inequality in Latin America. In particular, our analysis provides new evidence on the changing importance of mothers' education and occupation in relation to fathers' attributes for intergenerational transmission of socioeconomic status in the region. To the best of our knowledge, the comparison of mothers' and fathers' roles in explaining intergenerational mobility has so far mostly been limited to estimates for father-son and mother-daughter pairs (e.g., Kroeger and Thompson, 2016; Schneebaum et al., 2016) or considering cross combinations between father/mother and sons/daughters (Brandén et al., 2023). Our approach is an important extension considering the substantial increase in women's labor market participation and relative earnings in the last decades in Latin America (Marchionni et al., 2019).

Our results suggest that when only parents' education is used as a proxy for family background, intergenerational persistence estimates are between 26% and 50% lower than when parents' occu-

pation is included. This finding highlights the importance of exercising caution when analyzing intergenerational mobility using a single measure of parental background, especially when it is relatively evenly distributed. This is especially important in developing countries, where educational achievements were historically lower and more concentrated, but educational inequality has significantly decreased in recent decades. We also find that intergenerational persistence has a clear downward pattern when considering children's years of education as outcome variable but it shows a more flat trend when children's income position is considered. Lastly, we also find that the relative importance of mothers' characteristics has increased over time.

The remainder of this paper is organized as follows: Section 2 explains the LW approach. Section 3 describes the data sources and variables used to obtain our estimates. Section 4 presents the main results. Section 5 explores potential mechanisms behind our results. Section 6 concludes the paper.

2 Methodology

The Lubotsky and Wittenberg (2006, henceforth LW) approach enables the inclusion of multiple dimensions of parental socioeconomic status and determines the relative contribution (weights) of each dimension to the measurement of intergenerational mobility. Importantly, these weights are determined solely by the data structure, eliminating potential bias induced by arbitrary decisions.[1] Empirical evidence shows that the LW approach effectively reduces attenuation bias compared to the inclusion of a single proxy for the unobserved variable (Lubotsky and Wittenberg, 2006). Additionally, unlike other methods like factor analysis, the LW approach does not rely on strong assumptions regarding cross-correlations of measurement errors.

The procedure can be summarized as follows: considering that children's outcomes (y_i), such as years of education or income rank, depend on parental socioeconomic status (h_i), the objective is to optimally estimate the intergenerational association parameter β from equation (1).

[1] Neidhöfer et al. (2018) show that arbitrary decisions on the weight chosen for mother's and father's education may cause educational mobility estimates to be upwardly or downwardly biased.

$$y_i = \beta h_i + e_i. \quad (1)$$

Parental socioeconomic status (h_i) is a latent and unobserved variable for which multiple proxy measures x_{ji}, $j = 1, 2, ..., J$, are available. Each of them can be defined as a linear projection of h_i:

$$x_{ji} = \rho_j h_i + u_{ji}. \quad (2)$$

The education and occupation of the mother and father are examples of such proxy measures. The common assumption is that each proxy variable does not directly affect children's education or income, but rather operates through parental socioeconomic background. Additionally, we normalize $\rho_1 = 1$, thus setting the scale of the latent variable equal to the first proxy. Consequently, all ρ_j for $j \neq 1$ are defined as follows:

$$\rho_j = \frac{Cov(y_{it}, x_{ji})}{Cov(y_{it}, x_{1i})}. \quad (3)$$

The ρ_j coefficients represent the optimal weights assigned to each proxy variable in a linear combination, reflecting their relative importance in explaining the intergenerational transmission of socioeconomic status. These coefficients can be conveniently estimated using instrumental variables, with x_{ji} as the dependent variable and y_{it} as the instrument for x_{1i}.

Unlike factor analysis or instrumental variable approaches, the LW method does not require a strong assumption of zero cross-correlations among the errors in the proxy equations (i.e., $Cov(u_{ji}, u_{jk}) = 0$). This is particularly relevant in our analysis, as different proxies for family background may be affected by common shocks. The LW approach not only relaxes this assumption but also exploits this correlation when producing the estimates of ρ_j. Other methods, such as two-sample two-stage least squares, require detailed parental characteristic information to perform correctly, which is often unavailable in existing databases. Then, it is prone to considerable biases with unknown directions especially when estimating the intergenerational persistence coefficient β (Chetty et al., 2014). While methodological advancements have focused on addressing colinearity issues when dealing with a substantial number of proxies, employing machine learning approaches (Bloise et al., 2021), these approaches have not explicitly addressed the challenges associated with limited parental information and the potential correlation between measurement errors of the proxies.

Finally, the estimated coefficient of association between children's outcomes and the socioeconomic status of their parents can be obtained as:

$$\hat{\beta} = \sum_{j=1}^{J} \hat{\rho}_j \hat{\phi}_j, \quad (4)$$

where $\hat{\phi}_1, \hat{\phi}_2, ..., \hat{\phi}_J$ represent the estimated coefficients from an auxiliary joint linear regression of children's education or income rank on all the proxy measures of parental socioeconomic background, such as the education and occupation of both parents:

$$y_i = \phi_1 x_{1i} + \phi_2 x_{2i} + ... + \phi_J x_{Ji} + v_i \ . \quad (5)$$

In our analysis, we present the evolution of $\hat{\beta}$ over time and for each country controlling for children's gender and age when estimating (3) and (5). Additionally, we utilize the weights for each dimension ρ_j to assess the changing importance of mother's education and occupation over time.[2]

3 Data

For our analysis we use a dataset consisting of 14 nationally representative household surveys from five Latin American countries: Brazil, Chile, Ecuador, Mexico, and Panama (see Table 1). These surveys provide information on education and incomes of the individuals in the generation we will refer to as "the children" in our analysis, as well as crucial information about the education and occupation of their parents obtained from retrospective questions. Since co-residency can introduce bias in social mobility estimates (Emran et al., 2018; Emran and Shilpi, 2021) our sample only includes countries with at least one representative survey with retrospective questions on parental education and occupation. The retrospective questions on parental characteristics are focused at the

[2]It is worth noting that the LW approach implicitly considers assortative mating by incorporating information on both parents. For instance, women's employment is also influenced by their spouse's employment, given their own level of education. Previous studies have highlighted a negative association between employment status of husbands and wives, particularly in Latin America (Skoufias and Parker, 2006; Serrano et al., 2019; Ciaschi and Neidhöfer, 2024). This negative relationship can counterbalance the positive and high spouse correlation in educational attainment between parents, leading to lower weights (ρ_j) for mothers' characteristics in determining the association between parental background and children's future outcomes.

Table 1: Data sources

Country	Name of survey	Acronym	Coverage	Survey versions
Brazil	*Pesquisa Nacional por Amostra de Domicilios*	PNAD	National	2014
Chile	*Encuesta de Caracterizacion Socioeconomica Nacional*	CASEN	National	2009
Ecuador	*Encuesta de Condiciones de Vida*	ECV	National	1995, 1998, 2006, 2014
Mexico	*Mexican Family Life Survey*	MXFLS	National	2002, 2005-2006, 2009-2012
	Encuesta de Movilidad Social	ESRU-EMOVI	National	2006, 2011, 2017
Panama	*Encuesta de Niveles de Vida*	ENV	National	1997, 2008

time the children were 14 or 15 years old, a critical period in terms of educational decisions and future adult outcomes (Marchionni et al., 2019; Carneiro et al., 2022). Importantly, these surveys provide occupational information for both fathers and mothers.

To measure parental education, we utilize years of schooling imputed based on retrospective questions on the level of education (see Neidhöfer et al., 2018). To measure parental occupation, we use the five broad categories available in each country: employer, employee, self-employed, agricultural worker, and domestic service worker; except for Chile and Mexico, where agricultural workers and self-employed individuals, respectively, are classified under other categories. Building on the LW approach utilized in prior studies (Adermon et al., 2019; Vosters, 2018), we incorporate a set of equations, one for each binary indicator representing an occupation category of the mother or father. We exclude the "non-employed" category, which will serve as the reference category for our analysis. This approach aligns with previous research utilizing the LW approach, which requires limiting the number of occupation categories to provide reliable estimates (Vosters, 2018). Other methods such as two-sample two-stage least squares are also not significantly influenced by the inclusion of broader occupational categories (Barbieri et al., 2020). To test this with our data, we employ the International Standard Classification of Occupations (ISCO) at 1-digit level to classify parents' occupations for Brazil and Mexico, where this information is available. The estimations yield very similar results.[3]

[3] Additional details can be found in the Appendix Section B.

To mitigate potential bias arising from age or gender-related income positions, we calculate children's income rank within their respective cohort-gender income distributions. Throughout the paper, this variable will be referred to as "income rank".

Our sample is restricted to individuals aged 23 and above to ensure that only individuals who are no longer enrolled in the education system are included. This results in a sample size of around 220,000 individuals. To derive estimates of intergenerational persistence, we weight each observation by the survey's inverse probability of selection and normalize the weights across survey waves. Descriptive statistics are included and described in the Online Appendix, Section A.

4 Results

4.1 Relevance of parents' occupation in intergenerational persistence

In this subsection, we present our findings on the relevance of parents' occupation in explaining intergenerational mobility patterns. Figure 1 presents the LW-estimated intergenerational persistence coefficients $\hat{\beta}$ from equation (1) by country and birth cohort, considering both parental education and occupation. The figure shows that intergenerational persistence of education has decreased over time in the five countries, but the pattern of intergenerational persistence of income rank is not as clear. Furthermore, results indicate that traditional estimates solely based on education underestimate persistence. Including parents' occupation increases the estimated persistence by 26% to 50% for children's education or income rank, respectively.[4]

Parental occupation's relevance in explaining intergenerational mobility patterns varies across countries. It appears to have little impact in Chile but is significant in other countries. Although the evolution of the two LW-estimated coefficients is similar, there is some convergence over time, mainly when evaluating children's education as the outcome. This suggests that while parental occupation remains important, its role in explaining children's educational attainment has diminished compared to explaining their income position.

[4]See Section A in the Appendix for the unweighted mean across the countries considered.

These findings are in line with Neidhöfer et al. (2022) in highlighting the importance of considering factors beyond education for explaining intergenerational mobility patterns. Labor market mechanisms, mostly overlooked in other studies, play a significant role in shaping social mobility. This is consistent with recent evidence in developed countries (Rothstein, 2019; Staiger, 2021). In Section 5, we discuss how the relevance of parental occupation can be related to educational inequalities in the parents' generation. We argue that labor market mechanisms linked to parental occupation are relatively more influential in explaining inequalities among children's generation in societies with more equal access to education in the parents' generation.

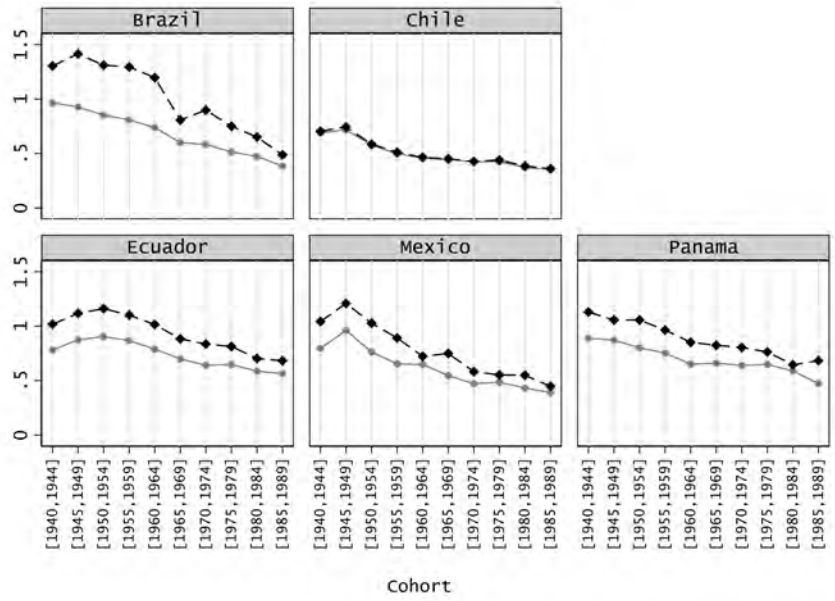
Additionally, we investigate heterogeneities in the reported patterns for the estimated coefficients. In the Appendix, we show estimations of intergenerational persistence by children's gender and birthplace. Section A shows that intergenerational mobility is slightly lower for sons than for daughters, particularly when considering children's education. Parents' occupation appears to be relevant for both sons and daughters, but slightly more so for the former. In Section A, we present the patterns of the intergenerational persistence coefficients for rural and urban birthplace. The figures suggest that including parental occupation proxies is more relevant for children from rural zones, although the evolution of the coefficients does not show substantially different patterns by birthplace zone, especially when explaining children's education.

4.2 The role of mothers in intergenerational mobility

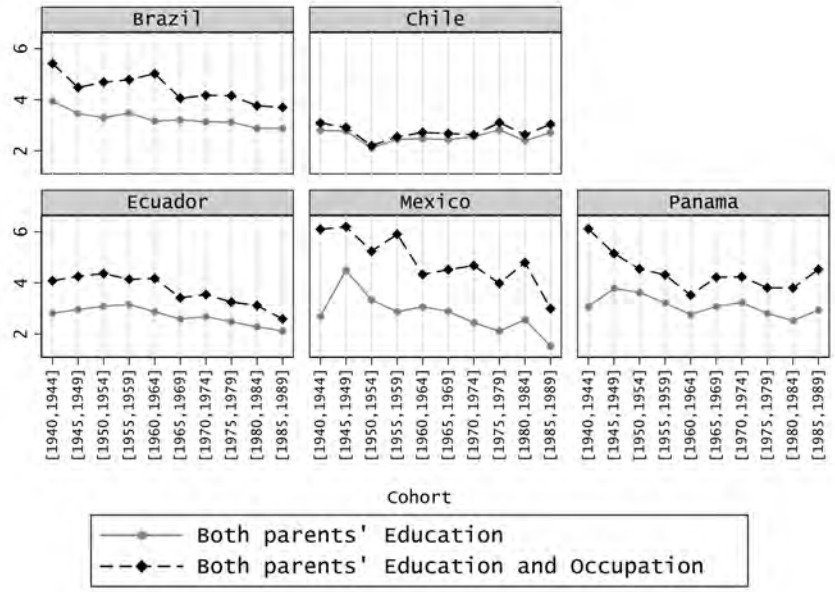
In this subsection, we investigate how the relative importance of mothers' characteristics compared to fathers' in explaining children's outcomes has evolved over time. Figure 2 shows the changing weights of mother characteristics relative to fathers' for both children's education and income rank—i.e, the ratio of mothers' to fathers' coefficients ρ from equation 3 . First, the figure shows that the ratio is generally less than one, indicating that the relevance of mothers' characteristics is lower than that of fathers' characteristics in explaining their children's outcomes. Second, results reveal that mothers' education and occupation have gained importance over time. While mother's attributes were approximately 20% less relevant than father's for individuals born between 1940

Figure 1: Intergenerational persistence by country. LW estimates

Panel A – Children's education (in years)



Panel B – Children's income rank



Source: own estimates based on household surveys.
Notes: LW estimated intergenerational persistence coefficients. In gray, estimates only considering both parents' education as proxies for parental background; in black, estimates also considering both parent's occupational categories.

and 1944, for the youngest cohorts born in the late 1980s, they were only 5% less relevant or equally important in explaining children's outcomes.[5]

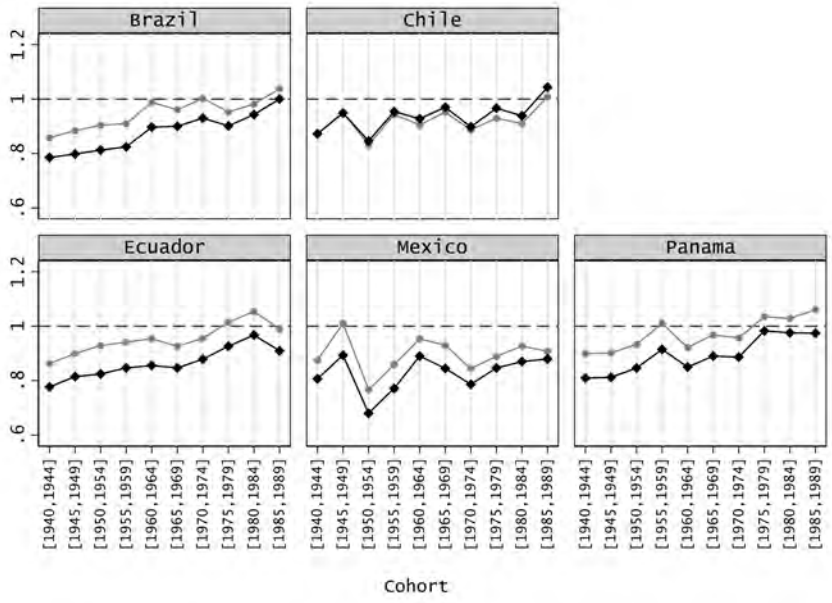
Morever, Figure 2 also shows that including parents' occupation as a proxy for children's socioeconomic status diminishes the relative importance of mother's characteristics. While the evolution of the relative importance of mothers' characteristics remains similar with or without the inclusion of parents' occupation as proxy variables, considering only educational proxies may overstate the role of mothers in explaining children's family background. Across countries, the results suggest a common increasing pattern of relative weights when analyzing children's years of education. For younger cohorts, mothers' characteristics become at least as important as fathers', although this trend appears to flatten in Ecuador and Mexico. However, the relative importance of mothers' characteristics for children's income rank shows a stable trend for younger cohorts in all studied countries. In Section 5, we explore the potential mechanisms behind these heterogeneous patterns and their association with the evolution of female education and labor market participation. Recent decades have witnessed a reduction in gender gaps in both education and labor market participation in Latin America, as highlighted by Marchionni et al. (2019). However, the closure of these gaps has been mainly observed in terms of education, while disparities in labor market participation persist. We explore how these shifts in gender dynamics may have contributed to the changing importance of mothers' characteristics in shaping intergenerational mobility.

In Appendix Section A, we show this analysis by children's gender. The estimates suggest that mothers' attributes have grown in importance for both sons and daughters, but more so for the latter. For the four youngest birth cohorts, mothers' relative weights become higher than 1 for daughters, while they show a flatter pattern for sons in the same cohorts. Additionally, Section A presents the analysis by birthplace. The findings reveal that mothers' characteristics are more important for children born in rural areas compared to urban areas. Nonetheless, the increasing trend in this indicator remains very similar between both birthplace zones.

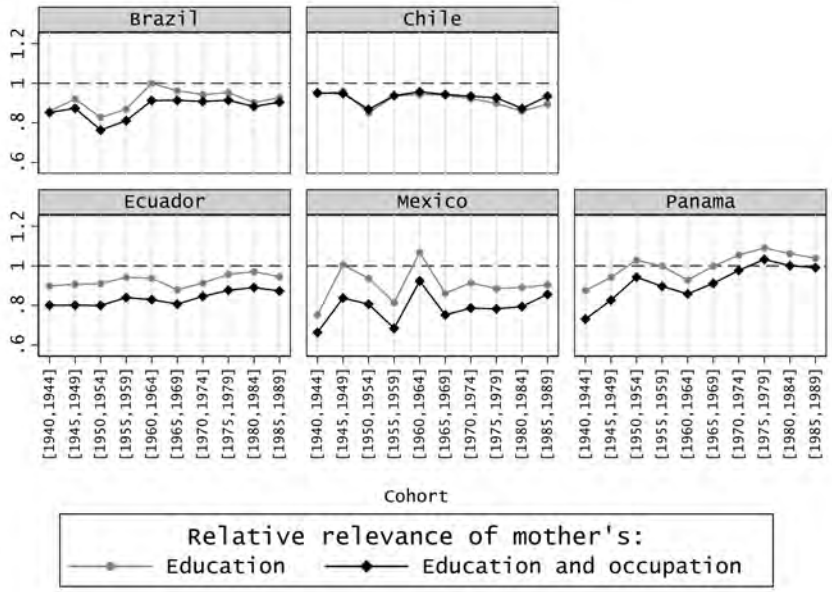
[5] In an analysis for Mexico using a machine learning approach, Plassot et al. (2022) found that mother´s education becomes more important in explaining children outcomes for most recent survey years.

Figure 2: Relevance of mothers' characteristics by country

Panel A – Children's education (in years)



Panel B – Children's income rank



Source: own estimates based on household surveys.
Notes: LW estimated intergenerational relative weight of mother's characteritics in children's parental background, compared to fathers'. In gray, estimates only comparing both parent's education; in black, estimates also considering both parent's occupational categories.

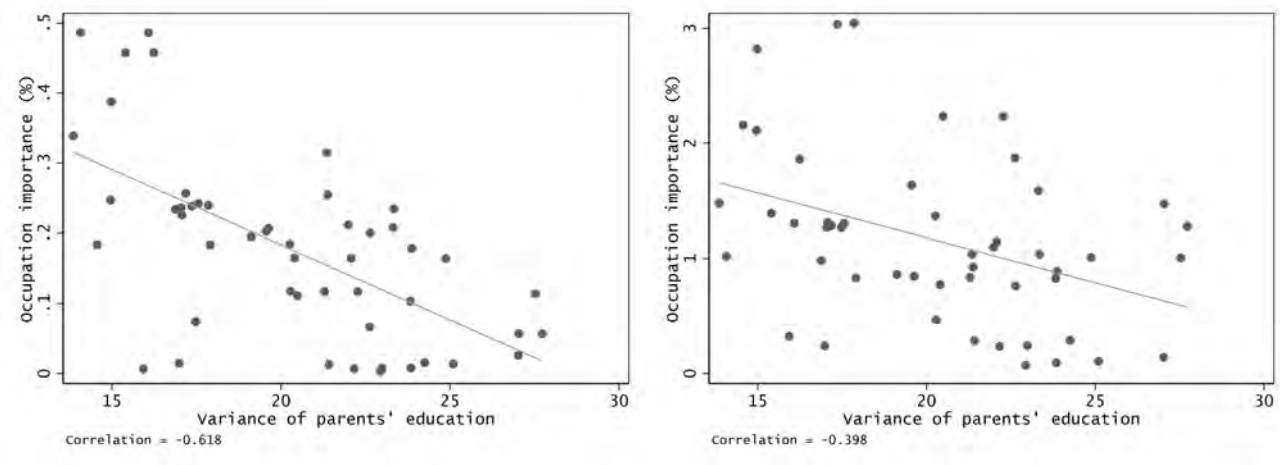
5 Mechanisms

In this section, we present a stylized analysis aimed at formulating hypotheses to shed light on the findings from Section 4. It is important to note that the correlations presented here are solely descriptive and do not imply causal relationships. Nevertheless, they serve as a preliminary step in understanding the underlying mechanisms driving our results and inspire future research. The first part of the analysis explores the role of educational inequality in the parental generation in explaining the relevance of parents' occupation in intergenerational mobility. It seems plausible that parental occupation becomes more informative in contexts where parental education is more evenly distributed. On the other hand, higher educational inequalities tend to lead to occupational segregation and a wider range of outcomes within the labor market (Rothstein, 2019). Our analysis helps to evaluate the potential downward bias when using only parental education to explain children's outcomes. The second part of our discussion explores the reasons behind the changing importance of mothers' characteristics, which is linked to their increased educational attainment, labor force participation, and occupational diversification.

Figure 3 focuses on the relationship between the relevance of parental occupation and educational inequality in the parental generation. We observe a clear negative correlation between these variables when considering children's years of education and income rank. A regression analysis including country fixed effects, as shown in columns 1 and 5 of Table 2, confirms this correlation. A 10% increase in inequality of parental education is associated with a 1.8 to 6.2 percentage point decrease in occupational relevance, representing between 3.5% and 10% of the average importance.

These findings emphasize the need for caution when using solely educational measures of parental background in intergenerational mobility analyses. Estimates may be significantly downward biased as education is distributed more evenly among parents. This is particularly relevant for developing countries, where in previous generations, parental education used to be lower and less dispersed. However, over the years, as access to education improved, it witnessed increasing educational inequality but has shown a trend toward educational compression in recent decades. (Cruces

Figure 3: Parents' occupation relevance and parental education variance. Children's education (left) and income rank (right)



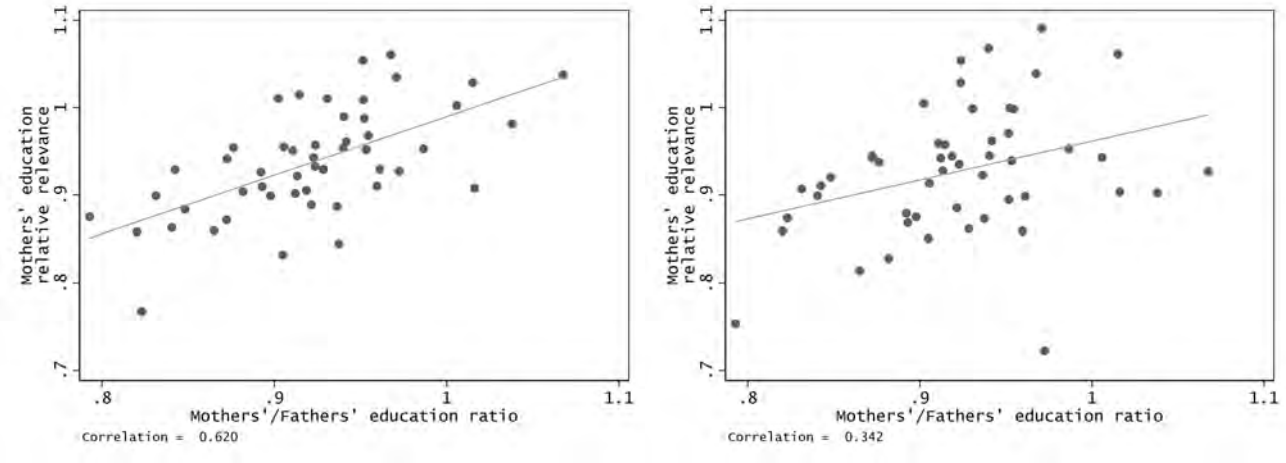
Source: own estimates based on household surveys.
Notes: the variance of parental education was considered as inequality measure. "Occupational importance (%)" refers to the percentage difference between the LW-estimated β including and excluding parents' occupation.

Table 2: Relevance of proxy measures for parental background

	Children's Education				Children's Income Rank			
	Occupation Relevance	Mothers' Education	Mothers' Occupation	Mothers' Occupation	Occupation Relevance	Mothers' Education	Mothers' Occupation	Mothers' Occupation
Variance of parents' education	-0.018***				-0.062***			
	(0.003)				(0.019)			
Mothers'/Fathers' education ratio		0.730***				0.390**		
		(0.111)				(0.155)		
Mothers' Labor Participation			1.655***				1.277***	
			(0.372)				(0.195)	
Mothers'/Fathers' occupation variance ratio				1.277***				0.805***
				(0.296)				(0.168)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	50	50	50	50	50	50	50	50
Average	0.18	0.92	0.50	0.50	1.15	0.92	0.43	0.43
R-squared	.80	.58	.66	.70	.76	.39	.73	.68

Source: own estimates based on household surveys.
Notes: Robust standard errors indicated in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The value in the last row indicates the average of the dependent variable. "Occupational relevance" refers to the percentage point difference between the LW-estimated β including and excluding parents' occupation. "Mother's education" refers to the percentage point difference between mother's vs. father's education weight. "Mother's occupation" refers to the percentage point difference between mother's vs. father's occupation weight.

Figure 4: Mothers' education relevance and education ratio. Children's education (left) and income rank (right)



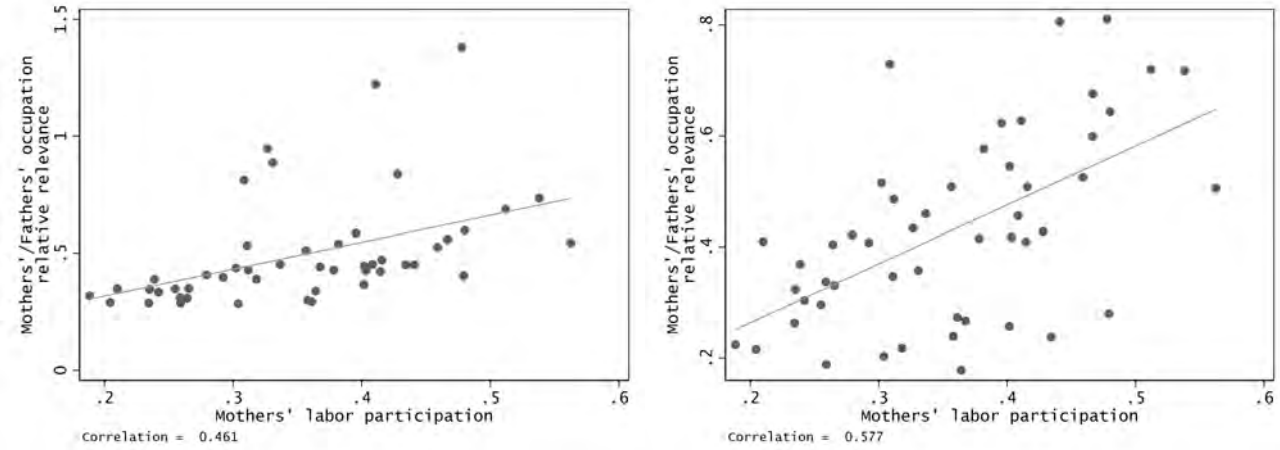
Source: own estimates based on household surveys.
Notes: the variance of parental education was considered as inequality measure. "Mother's education relative relevance" refers to the percentage difference between the LW-estimated difference between mother's vs. father's education weight.

et al., 2014; Acosta et al., 2019). As education becomes more universally accessible, parental occupation gains greater significance in explaining intergenerational mobility patterns. Then, when using the traditional approach, estimates of intergenerational persistence levels and their evolution over time may be incomplete due to changing access to education among parents in Latin America.

Latin America has made considerable improvements in female access to education, aligning with broader educational advancements seen in many developing countries. The narrowing or even reversal of the educational gender gap in recent decades has been well-documented (Marchionni et al., 2019). In Figure 4, we explore the relationship between the increasing access of women to education over time and the importance of mothers' education in intergenerational mobility. The analysis reveals a positive correlation, showing that as mothers' access to schooling increases, so does the importance of their education in shaping their children's outcomes. A regression analysis controlling for cross-country differences supports this relationship. The results from columns 2 and 6 in Table 2 indicate that a 10% increase in the gender ratio of years of education among parents is associated with a 3.9 to 7.3 percentage point (between 4.2% and 8% of the average) increase in the relevance of mother's education.

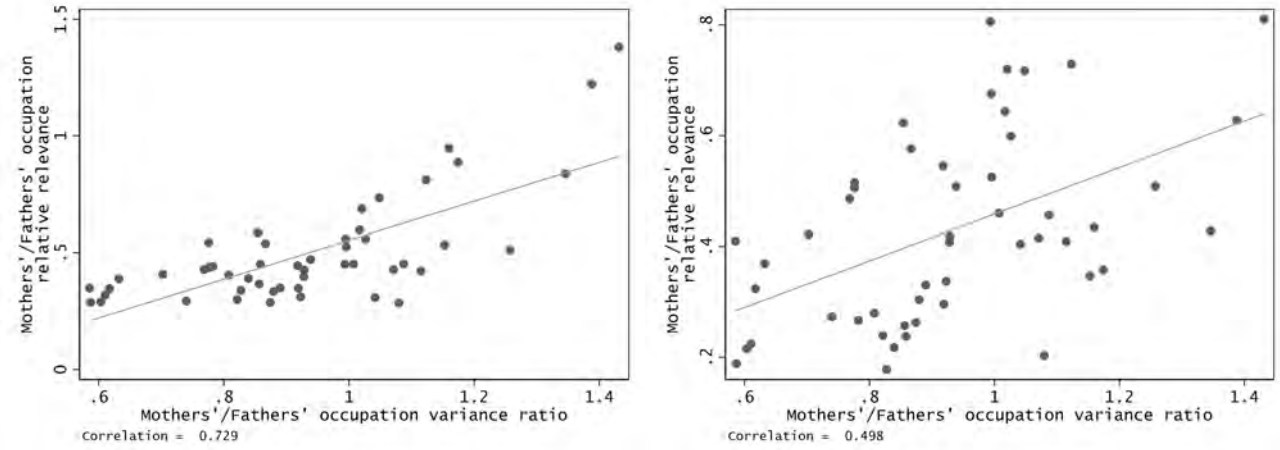
Next, we examine the relative importance of mothers' occupations in light of the documented increase in female labor market participation in Latin America (Marchionni et al., 2019). Figure 5 and columns 3 and 7 from Table 2 show a positive correlation between mothers' labor market participation and the importance of their occupation in explaining their children's outcomes. Regression analysis suggests that a 10% increase in mothers' labor market participation is associated with a 13% to 17% increase in the relevance of their occupation. Furthermore, we consider the role of maternal occupation diversity, which is closely linked to their increased labor market participation: as mothers enter the workforce, their occupations become more diverse. Figure 6 and columns 4 and 8 from Table 2 reveal a positive relationship between the diversification of mothers' occupations and their relevance in explaining their children's outcomes. A 10% increase in the variance of mothers' occupations is related to an 8% to 12% increase in the relevance of their occupations. These findings align with recent contributions highlighting the close connection between the rising relevance of maternal employment and intergenerational persistences in the United States, attributed to the increased labor force participation of women (Brandén et al., 2023). Overall, our analysis emphasizes the significant impact of educational and labor market advancements for women on intergenerational mobility in Latin America.

Figure 5: Mothers' occupation relevance and labor market participation. Children's education (left) and income rank (right)



Source: own estimates based on household surveys.
Notes: the variance of parental education was considered as inequality measure. "Mother's/Father's occupation relative relevance" refers to the percentage difference between the LW-estimated difference between mother's vs. father's occupation weight.

Figure 6: Mothers' occupation relevance and relative occupation variance. Children's education (left) and income rank (right)



Source: own estimates based on household surveys.
Notes: the variance of parental education was considered as inequality measure. "Mother's/Father's occupation relative relevance" refers to the percentage difference between the LW-estimated difference between mother's vs. father's occupation weight.

6 Conclusions

This paper addressed an important gap in the literature on intergenerational mobility in Latin America. Prior studies had often focused on a single measure of social status, which might not have fully captured the complexity of social mobility dynamics. By applying the Lubotsky and Wittenberg (2006) approach and integrating parents' educational and occupational proxy measures of family background, we offered a more comprehensive analysis. To the best of our knowledge, this study is the first to apply this approach to comprehensively examine various proxy measures of parental background and assess the changing relevance of each parent's characteristics on intergenerational mobility in developing countries.

Our findings revealed that relying solely on parents' education as a proxy for family background can lead to significant underestimations of intergenerational persistence, with estimates being 26% to 50% lower compared to including parents' occupation besides education. These results highlight the contribution of using indicators that go beyond education to measure social mobility, especially in developing countries with historically high but declining educational inequality. Moreover, we found that, while fathers' characteristics continue to hold greater importance, the relative importance of mother's attributes in shaping children's outcomes increased over time, coinciding with their improved access to education and participation in the labor market.

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Online Appendix

A Descriptive statistics

Tables A.1 and A.2 describes our sample for all individuals as well as those from the two early and last birth cohorts. Table A.1 show that children have an average age range between 41 and 45 years old and male are under represented.[6] Educational levels, measured in years, are relatively similar across countries, except for Chile where education is higher. The table also shows the educational advancements across all countries, with years of education doubling for individuals born in the 1980s compared to those born in the 1940s. Furthermore, since income ranks are computed within cohort and gender, they exhibit small temporal variation and are close to 50. On the other hand, Table A.2 shows that parental education nearly doubled between the earliest and most recent cohorts of children. Importantly, there was a substantial shift in the occupational composition among parents, characterized by a decline in agricultural occupations and a notable increase in employee and self-employed ones. An additional noteworthy distinction lies in the participation of fathers and mothers in domestic service occupations, with an even more striking difference emerging in terms of employment status. Specifically, while nearly all fathers were employed when their children were 15 years old, on average, only 35% of mothers held employment during that same period. Although this gender gap has gradually narrowed over time, it continues to be of considerable relevance.

[6]The drop in the proportion of males in the last Chilean cohorts appears when individuals without parental information are excluded from the sample. In Mexico, the greater presence of male respondents in the early cohorts can be attributed to the sample design of the 2006 EMOVI survey, which was not fully representative of the female population.

A.1 Children's characteristics

Table A.1: Children's descriptive statistics

		Age	% Male	Education (years)	Income rank
Brazil					
	All	45.2	46.6	8.9	50.8
	[1940-1949]	69.1	43.0	5.5	49.2
	[1980-1989]	29.7	47.0	10.9	51.0
Chile					
	All	44.6	41.1	10.9	58.1
	[1940-1949]	64.0	45.3	8.6	60.8
	[1980-1989]	26.2	34.2	12.2	57.4
Ecuador					
	All	40.8	47.6	8.5	51.8
	[1940-1949]	57.0	49.7	5.9	51.5
	[1980-1989]	28.4	44.2	9.9	53.7
Mexico					
	All	41.7	60.8	8.6	51.1
	[1940-1949]	61.2	76.2	5.2	50.1
	[1980-1989]	28.4	52.0	10.4	51.9
Panama					
	All	41.4	47.2	9.1	54.2
	[1940-1949]	56.6	49.8	7.2	54.6
	[1980-1989]	25.5	45.2	10.2	56.1

Source: own estimates based on household surveys.

Table A.2: Parents' descriptive statistics

		Father							Mother						
			Occupation (%)							Occupation (%)					
		Education (years)	Employer	Self-employed	Agricultural	Employee	Domestic Service	Non-employed	Education (years)	Employer	Self-employed	Agricultural	Employee	Domestic Service	Non-employed
Brazil															
	All	4.0	4.5	15.5	39.2	36.2	0.5	4.0	3.9	0.9	7.0	19.4	13.3	6.3	53.1
	[1940-1949]	2.4	3.7	13.1	56.3	22.6	0.5	3.9	2.0	0.6	6.8	26.5	4.6	3.4	58.1
	[1980-1989]	5.5	5.7	18.7	27.1	42.8	0.8	4.8	5.8	1.5	7.3	13.7	20.7	9.2	47.6
Chile															
	All	6.7	3.9	23.8	.	71.4	0.1	0.9	6.2	0.9	8.7	.	17.7	6.5	66.2
	[1940-1949]	5.2	4.6	26.1	.	68.4	0.1	0.8	4.6	0.7	8.5	.	13.2	5.6	71.9
	[1980-1989]	8.9	4.3	22.1	.	72.6	0.1	0.9	8.6	1.5	8.1	.	25.9	7.7	56.8
Ecuador															
	All	5.1	1.4	24.0	49.8	23.4	0.1	1.3	4.6	0.3	11.4	9.7	6.0	2.0	70.6
	[1940-1949]	4.2	1.5	20.8	57.5	18.3	0.1	1.9	3.5	0.1	9.4	11.4	3.1	1.4	74.6
	[1980-1989]	6.2	1.0	25.5	43.5	29.1	0.1	0.9	5.9	0.4	14.4	11.0	11.5	3.6	59.1
Mexico															
	All	4.1	3.7	19.6	33.6	31.9	0.2	10.9	3.8	1.2	11.5	5.0	13.6	3.5	65.2
	[1940-1949]	2.3	2.7	13.2	57.4	18.9	0.2	7.6	2.0	0.7	6.7	9.0	6.2	2.2	75.2
	[1980-1989]	6.1	4.5	25.6	18.0	37.7	0.4	13.8	6.0	1.2	15.2	2.5	19.8	5.5	55.8
Panama															
	All	5.3	2.5	19.2	40.6	32.3	0.2	5.2	4.9	0.5	4.9	3.8	13.0	3.7	74.2
	[1940-1949]	4.0	2.7	20.0	49.8	23.8	0.1	3.7	3.6	0.3	5.1	4.3	6.4	2.9	81.0
	[1980-1989]	7.3	4.1	16.8	30.2	46.4	0.0	2.5	7.3	0.7	5.3	3.1	20.9	5.7	64.2

Source: own estimates based on household surveys.

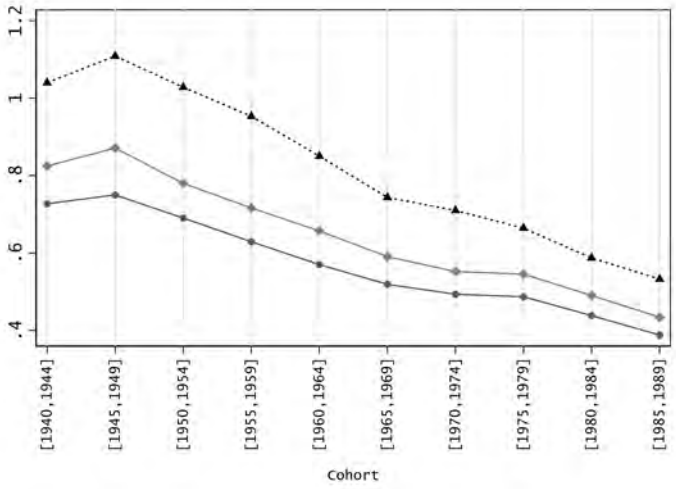
B Heterogeneous results

B.1 Relevance of parents' occupation in intergenerational persistence

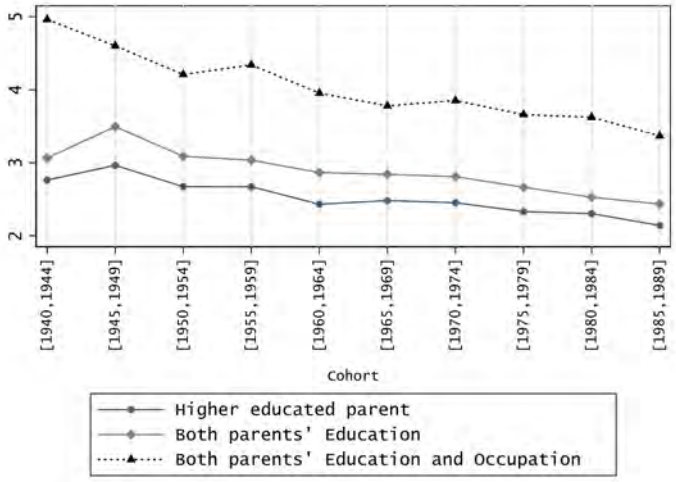
B.1.1 Unweighted average

Figure A.1: Intergenerational persistence (unweighted average). LW estimates

Panel A – Children's education (in years)



Panel B – Children's income rank

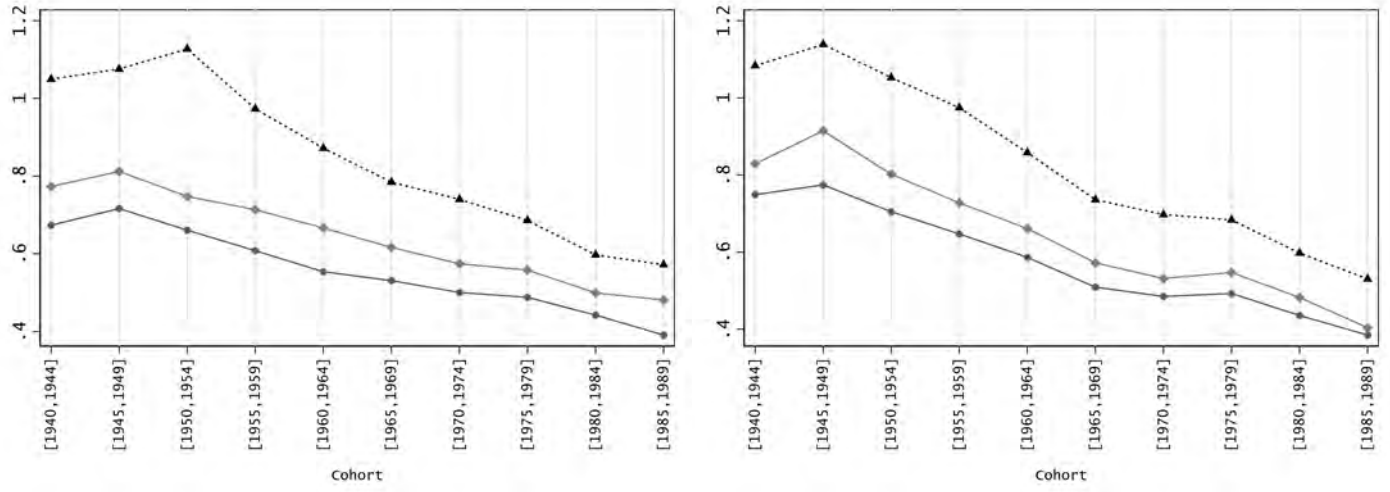


Source: own estimates based on household surveys.
Notes: Estimated intergenerational persistence coefficients. In blue, estimates only considering the higher education among parents. In gray, LW estimates only considering both parents' education as proxies for parental background; in black, LW estimates also considering both parent's occupational categories.

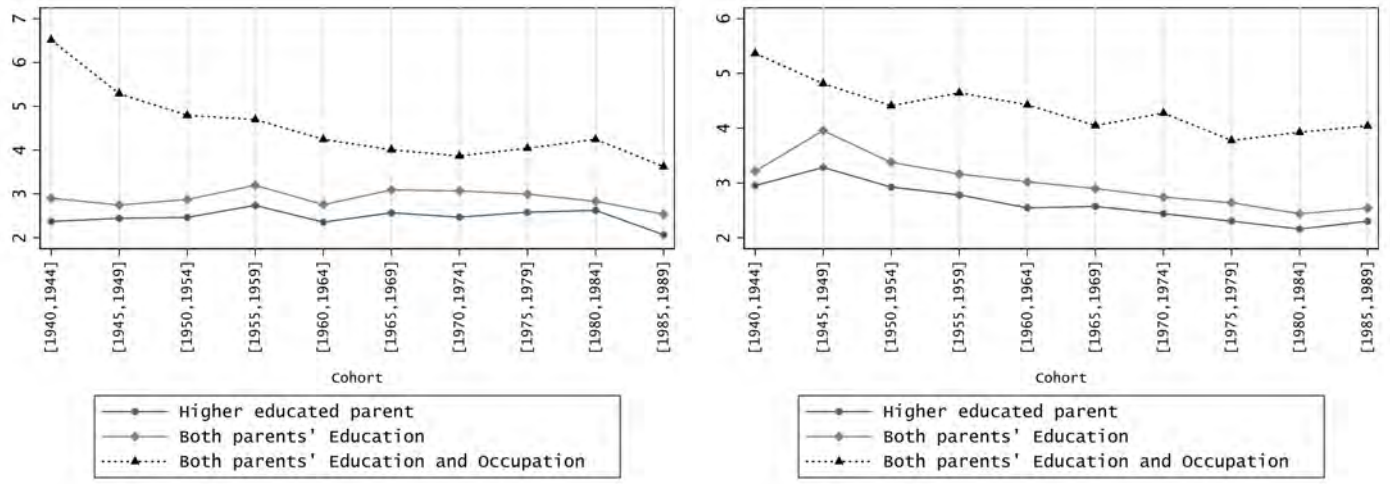
B.1.2 Sons and daughters

Figure A.2: Intergenerational persistence (unweighted average). LW estimates. Daughters (left) and sons (right)

Panel A – Children's education (in years)



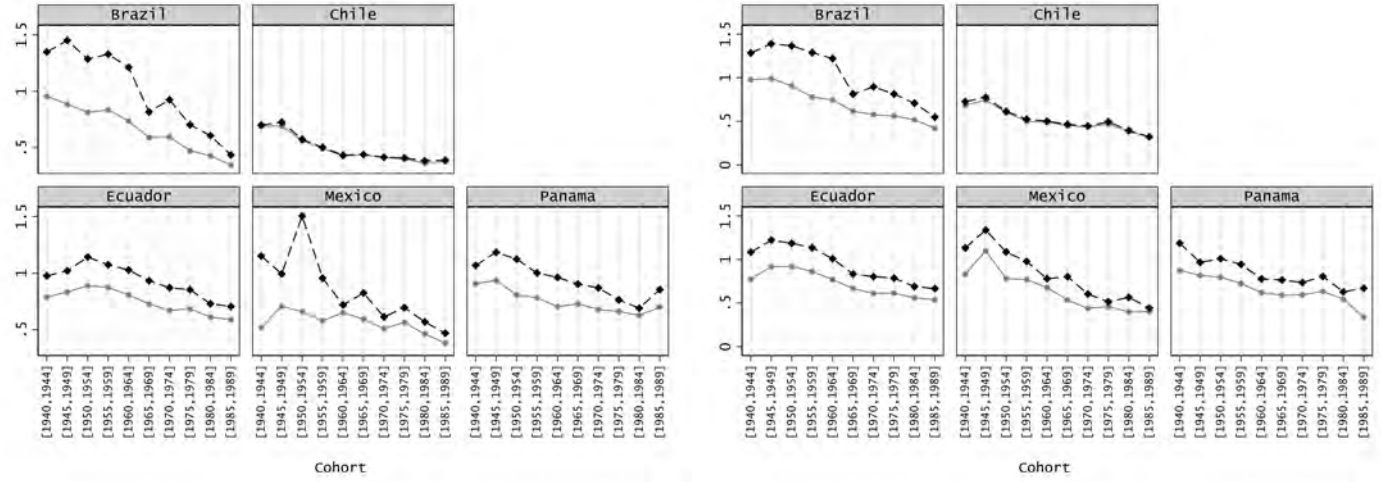
Panel B – Children's income rank



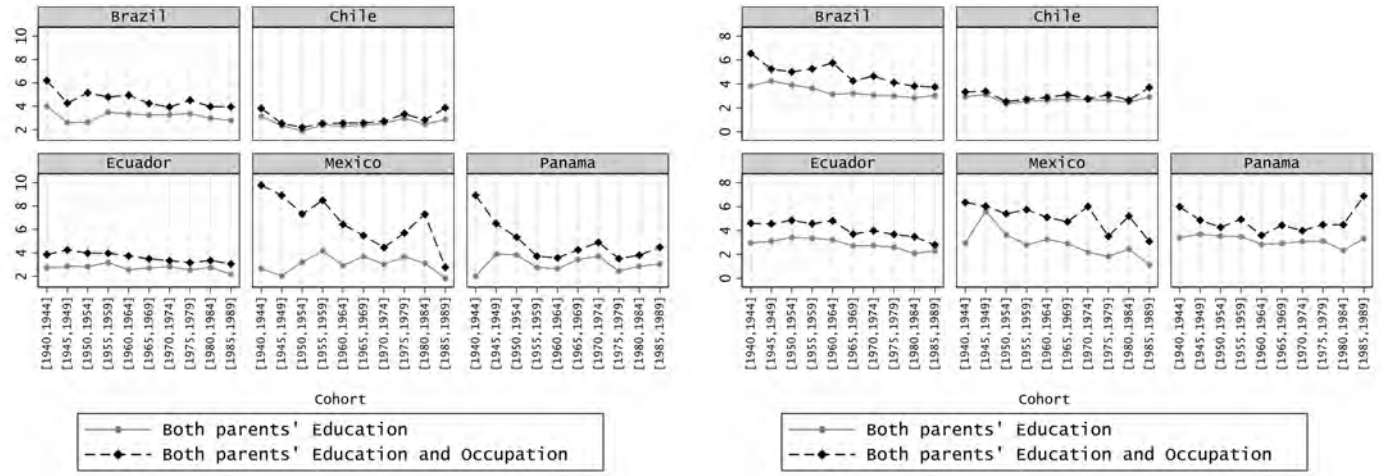
Source: own estimates based on household surveys.
Notes: Estimated intergenerational persistence coefficients. In blue, estimates only considering the higher education among parents. In gray, LW estimates only considering both parents' education as proxies for parental background; in black, LW estimates also considering both parent's occupational categories.

Figure A.3: Intergenerational persistence by country. LW estimates. Daughters (left) and sons (right)

Panel A – Children's education (in years)



Panel B – Children's income rank

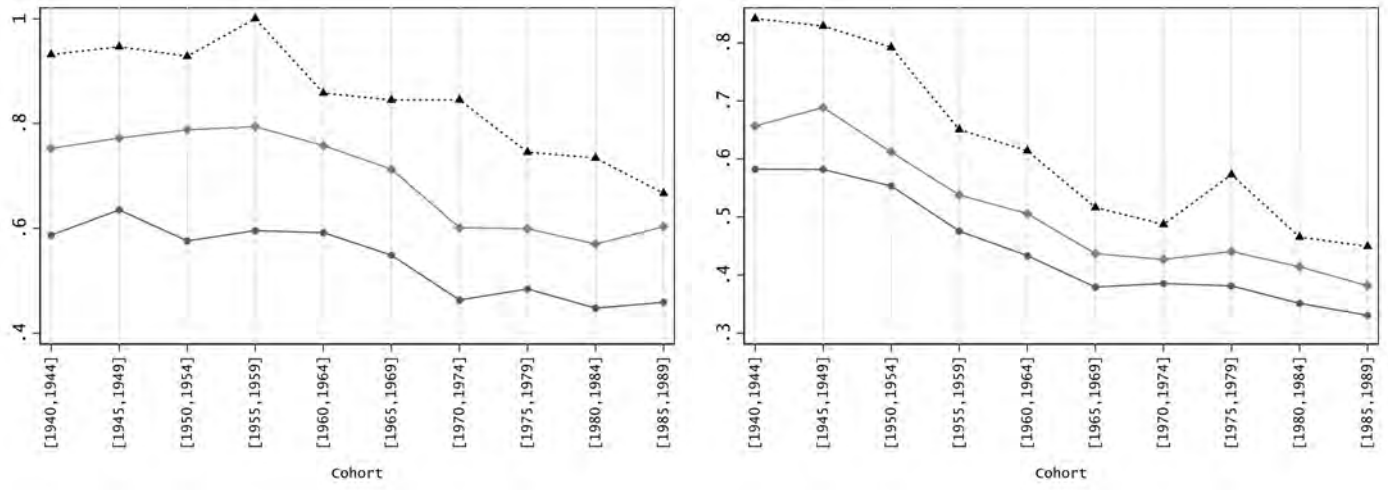


Source: own estimates based on household surveys.
Notes: LW estimated intergenerational persistence coefficients. In gray, estimates only considering both parents' education as proxies for parental background; in black, estimates also considering both parent's occupational categories.

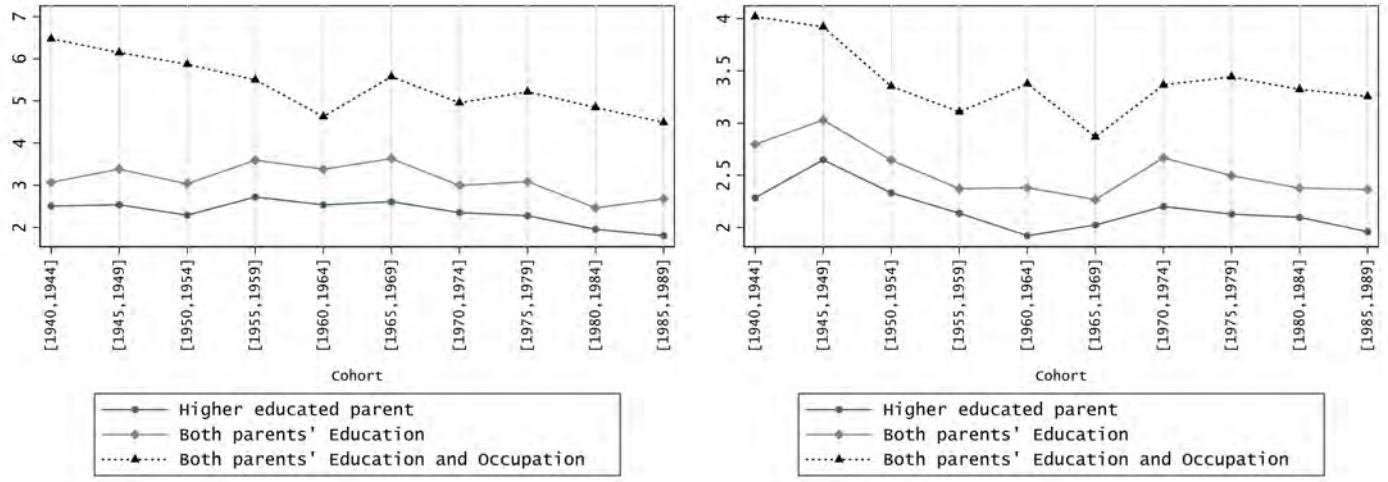
B.1.3 Urban and rural birth zones

Figure A.4: Intergenerational persistence (unweighted average). LW estimates. Rural (left) and urban (right) birth zones

Panel A – Children's education (in years)



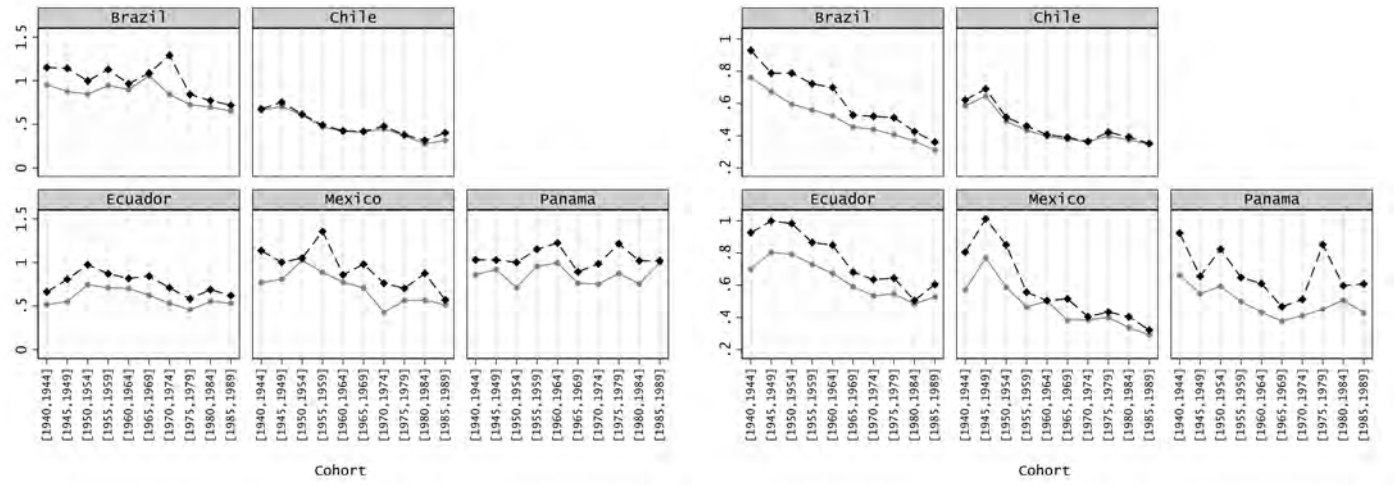
Panel B – Children's income rank



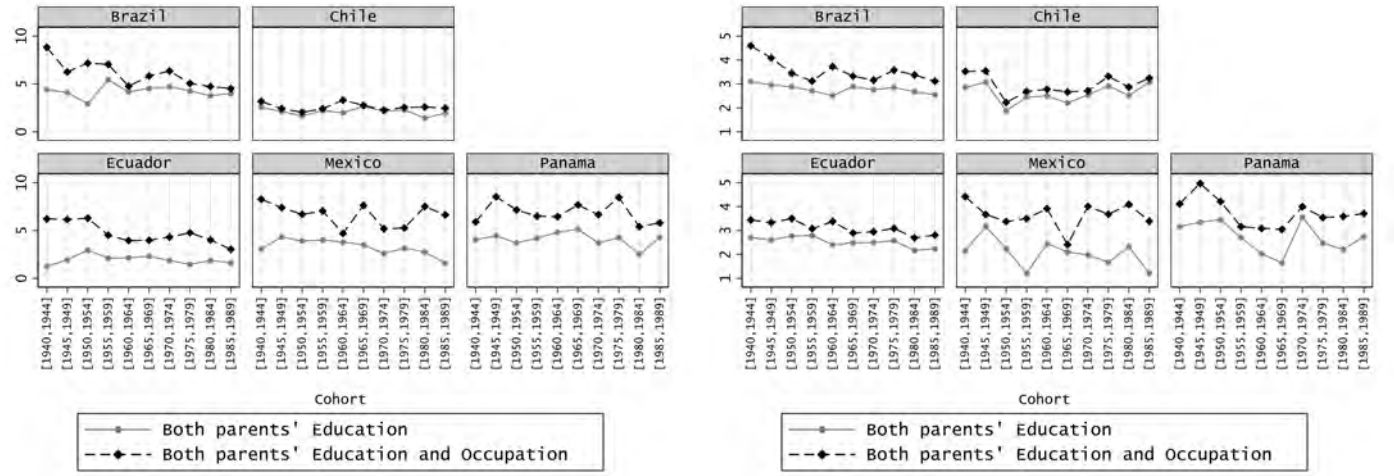
Source: own estimates based on household surveys.
Notes: Estimated intergenerational persistence coefficients. In blue, estimates only considering the higher education among parents. In gray, LW estimates only considering both parents' education as proxies for parental background; in black, LW estimates also considering both parent's occupational categories.

Figure A.5: Intergenerational persistence by countries. LW estimates. Rural (left) and urban (right) birth zones

Panel A – Children's education (in years)



Panel B – Children's income rank



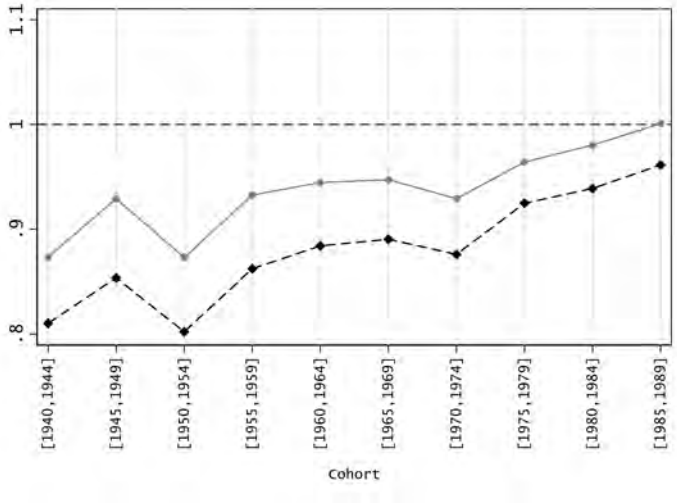
Source: own estimates based on household surveys.
Notes: LW estimated intergenerational persistence coefficients. In gray, estimates only considering both parents' education as proxies for parental background; in black, estimates also considering both parent's occupational categories.

B.2 The role of mothers in intergenerational mobility

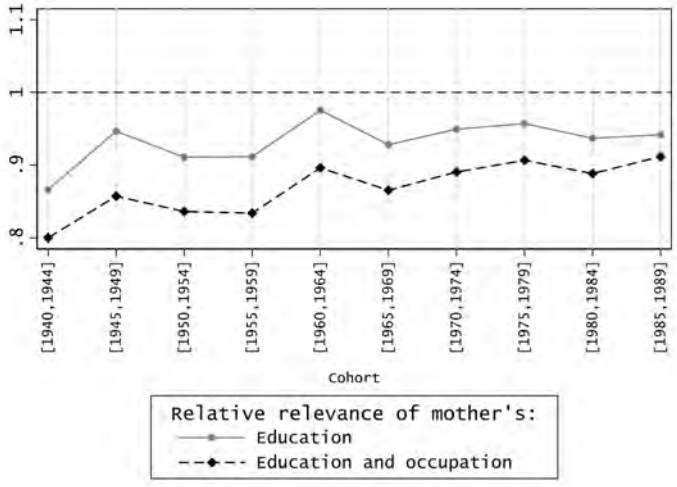
B.2.1 Unweighted average

Figure A.6: Relevance of mothers' characteristics (unweighted average). LW estimates

Panel A – Children's education (in years)



Panel B – Children's income rank

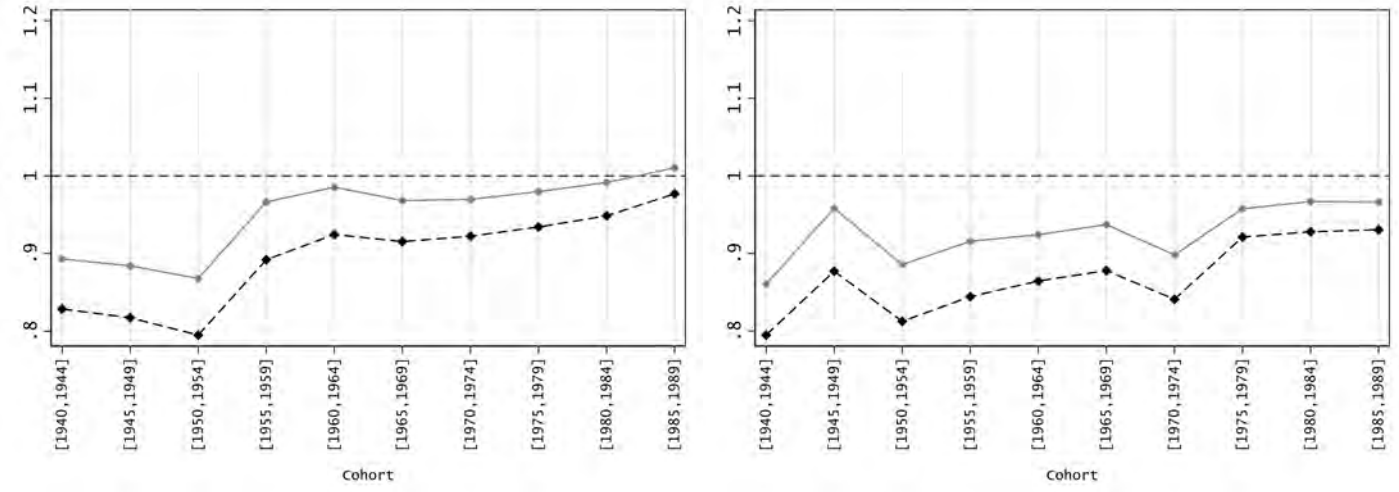


Source: own estimates based on household surveys.
Notes: LW estimated intergenerational relative weight of mother's characteritics in children's parental background, compared to fathers'. In gray, estimates only comparing both parent's education; in black, estimates also considering both parent's occupational categories.

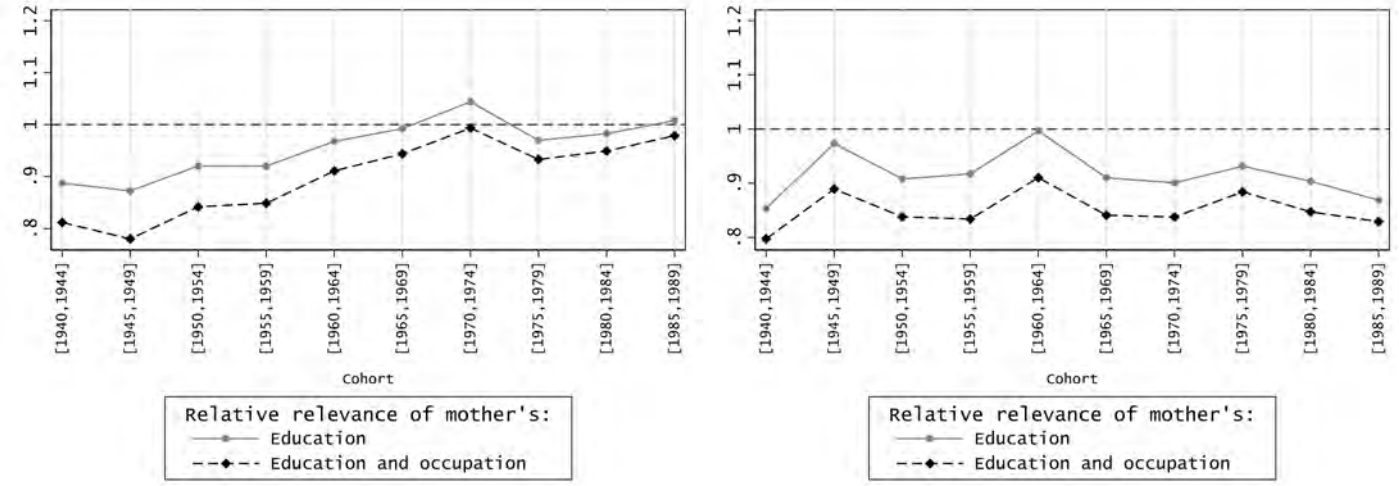
B.2.2 Sons and daughters

Figure A.7: Relevance of mothers' characteristics (unweighted average). Daughters (left) and sons (right)

Panel A – Children's education (in years)



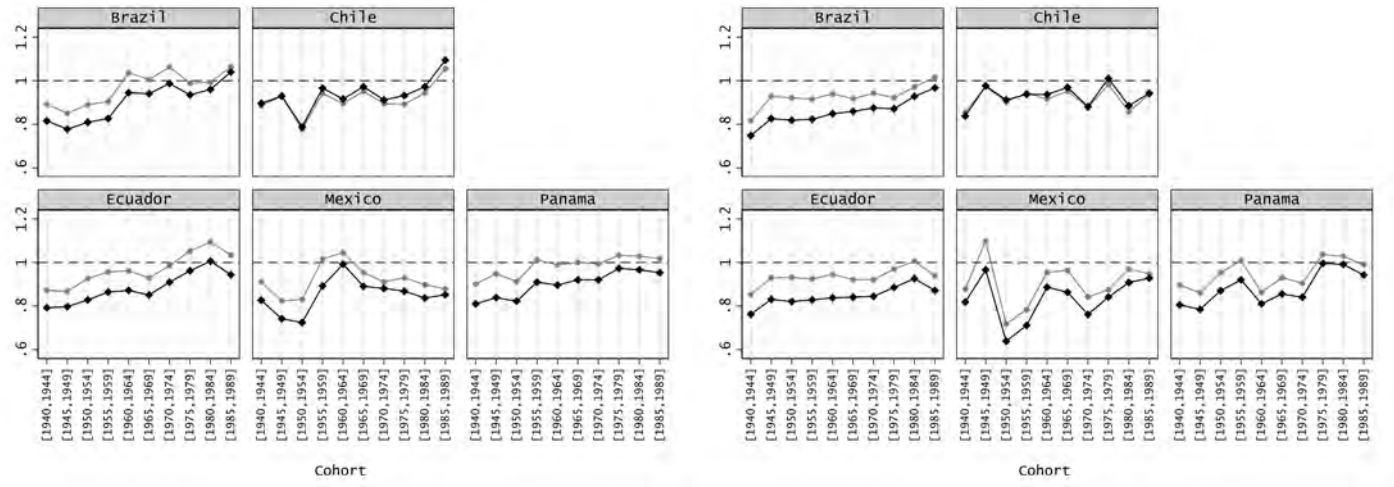
Panel B – Children's income rank



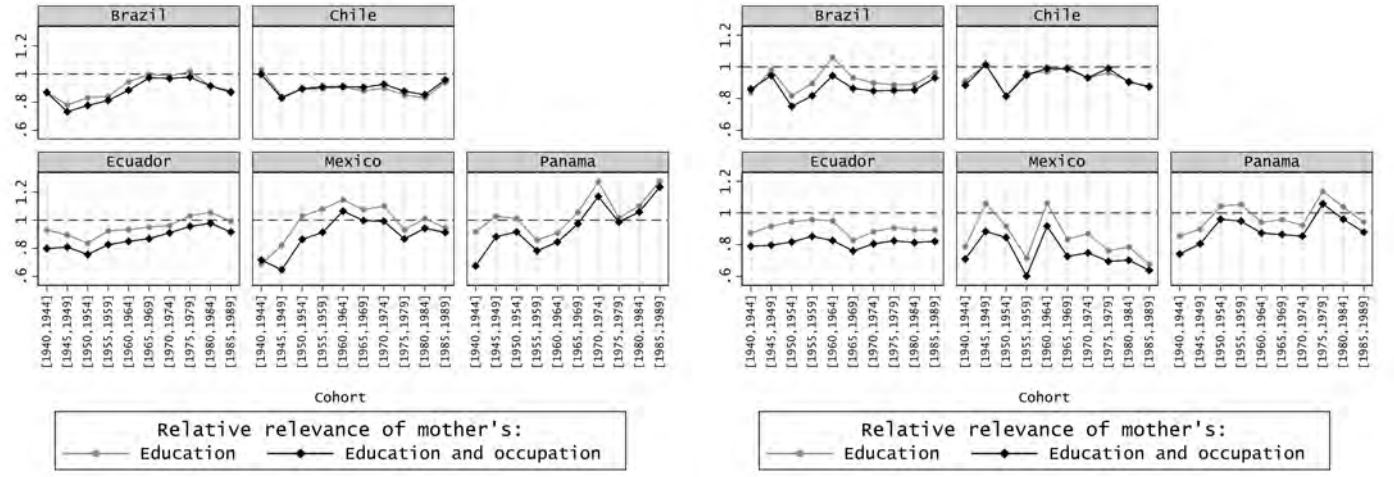
Source: own estimates based on household surveys.
Notes: LW estimated intergenerational relative weight of mother's characteritics in children's parental background, compared to fathers'. In gray, estimates only comparing both parent's education; in black, estimates also considering both parent's occupational categories.

Figure A.8: Relevance of mothers' characteristics by country. Daughters (left) and sons (right)

Panel A – Children's education (in years)



Panel B – Children's income rank

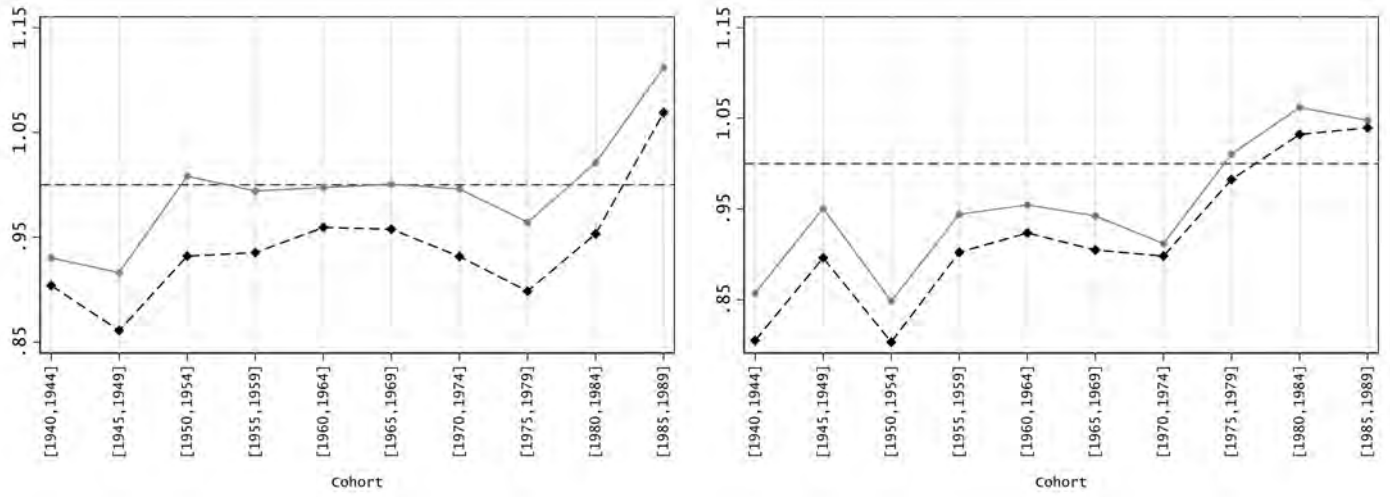


Source: own estimates based on household surveys.
Notes: LW estimated intergenerational relative weight of mother's characteritics in children's parental background, compared to fathers'. In gray, estimates only comparing both parent's education; in black, estimates also considering both parent's occupational categories.

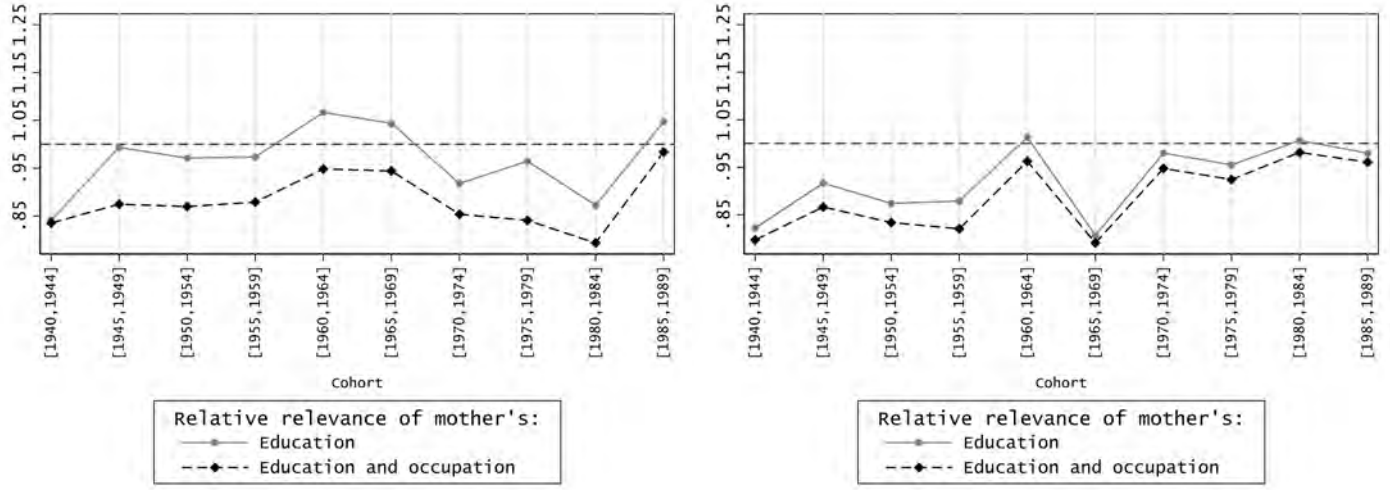
B.2.3 Urban and rural birth zones

Figure A.9: Relevance of mothers' characteristics (unweighted average). Rural (left) and urban (right) birth zones

Panel A – Children's education (in years)



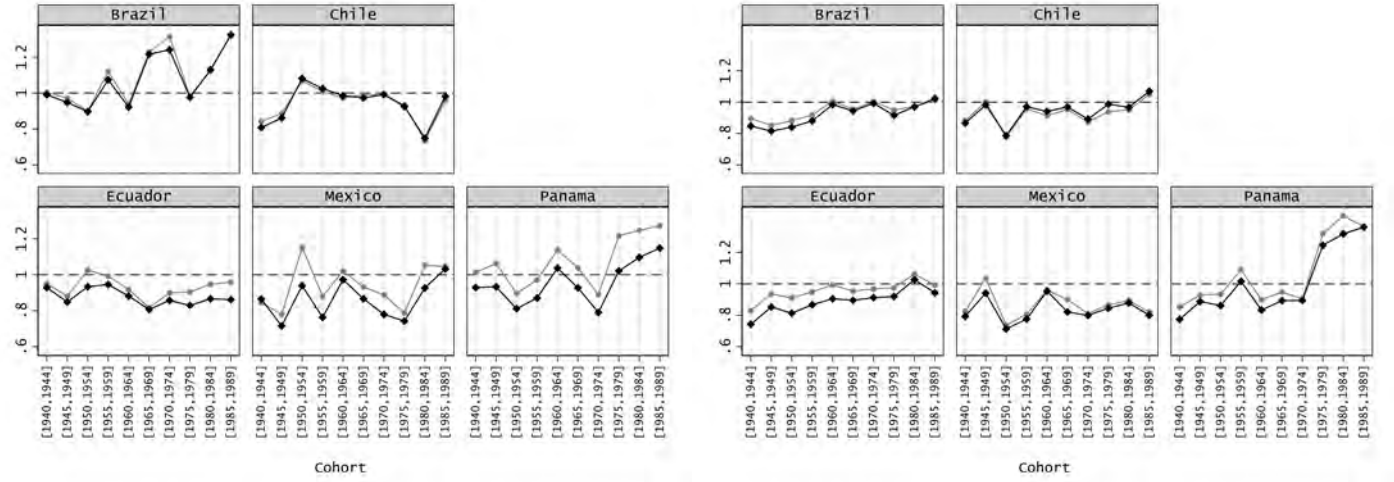
Panel B – Children's income rank



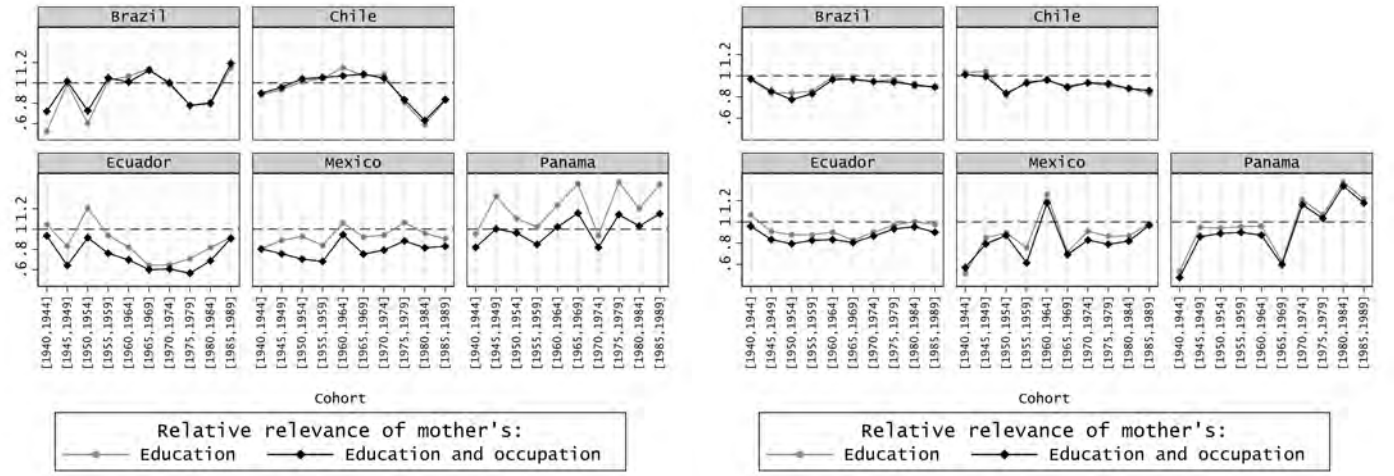
Source: own estimates based on household surveys.
Notes: LW estimated intergenerational relative weight of mother's characteritics in children's parental background, compared to fathers'. In gray, estimates only comparing both parent's education; in black, estimates also considering both parent's occupational categories.

Figure A.10: Relevance of mothers' characteristics by country. Rural (left) and urban (right) birth zones

Panel A – Children's education (in years)



Panel B – Children's income rank

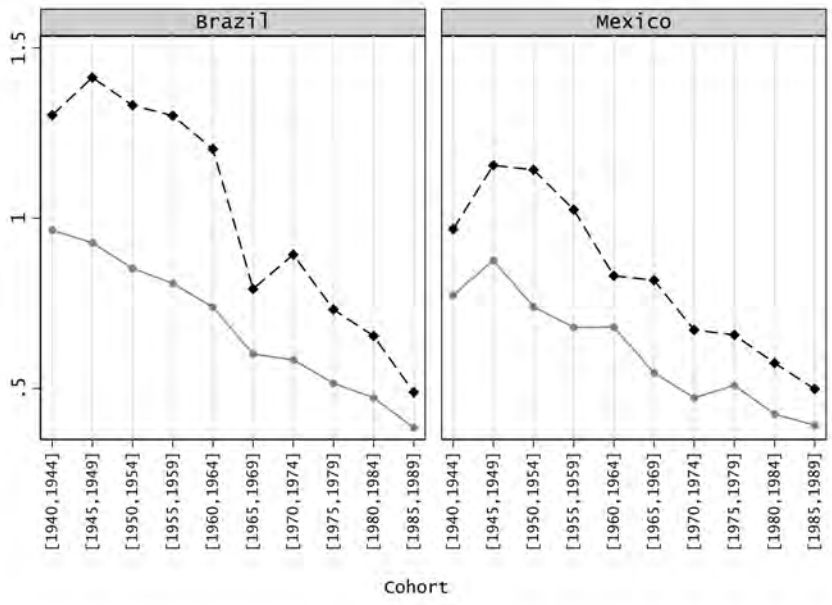


Source: own estimates based on household surveys.
Notes: LW estimated intergenerational relative weight of mother's characteritics in children's parental background, compared to fathers'. In gray, estimates only comparing both parent's education; in black, estimates also considering both parent's occupational categories.

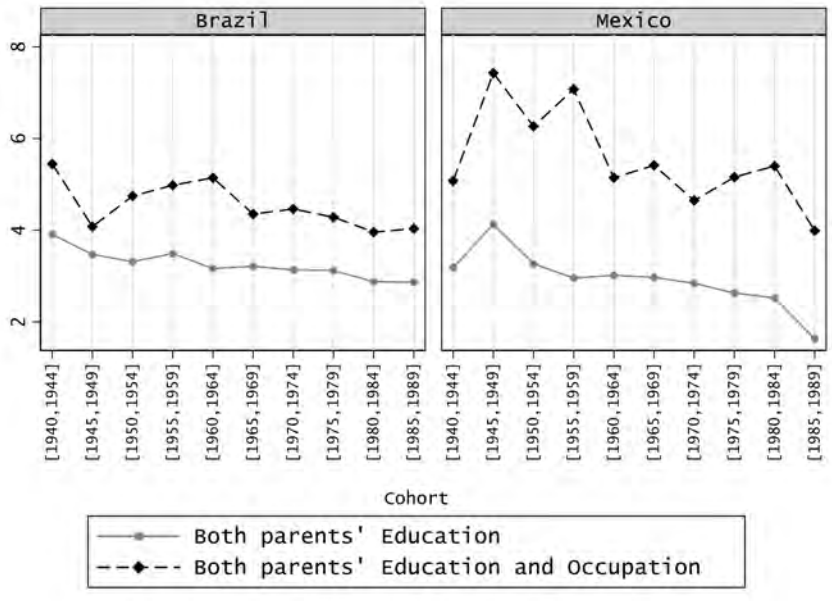
B Broader Occupation definition

Figure A.11: Intergenerational persistence by country. LW estimates using ISCO codification

Panel A – Children's education (in years)



Panel B – Children's income rank

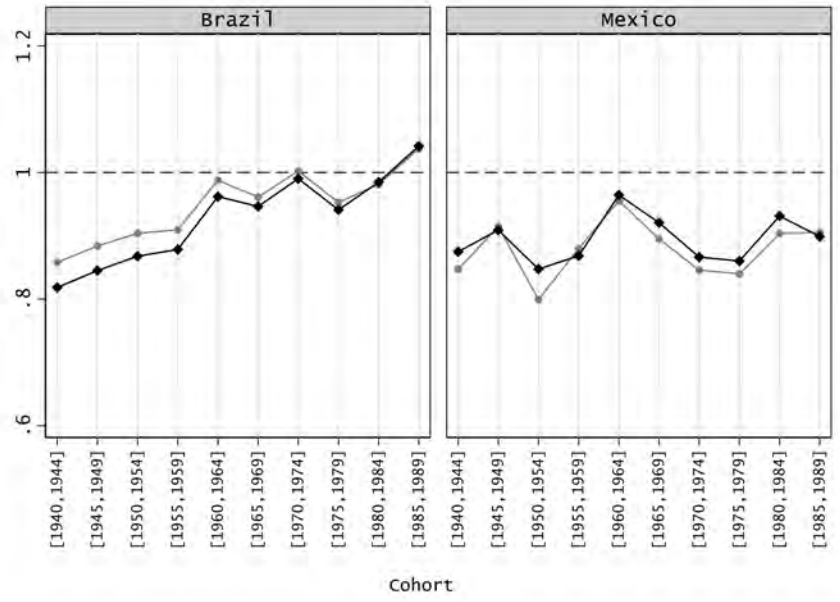


Source: own estimates based on household surveys.

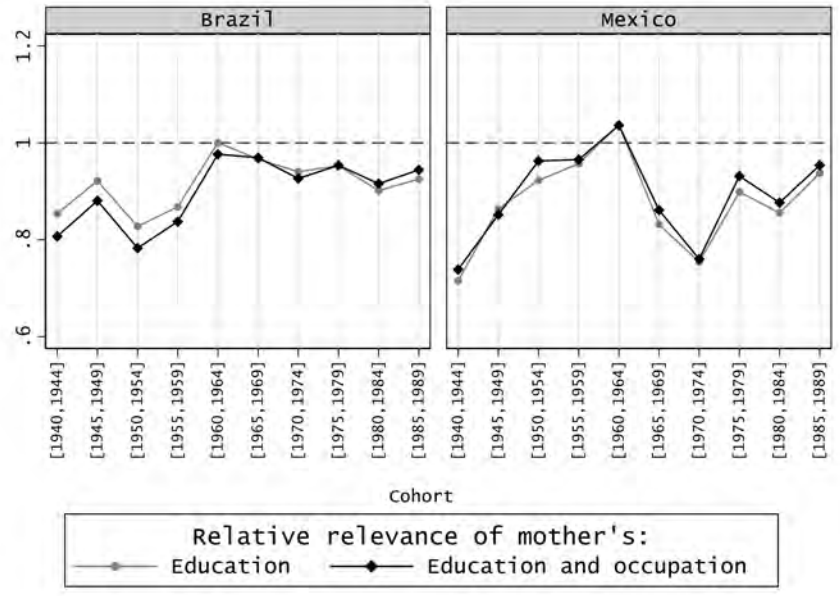
Notes: LW estimated intergenerational persistence coefficients. In gray, estimates only considering both parents' education as proxies for parental background; in black, estimates also considering both parent's occupational categories. 9 occupational categories were considering following 1-digit ISCO (International Standard Classification of Occupations) classification.

Figure A.12: Relevance of mothers' characteristics by country using ISCO codification

Panel A – Children's education (in years)



Panel B – Children's income rank



Source: own estimates based on household surveys.
Notes: LW estimated intergenerational relative weight of mother's characteritics in children's parental background, compared to fathers'. In gray, estimates only comparing both parent's education; in black, estimates also considering both parent's occupational categories. 9 occupational categories were considering following 1-digit ISCO (International Standard Classification of Occupations) classification.