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Lucky Women in Unlucky Cohorts

Gender Differences in the Effects of Initial Labor Market Conditions in Latin America*

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Abstract

This paper assesses gender differences in the effects of adverse conditions at labor-market entry in a developing region. Using harmonized microdata from national household surveys for 15 Latin American countries, we build a synthetic panel of cohorts that potentially transition from school to work and observe their labor market outcomes 10 years later. We find that men who faced higher unemployment rates at ages 18-20 suffer a negative effect on employment at ages 27-30. In contrast, women from those same unlucky cohorts have higher employment rates and earnings. Our results are consistent with women acting as secondary workers in downturns. We also find that initial labor market conditions correlate with the role played by women within the household and to perceptions about gender roles later in life, suggesting that empowerment could be a mechanism underlying the persistence of the positive effects on female labor outcomes.

JEL Classification: J16, J21, J22, J31.
Keywords: crises, unemployment, scarring effects, gender, secondary worker, Latin America.

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1 Introduction

Evidence from developed countries suggests that bad initial economic conditions have lasting negative effects on workers' labor market outcomes (Von Wachter, 2020). In particular, those who enter the labor market in high unemployment periods—the unlucky cohorts—suffer lower earnings and wages in the long-term than those who enter when unemployment rates are lower. Also, interruptions of the initial process of career progression can have lasting consequences on labor market outcomes (Oreopoulos et al., 2012).

Although pervasive across developed economies, these results may not be fully extrapolated to developing countries, where adjustments to negative shocks may be different due to, for instance, low female labor force participation. In fact, the evidence from developing countries suggests that in bad times many women act as secondary workers, entering the labor market when men in their households lose their jobs—i.e., the added-worker effect. In particular, for young women in the typical age of the school-work transition economic downturns may act as an additional incentive to enter the labor market in order to help their families. This unexpected entry may have long-lasting positive consequences on the labor market attachment and earning perspectives of young women through various channels, including increased human capital, change in perceptions and empowerment. In other words, the negative shock might end up being beneficial to these "lucky women" in "unlucky cohorts".

We explore these issues in the context of Latin America, one of the most economically unstable regions in the developing world, characterized by high macroeconomic volatility and frequent downturns. Relevant for the issue at hand, Latin America is also characterized by high youth unemployment and low female labor force participation, especially among the unskilled. In addition, the evidence for the added-worker effect is particularly abundant in Latin America (Cerrutti, 2000; Parker and Skoufias, 2004; Fernandes and de Felicio, 2005; Skoufias and Parker, 2006; Paz, 2009; Martinoty, 2015). For instance, Skoufias and Parker (2006) show for Mexico that women's labor participation and employment increase when men lose their jobs, and Serrano et al. (2019) find that in Latin America female labor force participation is negatively related to the cyclical component of per capita GDP, which is mostly related to short-term shocks.

In this paper we study the effects of adverse initial labor market conditions on worker's labor market outcomes ten years after entry, assess differences between men and women, and explore the potential mechanisms underlying these effects. Based on harmonized microdata of more than 1.5 million individuals from national household surveys in 15 Latin American countries we build a synthetic panel data-set that allows us to follow different labor-market entry cohorts in each country. We estimate the persistent effects on labor market outcomes, on the role of women within the household, and on the perceptions about gender roles in society using a model with fixed effects by country and by year. Our identification strategy exploits the variability of national unemployment rates at labor market entry across countries and cohorts. In order to deal with the fact that

individuals may react to labor market conditions by advancing or delaying labor market entry, raising the concern that the unemployment rate at the time of labor market entry may not be orthogonal to the unobserved determinants of each outcome, we use the school-entrance age and school duration to proxy graduation year, as in Arellano-Bover (2020). In particular, we take the national unemployment rate that a cohort faced between ages 18-20 as our proxy for initial conditions. Accordingly, the composition of our cohorts is likely exogenous since it depends only in the year of birth. In any case, our results are robust to other ways of defining the years of presumed labor market entry.

In line with evidence from developed countries, we find that men from unlucky cohorts—i.e., those who faced higher unemployment rates at ages 18-20—suffer a negative effect on employment at ages 27-30. In contrast, Latin American women from those unlucky cohorts have more chances of being employed and of getting higher earnings ten years after their potential entry into the labor market. The results hold even after controlling for the fact that both men and women get more education as a response to higher unemployment. Our results are consistent with women acting as secondary workers in the negative phase of the business cycle—i.e., the added-worker effect. We also find that initial labor market conditions are correlated with the role played by women within the household and with perceptions about gender roles later in life, suggesting that empowerment could be a mechanism underlying the persistence of the positive effects on female labor outcomes.

This paper contributes to the large literature that studies the long-term impacts of bad conditions at labor market entry (Genda et al., 2010; Kahn, 2010; Oreopoulos et al., 2012; Taylor, 2013; Brunner and Kuhn, 2014; Liu et al., 2014; Cockx and Ghirelli, 2016; Päällysaho, 2017; Fernández-Kranz and Rodríguez-Planas, 2018; Han, 2018; van den Berge, 2018; Schwandt and von Wachter, 2019; Arellano-Bover, 2020; Cotofan et al., 2021; Rothstein, 2020; Silva et al., 2021). In contrast to the profuse literature for high-income countries, the relationship between initial conditions in the labor market and subsequent labor outcomes has been seldom studied for low- and middle-income countries (e.g., Kuchibhotla et al., 2020; Ismail and Kollamparambil, 2015; Cruces et al., 2012). Our paper contributes to this literature on scarring effects with evidence for most Latin American countries. More importantly, we contribute with a novel result—i.e., there are groups (young women) whose labor market outcomes might benefit in the longer run from worse initial conditions in the labor market—, and explore the reasons for the gender heterogeneity.

We also contribute to the literature that studies the consequences of the business cycle, and economic downturns in particular, in Latin America. Whereas the immediate effects of economic crises on employment and wages have been extensively studied in the region, much less is known about their effects in the medium and longer run.

Finally, the current crisis triggered by the COVID-19 pandemic reinforces the need to understand the mechanisms behind the persistent and asymmetric impacts of initial labor market conditions. Our results, although based on economic fluctuations generated

by factors of a different nature, may shed some light on this issue and contribute to a fast-growing literature (Adams-Prassl et al., 2020; Brodeur et al., 2020; Cajner et al., 2020; Coibion et al., 2020; Koebel et al., 2021; Miguel and Mobarak, 2022; Goldin, 2022; Viollaz et al., 2022).

The rest of the paper is organized as follows. Section 2 describes the data and the empirical approach, Section 3 presents and discusses the main results, while Section 4 explores the potential role of empowerment on the persistence of the results. Section 5 ends with some concluding remarks.

2 Data and Empirical Strategy

2.1 Data

Our analysis is based on data from cross-section national household surveys for 15 Latin American countries for the period 2001-2017. The countries included are: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Honduras, Mexico, Panama, Paraguay, Peru, and Uruguay. Table A.1 in the Online Appendix lists the surveys used for each country. We make all possible efforts to make statistics comparable across countries and over time by using similar definitions of variables in each country/year, and by applying consistent methods of processing the data. Specifically, surveys were processed following the protocol of the Socioeconomic Database for Latin America and the Caribbean (SEDLAC), a joint project between CEDLAS at Universidad Nacional de La Plata and the World Bank (CEDLAS and The World Bank, 2021). From this data source we obtain social, labor, and demographic variables at the individual level. We provide more details on the construction and definitions of these variables in Section B in the Online Appendix.

In addition, we use the unemployment rate at the national level to characterize the labor market conditions prevailing during the years of labor-market entry. We gather this information by combining two main sources: the World Development Indicators (The World Bank, 2021) and SEDLAC. This will be our main independent variable of interest, which we standardize using country-specific means and standard deviations as in Arellano-Bover (2020).

Finally, we use data from Latinobarometro and the World Values Survey to construct measures of perceptions regarding gender roles that we use as outcome variables. Latinobarometro has information for the 15 countries under analysis, while the World Values Survey has information for 11 of them. We use all available surveys within the period 2001-2017, which includes 6 years of data from Latinobarometro and 8 years from the World Values Survey.

We focus on cohorts born between 1974 and 1987—i.e., a total of 14 cohorts in each country—built from the repeated cross-section household surveys as in Schwandt and von Wachter (2019). We use age instead of the actual graduation date to proxy the

year of entry into the labor market, as in Arellano-Bover (2020). We focus on ages 18-20 to capture the education-work transition years because 18 is the theoretical age for completing secondary school, which is compulsory in most of the countries of the region. Indeed, the greatest jump in labor force participation occurs precisely at ages 18-20: it increases from 30% for people aged 15-17 to almost 60% for the 18-20 year-old group.[1]

In our data we observe these cohorts in the period 2001-2017, when they are between 27 and 30 years old. Our goal is to assess whether the outcomes at ages 27-30 depend on the labor market conditions they faced at ages 18-20. Table A.2 in the Online Appendix illustrates the construction of the cohorts. We also perform an analysis in which we observe the outcomes at ages 25-35 by allowing for an unbalanced synthetic panel. In both cases—balanced and unbalanced synthetic panels—we observe the outcomes over the period 2001-2017.[2]

The national unemployment rates in the period 1992-2007 describe the labor market conditions that our cohorts faced at ages 18-20. This is a period of strong instability in the region, with significant variability in unemployment rates both across countries and over time. For instance, the unemployment peaks in Argentina occurred in 1995 and 2002, in Colombia in 1999 and 2000, and in Uruguay in 2002 and 2003. Figure A.1 in the Online Appendix shows the standardized unemployment rates for each country between 1992 and 2007.

Given that the unemployment rate is defined at the country-year level, it is common econometric practice to work directly at the group level (Von Wachter, 2020).[3] Thus, our units of analysis are cells defined by cohort, gender, country, and calendar year, and all the variables are defined as means within each cell.[4]

As we will see bellow, we exploit the variability in unemployment rates at age 18-20 across cohorts and countries to identify the effects of initial labor market conditions on several outcomes. We study three groups of outcomes: (i) labor market outcomes (participation rate, employment rate, unemployment rate, hours worked per week, hourly wages, and monthly labor income), (ii) family outcomes (household headship and share of the household labor income earned by the woman), and (iii) perceptions regarding gender roles. Labor and family variables come from the national household surveys while values are obtained from Latinobarometro and the World Values Survey.

[1] Although labor participation continues to increase for people over the age of 20, it does so at a lower rate. For instance, the participation rates are 70%, 78%, and 80% for ages 21-23, 24-26, and 27-29 respectively.

[2] The panel is balanced in the sense that for all the years from 2001 to 2017 we have information from all the cohorts for most of the countries. But, strictly speaking, it is not a fully balanced panel because for certain years we do not have information from some countries. For instance, the household surveys in Chile are applied every three years and those in Mexico every other year. Table A.1 in the Online Appendix lists the years covered by the household surveys in each country. For simplicity, we refer to this sample as the balanced panel, in contrast to the unbalanced panel in which for some years there is no information on some cohorts for any of the countries. In the case of surveys capturing perceptions about gender roles, all the analysis is run by using an unbalanced panel.

[3] On the advantages of the cell-level model see Angrist and Pischke (2008).

[4] In our panel database constructed from the household surveys, the size of each cell ranges between 100 and 6,000 observations. We use survey weights to calculate average values within each of them.

We build our panel based on data for 806,880 women and 733,259 men from the household surveys. In the balanced panel we observe the 14 cohorts—those born between 1974 and 1987—in the 15 countries over the period 2001-2017 when they are between 27 and 30 years old. Table A.3 in the Online Appendix presents summary statistics across cohorts, countries and years. About 10 years after labor market entry, women have slightly more education than men (10.2 years versus 9.8 years), lower labor force participation (65% versus 94%) and employment rates (59% versus 90%), higher unemployment rate (9% versus 5%), and fewer working hours per week (39 hours versus 46 hours). The average log hourly wage for working women is slightly lower than that of men (0.78 versus 0.81 in USD PPP 2005). The gender gap in log monthly labor income is larger (5.8 versus 6.1 per month in USD PPP 2005) due to the lower labor supply of women compared to men in the intensive margin.

2.2 Methodology

Our goal is to estimate the causal effects of adverse initial conditions a decade after the presumed entry into the labor market. As previously mentioned, we build cohorts of potential labor market entrants from repeated cross-section data. This allows us to exploit the variability in unemployment rates across countries and over the years of potential entry into the labor market of each cohort as a means of identifying the persistent effects of bad initial conditions.[5]

Based on the sample of cohorts aged 27-30 in the period 2001-2017, we estimate the following model by OLS:

$$y_{gct} = \alpha + \beta U_{gc}^{18-20} + \delta_a + \lambda_c + \theta_t + \epsilon_{gct}, \tag{1}$$

where y_{gct} is the outcome variable for cohort (generation) g in country c observed at calendar year t, and U_{gc}^{18-20} is the unemployment rate that cohort g in country c faced between ages 18-20. The model also includes age-in-years dummies (δ_a) that allow for any age or potential experience effects on outcomes that are common across countries, country fixed effects (λ_c), and calendar year fixed effects (θ_t). We estimate the baseline model in equation 1 separately for cohorts of men and women, pooling together the 15 Latin American countries. In our preferred specification we use the balanced panel where we observe the 14 cohorts in the 15 countries over the period 2001-2017.

The parameter of interest is β, which captures the deviations of outcome y from the average for each country, calendar year and the typical age—or potential experience—profile due to country specific variation in initial unemployment rates, given the subsequent evolution of labor market conditions in each country.

For the causal interpretation of β to be valid we need that the unemployment rate at the predicted time of labor market entry is orthogonal to the unobserved determinants

[5] See Von Wachter (2020) for an overview of the different methodological strategies recently adopted in the literature.

of each outcome. A concern would arise if, for instance, we used the actual year of labor market entry of each cohort, because individuals may react to labor market conditions by advancing or delaying labor market entry. We avoid this potential problem by using the school-entrance age and school duration to proxy graduation year, as in Arellano-Bover (2020).

Another concern would arise if individuals reacted to labor market conditions by moving to another country. We therefore excluded migrants from the estimation sample, which is common practice in the literature.[6] But international out-migration could still be a problem to our results if it is affected by unemployment. Unfortunately, we do not have data on out-migration at the individual level. To tackle this concern, we first run a model of the rate of out-migration on the unemployment rate, based on country-year data from the United Nations Population Division for the same set of 15 countries used in the main analysis and the 6 years covered by the statistics (1990, 1995, 2000, 2005, 2010 and 2015). The coefficients are not statistically significant even when separating the population by gender. In addition, we estimate treatment effects on cohort sizes in the outcome data sources.[7] In particular, we run models of the size of each cell (log of number of individuals) on the unemployment rate at the time of the labor market entry following the specification in equation 1. Again, we do not find statistically significant effects. Given these results, we believe that migration is not likely to be a significant threat to our identification strategy.

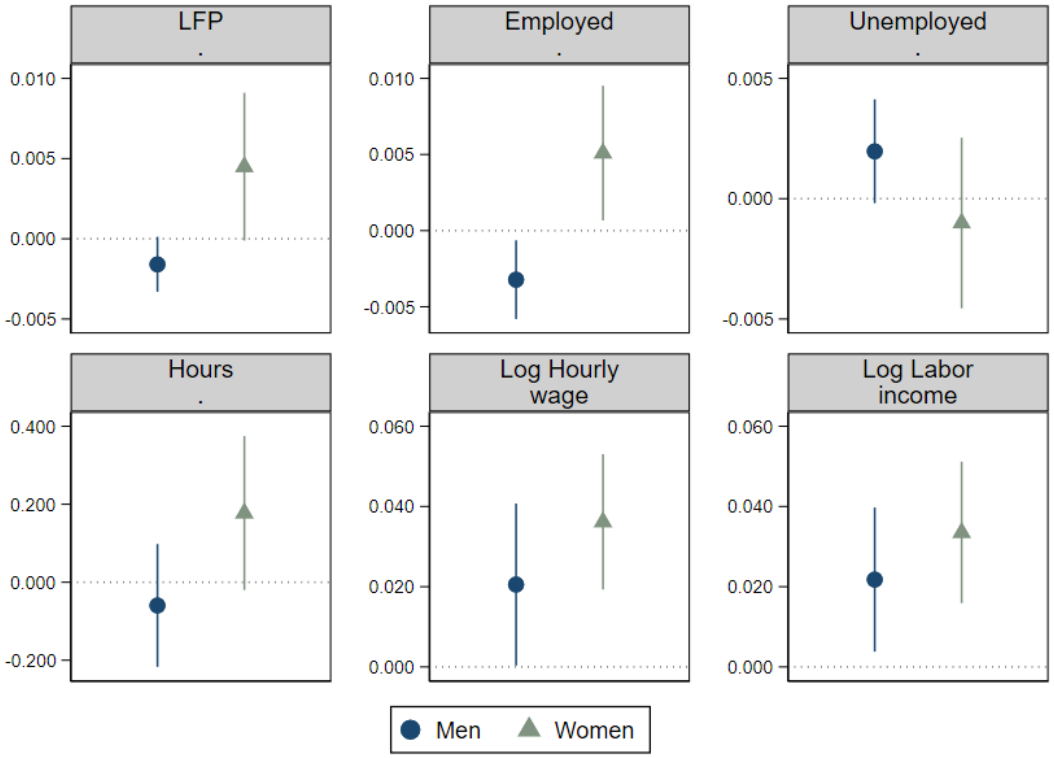
3 The Effects of Initial Labor Market Conditions on Labor Market Outcomes

In this section we present the main results obtained from estimating the model in equation 1 based on the balanced panel for the following labor market outcomes: (i) labor force participation (LFP), (ii) employment, (iii) unemployment, (iv) working hours per week, (v) hourly wages, and (vi) monthly labor income, where outcomes (iv) to (vi) are conditional on working and (v) and (vi) are in logs. Figure 1 summarizes the results by showing the coefficients β and the corresponding 90% confidence intervals by gender. The point estimates and standard errors are reported in Table A.4—columns 1 to 6—in the Online Appendix. Since U_{gc}^{18-20} is standardized using country-specific standard deviations, β measures the average effect on the outcome level at ages 27-30 of a one-standard deviation increase in the unemployment rate that cohort g in country c faced between ages 18–20. On average, a one-standard deviation increase represents 20% of the average unemployment rate in the region, which was 6.9% at the time our cohorts entered the labor market.

[6] For some countries, like Colombia, we do not have information on migrants. The exodus of Venezuelans to Colombia began around 2015 but only became massive after 2017 (Peñaloza Pacheco, 2019), which is outside our period of analysis. In any case, we repeated the analysis excluding Colombia and the results hold.

[7] We thank an anonymous reviewer for this suggestion.

Figure 1: Effect of the Standardized National Unemployment Rate at Ages 18-20 on Labor Market Outcomes



Notes: The figures show coefficients β and the corresponding 90% confidence intervals from estimating equation (1) for cohorts of women and men, separately. Standard errors clustered at the country*cohort level. The point estimates are reported in Panel A of Table A.4 in the Online Appendix. For each gender, the sample is a panel of 14 cohorts in 15 countries observed over the period 2001-2017. These cohorts were born between 1974 and 1987, they possibly entered the labor market between 1992 and 2007 at ages 18-20, and they are between 27 and 30 years old by the time we observe their outcomes. The values of the three first outcome variables (LFP, employment and unemployment rates) range from 0 to 1.

For men, our results are aligned with evidence for developed countries, where higher unemployment rates at entry have negative impacts on long-term male labor outcomes—for an overview of the results see Von Wachter (2020). Men from cohorts that faced higher unemployment rates at ages 18-20—i.e., the unlucky cohorts—are less likely to be employed and more likely to be unemployed at ages 27-30 than men from other cohorts. Specifically, a one-standard deviation increase in unemployment rates at ages 18-20 leads to a decrease in employment of 0.32 percentage points and to an increase in unemployment of 0.20 percentage points between ages 27-30, though the latter is barely statistically significant. The effect on men's working hours is not statistically different from zero. In contrast, the data reveals a small positive effect on wages—and hence on labor incomes—possible driven by a composition effect due to selection: low productivity/effort workers are probably the first to be discouraged or lose their jobs due to bad initial economic conditions (Hoynes et al., 2012; Silva et al., 2021).

Unlike men, Latin American women appear to benefit from entering the labor market during bad times. About a decade after their presumed entry into the labor market, women from unlucky cohorts are more likely to participate in the labor force, to be employed and to work longer hours. A one-standard deviation increase in unemployment rates between ages 18-20 leads to a 0.51 percentage-points increase in female employment, a 0.45 percentage-points increase in female labor force participation and to a 0.18 increase in working hours per week, though the last two effects are not strongly statistically significant. We also find positive effects on women's hourly wages and labor income which are larger than the effects for men. Specifically, our results show an increase of 3.6 and 3.3 per cent in hourly wages and monthly labor income, respectively, for each one-standard deviation increase in unemployment at ages 18-20. Although the gender difference is not statistically significant, it is worth noticing that while in the case of men we could expect a positive effect on labor income due to positive selection into employment—as explained before—, for women we expected that the composition effect—driven by an increase in female employment rates—would negatively affect their average wages. However, our results suggest that women from unlucky cohorts are able to advance their labor market careers obtaining higher wages. We speculate this could be connected to a change in social perceptions about the role of women at home and in society, something we study in Section 4. The result on unemployment also suggests a positive impact of initial conditions for women—i.e., lower unemployment 10 years after entry—although the coefficient is not statistically significant.

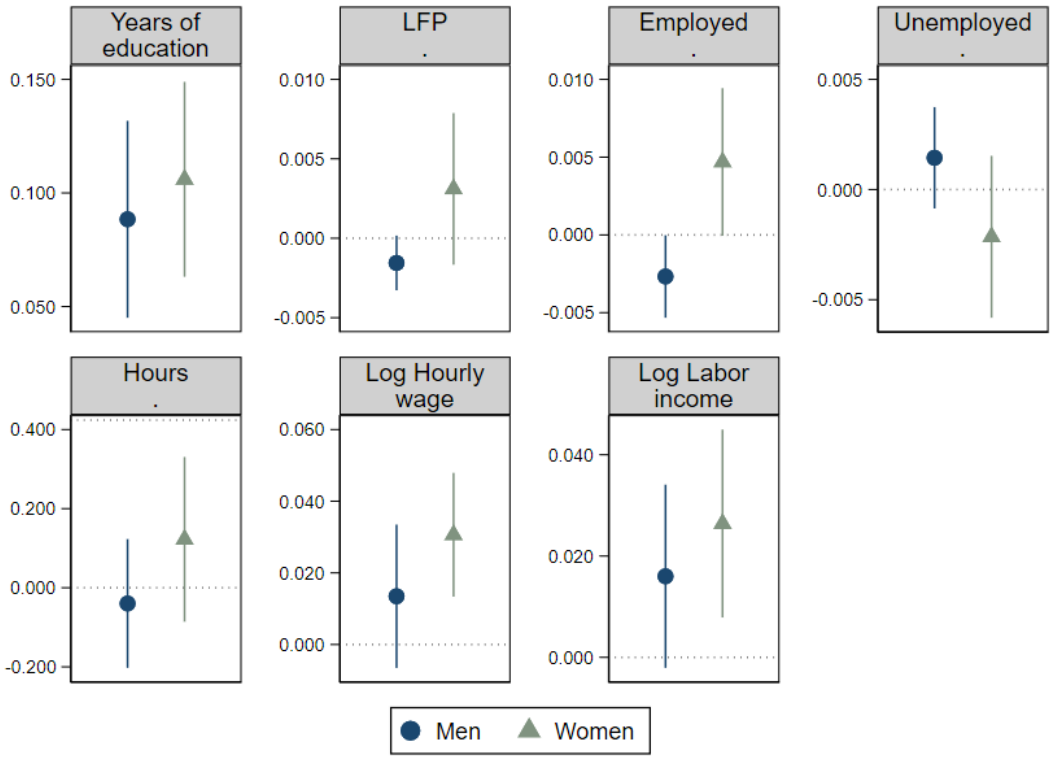
Such a contrast between the results for men and women does not appear in previous studies for developed countries. For instance, Schwandt and von Wachter (2019), Rothstein (2020) and Rinz (2022), based on data for the US, find a negative impact of entering the labor market in a recession for both women and men.

3.1 Is Education Driving the Results?

Before exploring the possible mechanisms underlying our results, we want to rule out that changes in educational attainment are fully driving the long-term labor market effects. Women that face higher unemployment rates on education-work transition years may decide to extend their formal education, which would improve their long-term labor market prospects. To assess the effect of initial labor market conditions on educational attainment we estimate equation (1) using years of formal education as the dependent variable. Consistent with evidence for developed countries (Kahn, 2010; Hampf et al., 2020; Stuart, 2022), we find that both women and men from unlucky cohorts end up with more formal education than individuals from other cohorts. A one-standard deviation increase in unemployment rates at labor market entry leads to an increase in 0.11 and 0.09 years of education for women and men aged 27-30, respectively, as shown in the first panel of Figure 2 and in the last column of Table A.4 in the Online Appendix.

This raises the question of whether the improvements in education lead to the lasting

Figure 2: Effect of the Standardized National Unemployment Rate at Ages 18-20 on Labor Market Outcomes after Controlling for Education



Notes: The figures show coefficients β and the corresponding 90% confidence intervals from estimating a version of equation (1) that controls for education for cohorts of women and men, separately. Standard errors clustered at the country*cohort level. The point estimates are reported in Panel B of Table A.4 in the Online Appendix. For each gender, the sample is a panel of 14 cohorts in 15 countries observed over the period 2001-2017. These cohorts were born between 1974 and 1987, they possibly entered the labor market between 1992 and 2007 at ages 18-20, and they are between 27 and 30 years old by the time we observe their outcomes. The values of the LFP, employment and unemployment rates range from 0 to 1.

labor market improvements for women that we discussed earlier. First, notice that if the mechanism underlying our results is the increase in years of education of the unlucky cohorts, we should also observe a positive impact of recessions at labor market entry on the labor trajectories of men. However, we observe the opposite. Anyway, to evaluate this possibility, we estimate equation (1) for labor market outcomes as dependent variables, including the average years of education of each cohort in each country as a control variable. Figure 2 shows that our previous conclusions hold after controlling for education, although estimates are more imprecise (Panel B of Table A.4 in the Online Appendix reports the point estimates).[8] Beyond the impact of education on labor market outcomes,

[8] We find similar results when controlling for the share of individuals with college education instead of the average years of education.

bad economic conditions at ages 18-20 favors women's employment and hurts men's a decade after labor market entry. Furthermore, the effects on hourly wages and total labor income for women is still positive and statistically significant while these effects are no longer significant for men after controlling for years of education.

3.2 Robustness

In this section we report some robustness exercises. First, we try with alternative definitions of the initial conditions in the labor market. We re-estimate equation (1) but changing (i) the definition of the unemployment independent variable and (ii) the age at which the cohorts presumably make the school-work transition. Regarding (i), we use the national unemployment rate without standardizing, while for (ii), we use the approximate age of graduation by educational attainment. Therefore, for individuals aged 27 to 30 with secondary education, we continue taking initial conditions at ages 18-20, whereas for those with college education (complete or incomplete) we look at initial conditions at ages 22-24. Panels A and B of Table A.5 in the Online Appendix show that after these changes our main results hold in most cases both in sign and in magnitude.

In another exercise we check the robustness of our results to the time window in which we observe the effect. Rather than focusing on outcomes at ages 27-30, we observe labor market outcomes at ages 25-35 by allowing for an unbalanced panel. Again, the results are very similar to those of our main specification as shown in Panel C of Table A.5 in the Online Appendix.

Finally, we carry out another robustness analysis by ignoring large increases in the unemployment rates associated to big recessions. Specifically, we ignore observations where the standardized unemployment was greater than k, with $k = 0.75$ and 1. Panels D and E of Table A.5 show that our main results hold in the different subsamples for the alternative definitions of "large recessions"—i.e., values of k—, confirming that our findings are not driven only by large recessions.

3.3 A Possible Mechanism: The Added-Worker Effect

A possible mechanism behind our results may be triggered by the added-worker effect (AWE), which was originally proposed by Woytinsky (1940) and later developed by Ashenfelter (1980), Heckman and Macurdy (1980), Lundberg (1985), and Maloney (1987). The AWE refers to the entry into the labor market of secondary household workers—usually women—in response to unemployment shocks and the drop in family income during economic recessions. Under the AWE, young women who would not enter into the labor market in normal times are "forced" to do so in difficult times to help their families. But once in the labor market, they could be more likely to stay, even when the economy recovers and their contribution to family income is no longer needed.

Several authors have already provided evidence supporting the added-worker effect in Latin American countries based on data at the individual level (e.g., Martinoty (2015),

Cerrutti (2000) and Paz (2009) for Argentina; Fernandes and de Felicio (2005) for Brazil; and Parker and Skoufias (2004) for Mexico). Recently, Serrano et al. (2019) added evidence on this regard for the entire region, based on an aggregate panel dataset for 9 population groups in 18 Latin American countries over the period 1987–2014.

Although our data is not ideal to explore this issue—there were fewer and less frequent household surveys during the 1990s, when our cohorts entered the labor market—, we also find evidence consistent with the AWE. To explore how the labor participation of young women and men is associated with the national unemployment level we estimate a contemporaneous version of model 1 where the dependent variable is now defined as the labor force participation at ages 18-20. Due to data availability over the period under analysis, the sample only includes Argentina, Bolivia, Brazil, Chile, Costa Rica, Honduras, Mexico, and Uruguay.[9]

Columns 1 and 2 of Table 1 show the estimation results. Whereas the labor force participation of young men aged 18-20 shows a negative association with the contemporaneous national unemployment rate, young women's labor participation stays unchanged or even increases when national unemployment raises. This result suggests that for the group of young women—and not for men—there is a factor that compensates the typical discouraged worker effect that reduces labor market participation when unemployment is high. This factor is probably associated with the AWE. In any case, this piece of evidence is just an addition to a stronger literature on this effect in Latin America.

In the following columns of Table 1 we track the evolution of labor force participation as our cohorts get older. We therefore repeat the analysis to estimate the effect of national unemployment at ages 18-20 on labor force participation at ages 21-23 and 24-26. Columns 3 and 5 in the table show that the effect of high unemployment at ages 18-20 on female labor participation is always negative but it gets stronger as time goes by and even becomes statistically significant at ages 24-26. These results are consistent with our hypothesis that more women enter the labor market when they face bad conditions at ages 18-20, and thereafter remain in the labor market.

4 The Persistence of the Effects and the Changing Role of Women

The added-worker mechanism may help explain the short-term effects of conditions at labor market entry, but it is not enough to account for the lasting effects over a longer period. The persistence of the effects could be driven by changes in certain behaviors or perceptions once in the labor market. The effect may last, for instance, because of a positive shock to the on-the-job skill accumulation process that places women on a better human-capital accumulation path (Arellano-Bover, 2020). It may also be that, once in the market, certain perceptions about the value of having a job and being financially

[9] We re-run the main analysis for this subset of countries and verified that the main results of Figures 1 and 2 hold, although, naturally, results are more imprecise.

Table 1: Labor Supply Responses of Young Men and Women to the Standardized National Unemployment Rate at Ages 18-20

	LFP by age groups					
	18-20		21-23		24-26	
	Women	Men	Women	Men	Women	Men
Unemployment rate at 18-20 (std)	0.005	-0.009	0.007	-0.002	0.012	-0.001
	(0.006)	(0.005)*	(0.005)	(0.003)	(0.004)***	(0.002)
Observations	262	262	272	272	275	275
R-squared	0.852	0.886	0.860	0.837	0.872	0.729
Country and year FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The table reports OLS estimates of equation (1) for the labor force participation at ages 18-20, 21-23, and 24-26. For each gender, the sample is a panel of 14 cohorts in 8 countries observed over the period 1992-2013. These cohorts were born between 1974 and 1987 and they are between 18 and 20 years old between 1992 and 2007. The sample includes Argentina, Bolivia, Brazil, Chile, Costa Rica, Honduras, Mexico, and Uruguay. The theoretical number of observations for each column would be 336 (3 ages x 14 cohorts x 8 countries), but we loose observations because some of the countries lack surveys in the years that our cohorts are 18-20, 21-23, or 24-26. Standard errors clustered at the country*cohort level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

independent change (Sen, 1990; Kessler-Harris, 2003; Kabeer, 2008). Women who would have never entered the labor market had they not belonged to an unlucky cohort are exposed to a whole new experience—even if they do not find a job—that may affect their perceptions and aspirations and, more generally, social attitudes towards working women. In this sense we could think of female empowerment as a result of increased female labor participation. But then this increase in empowerment may act as a mechanism underlying the persistence of the positive effects on female labor outcomes found in Section 3.

In this section we explore the hypothesis that women's empowerment increased for those women in the unlucky cohorts, and that such an increase in empowerment underlies the persistence of the positive effects on female labor outcomes found in Section 3. For this, we assess the effects of labor market conditions at ages 18-20 on variables indicative of the role that women play within their household and perceptions regarding gender roles. Family variables come from the national household surveys described in Section 2 while values are obtained from Latinobarometro and the World Values Survey.

Figure 3 shows the results of estimating equation 1 using as dependent variables the share of household labor income earned by the woman and the share of female headed households. We find that women who face high levels of unemployment at ages 18-20 end up controlling a larger share of family income and are more likely to be the head of household 10 years after labor market entry.[10] A one-standard deviation increase in unemployment rates between ages 18-20 leads to a 0.55 percentage-points increase in the share of family labor income earned by women and 1.1 percentage-points increase

[10]The result that women from the unlucky cohorts end up earning a larger share of family labor income is not completely mechanical, since it could be reversed by large changes in assortative mating patterns. The results in the first panel of Figure 3 suggest that this channel is not relevant, or at least not strong.

in the probability of being the head of the household. On the contrary, men who face high unemployment rates at young ages end up controlling a smaller share of household resources—though the coefficient is not statistically significant—and are less likely to be the head of household than men from other cohorts.

Given that an increase in women's income relative to that of other household members is usually associated with an increase in the bargaining power of women within the household (Bertrand et al., 2015), the result in the first panel of Figure 3 may be taken as an indicator of women's empowerment. In fact, this is what the result in the second panel of Figure 3 suggests, since head of household is a self-reported category that is related to how people perceive themselves within the household.

The results in Figure 3 may be evidence of higher female bargaining power within households but may also be explained by higher shares of unmarried women. In fact, we do find that women—and also men—from unlucky cohorts are less likely to be married than women from other cohorts—results shown in column 9 of Table A.4 in the Online Appendix. As a result of lower marriage rates, for instance, more women would be living alone and then household headship will mechanically increase. However, our results hold when we repeat the analysis only for the group of married women, suggesting that married women gain bargaining power vis-à-vis their partners.

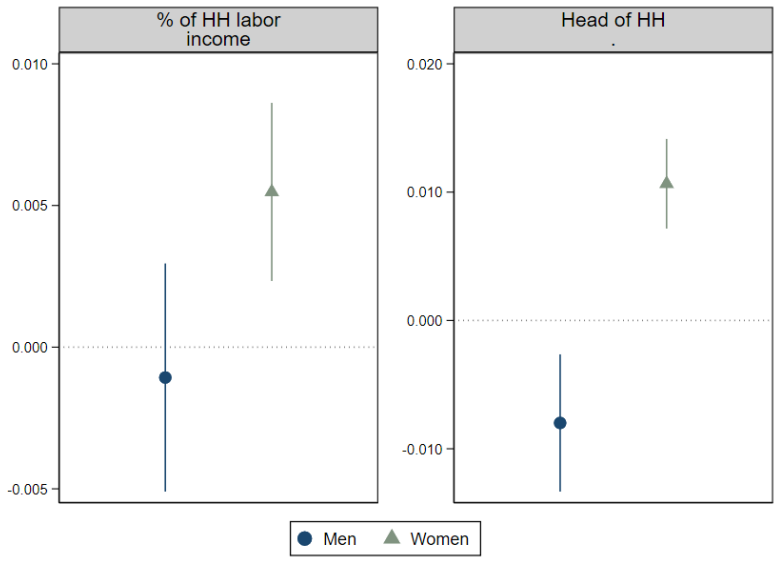
Consistent with the hypothesis of women from unlucky cohorts becoming more empowered, we find changes in societies' attitudes towards traditional gender roles. Figure 4 presents the results of estimating model 1 using as dependent variables the percentage of individuals who strongly disagree with statements implying traditional gender roles or stereotypes. The percentage of individuals that strongly disagrees with gender stereotypes increases for the unlucky cohorts compared to the other cohorts. For example, a one-standard-deviation increase in the unemployment rate at ages 18-20 leads to a 6.1 percentage-points increase in the share of individuals that strongly disagree with the statement "if a woman earns more money than her husband, it's almost certain to cause problems" and a 4.7 percentage-points increase in the share strongly disagreeing with "when a mother work for pay, the children suffer". The effects for the other statements are all positive although not statistically significant.[11]

5 Concluding remarks

In this paper we explore whether adverse conditions at labor-market entry have permanent consequences on labor market outcomes. We explore this issue in the context of Latin America, a region in the developing world with large heterogeneities in economic conditions across countries and over time, by building a synthetic panel of cohorts that

[11] We also construct an index combining the variables taken from World Values Survey, which is the only survey for which the same questions are consistently included in all countries every year. We follow two different methodologies to perform the aggregation: (i) Anderson (2008)'s approach and (ii) factor analysis. In both cases the result about the effect of unemployment at ages 18-20 on perceptions about gender roles remains positive and statistically significant.

Figure 3: Effect of the Standardized National Unemployment Rate at Ages 18-20 on the Role of Women Within the Household



Notes: The figures show coefficients β and the corresponding 90% confidence intervals from estimating equation (1) for cohorts of women and men, separately. Standard errors clustered at the country*cohort level. The point estimates are reported in Table A.4 in the Online Appendix. For each gender, the sample is a panel of 14 cohorts in 15 countries observed over the period 2001-2017. These cohorts were born between 1974 and 1987, they possibly entered the labor market between 1992 and 2007 at ages 18-20, and they are between 27 and 30 years old by the time we observe their outcomes. The values of the outcome variables range from 0 to 1.

exploits a unique harmonized microdata-set from national household surveys of 15 countries over two decades. We find a novel result in the literature: while men from unlucky cohorts—i.e., those who faced higher unemployment rates when they were young—suffer a negative effect on employment later in life, women from those unlucky cohorts have more chances of being employed and of getting higher earnings. Our results are consistent with women acting as secondary workers in downturns—i.e., the added-worker effect—which is particularly relevant in economies with low female labor force participation such as those of Latin America. We also find suggestive evidence that female empowerment could be an underlying mechanism for the persistence of positive effects on women's labor outcomes.

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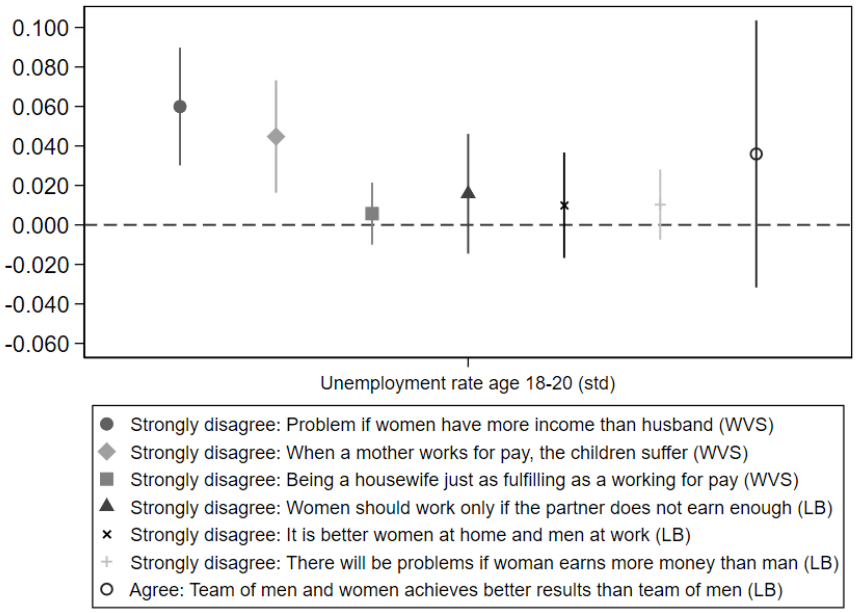
Figure 4: Effect of the Standardized National Unemployment Rate at Ages 18-20 on Perceptions about Gender Roles



Notes: Data from World Values Survey (WVS) and Latinobarometro (LB). The figure shows coefficients β and the corresponding 90% confidence intervals from estimating equation (1) for men and women together (controls also include gender), using an unbalanced panel for the pool of countries with available information. Standard errors clustered at the country*cohort level. The estimation sample includes individuals aged 27-30 between 2001 and 2017.

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A Online Appendix: Tables and Figures

Table A.1: National household surveys used in the analysis

	Name of survey	Surveys used
Argentina	Encuesta Permanente de Hogares Puntual Encuesta Permanente de Hogares Continua	2001-2002 2003-2011
Bolivia	Encuesta de Hogares	2001-2002, 2005-2009, 2011-2017
Brazil	Pesquisa Nacional por Amostra de Domicilios	2001-2009, 2011-2017
Chile	Encuesta de Caracterización Socioeconómica Nacional	2003, 2006, 2009, 2011 2013, 2015, 2017
Colombia	Encuesta Continua de Hogares Gran Encuesta Integrada de Hogares	2001-2005 2008-2017
Costa Rica	Encuesta de Hogares de Propósitos Múltiples Encuesta Nacional de Hogares	2001-2009 2010-2017
Dominican Republic	Encuesta Nacional de Fuerza de Trabajo Encuesta Nacional Continua de Fuerza de Trabajo	2001-2016 2017
Ecuador	Encuesta de Empleo, Desempleo y Subempleo	2003-2017
El Salvador	Encuesta de Hogares de Propósitos Múltiples	2001-2017
Honduras	Encuesta Permanente de Hogares de Propósitos Múltiples	2001-2017
Mexico	Encuesta Nacional de Ingresos y Gastos de los Hogares	2002, 2004-2006, 2008, 2010, 2012, 2014, 2016
Panama	Encuesta de Hogares	2001-2017
Paraguay	Encuesta Integrada de Hogares Encuesta Permanente de Hogares	2001 2002-2017
Peru	Encuesta Nacional de Hogares	2001-2017
Uruguay	Encuesta Continua de Hogares	2001-2017

Table A.2: Construction of Synthetic Cohorts from Repeated Cross-sectional Data from National Household Surveys

	Year of birth													
Survey years	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
2001	**27**	**26**	**25**	24	23	22	21	20	19	18	17	16	15	14
2002	**28**	**27**	**26**	**25**	24	23	22	21	20	19	18	17	16	15
2003	**29**	**28**	**27**	**26**	**25**	24	23	22	21	20	19	18	17	16
2004	**30**	**29**	**28**	**27**	**26**	**25**	24	23	22	21	20	19	18	17
2005	**31**	**30**	**29**	**28**	**27**	**26**	**25**	24	23	22	21	20	19	18
2006	**32**	**31**	**30**	**29**	**28**	**27**	**26**	**25**	24	23	22	21	20	19
2007	**33**	**32**	**31**	**30**	**29**	**28**	**27**	**26**	**25**	24	23	22	21	20
2008	**34**	**33**	**32**	**31**	**30**	**29**	**28**	**27**	**26**	**25**	24	23	22	21
2009	**35**	**34**	**33**	**32**	**31**	**30**	**29**	**28**	**27**	**26**	**25**	24	23	22
2010	36	**35**	**34**	**33**	**32**	**31**	**30**	**29**	**28**	**27**	**26**	**25**	24	23
2011	37	36	**35**	**34**	**33**	**32**	**31**	**30**	**29**	**28**	**27**	**26**	**25**	24
2012	38	37	36	**35**	**34**	**33**	**32**	**31**	**30**	**29**	**28**	**27**	**26**	**25**
2013	39	38	37	36	**35**	**34**	**33**	**32**	**31**	**30**	**29**	**28**	**27**	**26**
2014	40	39	38	37	36	**35**	**34**	**33**	**32**	**31**	**30**	**29**	**28**	**27**
2015	41	40	39	38	37	36	**35**	**34**	**33**	**32**	**31**	**30**	**29**	**28**
2016	42	41	40	39	38	37	36	**35**	**34**	**33**	**32**	**31**	**30**	**29**
2017	43	42	41	40	39	38	37	36	**35**	**34**	**33**	**32**	**31**	**30**

Notes: Each cell indicates the age of each birth cohort at each calendar year. Observations in the gray (bold) cells are the ones included in the balanced (unbalanced) panel dataset used for the analysis of household surveys.

Table A.3: Descriptive Statistics

	Women	Men
Age in years	28.51	28.51
	(1.12)	(1.12)
Years of education	10.15	9.82
	(1.41)	(1.44)
Married	0.62	0.55
	(0.09)	(0.1)
Labor force participation	0.65	0.94
	(0.09)	(0.03)
Employment	0.59	0.9
	(0.08)	(0.04)
Unemployment	0.09	0.05
	(0.04)	(0.03)
Hours worked	38.65	45.98
	(3.45)	(3.25)
Log of hourly wage	0.78	0.81
	(0.29)	(0.29)
Log of labor income	5.81	6.09
	(0.29)	(0.28)
Own labor income / total hh labor income	0.29	0.61
	(0.04)	(0.05)
Head of household	0.14	0.48
	(0.05)	(0.09)
No. of observations	756	756

Notes: The table shows means and standard deviations (between parentheses) across cohorts, countries and years. The sample includes 14 cohorts constructed from household survey microdata from 15 countries. The cohorts are observed between 2001 and 2017 when they are between 27 and 30 years old. Labor force participation, employment, and unemployment rates range from 0 to 1, and so do the head of household and married shares. Working hours per week, log. hourly wages and log. monthly labor income are conditional on working.

Table A.4: Main Results Using Standardized Unemployment Shock at Ages 18-20

	LFP	Employed	Unemployed	Hours	Log Hourly wage	Log Labor income	% of HH labor income	Head of HH	Married	Years of educ
Panel A: Main specification										
Women	0.0045	0.0051	-0.0010	0.1780	0.0362	0.0335	0.0055	0.0107	-0.0150	0.106
	(0.00279)	(0.00268)*	(0.00215)	(0.120)	(0.0102)***	(0.0107)***	(0.00190)***	(0.00211)***	(0.00468)***	(0.0185)***
R2	0.827	0.795	0.61	0.723	0.63	0.708	0.652	0.717	0.651	0.93
Men	-0.0016	-0.0032	0.0020	-0.0595	0.0205	0.0218	-0.0011	-0.0080	-0.0082	0.0884
	(0.00104)	(0.00156)**	(0.00131)	(0.0954)	(0.0122)*	(0.0109)**	(0.00244)	(0.00324)**	(0.00507)	(0.0191)***
R2	0.644	0.581	0.501	0.818	0.722	0.754	0.657	0.759	0.679	0.934
Panel B: Control for years of education										
Women	0.00311	0.00469	-0.00214	0.122	0.0306	0.0264	0.00519	0.0123	-0.0122	
	(0.00289)	(0.00287)	(0.00222)	(0.126)	(0.0105)***	(0.0112)**	(0.00184)***	(0.00219)***	(0.00447)***	
R2	0.83	0.796	0.618	0.726	0.635	0.717	0.652	0.728	0.675	
Men	-0.00155	-0.00267	0.00144	-0.0398	0.0135	0.016	0.000314	-0.00607	-0.00717	
	(0.00104)	(0.00160)*	(0.00139)	(0.0985)	(0.0121)	(0.0109)	(0.00245)	(0.00319)*	(0.00497)	
R2	0.644	0.585	0.509	0.819	0.734	0.763	0.67	0.768	0.685	
N	756	756	756	744	744	756	756	756	700	756

Notes: The table shows coefficients β from estimating equation (1) for cohorts of women and men, separately. For each gender, the sample is a panel of 14 cohorts in 15 countries observed over the period 2001-2017. These cohorts were born between 1974 and 1987, they possibly entered the labor market between 1992 and 2007 at ages 18-20, and they are between 27 and 30 years old by the time we observe their outcomes. For the outcomes Hours and Log hourly wages we lose 12 observations because in 3 years Mexico has no information on hours worked (12 = 3 years * 4 ages in years between 27-30). For outcome Married we lose 56 observations because this variable is not available for Brazil (56 = 14 cohorts * 4 ages in years between 27-30). The values of the LFP, employment, unemployment rates, head of household and married range from 0 to 1. Standard errors clustered at the country*cohort level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A.5: Robustness Tests

	LFP	Employed	Unemployed	Hours	Log Hourly wage	Log Labor income	% of HH labor income	Head of HH	Married
Panel A: National unemployment rate at 18-20 without standardizing									
Women	0.0014	0.0033	-0.0029	0.1770	0.0215	0.0229	0.0024	0.0055	-0.0018
	(0.00114)	(0.00118)***	(0.00112)**	(0.0904)*	(0.00619)***	(0.00596)***	(0.000899)***	(0.00128)***	(0.00198)
R2	0.826	0.796	0.617	0.726	0.632	0.713	0.649	0.715	0.638
Men	-0.0002	0.0008	-0.0009	0.0960	0.0188	0.0221	0.0027	0.0021	0.0000
	(0.000471)	(0.000848)	(0.000775)	(0.0451)**	(0.00572)***	(0.00466)***	(0.00101)***	(0.00148)	(0.00191)
R2	0.643	0.579	0.501	0.82	0.728	0.763	0.662	0.756	0.675
Panel B: Standardized national unemployment rate at graduation year									
Women	0.0065	0.0057	0.0013	0.0478	0.0377	0.0279	0.0058	0.0119	-0.0197
	(0.00374)*	(0.00365)	(0.00296)	(0.137)	(0.0129)***	(0.0145)*	(0.00254)**	(0.00292)***	(0.00630)***
R2	0.827	0.795	0.61	0.722	0.628	0.704	0.649	0.713	0.652
Men	-0.0024	-0.0050	0.0031	-0.1450	0.013	0.0141	-0.0026	-0.0105	-0.0115
	(0.00126)*	(0.00195)**	(0.00157)**	(0.115)	(0.0151)	(0.0139)	(0.00303)	(0.00395)***	(0.00657)*
R2	0.645	0.584	0.503	0.819	0.72	0.751	0.658	0.76	0.68
Panel C: Standardized national unemployment rate at 18-20 - Unbalanced panel									
Women	0.0051	0.0055	-0.0009	0.0045	0.0224	0.0183	0.0049	0.0078	-0.0083
	(0.00181)***	(0.00175)***	(0.00126)	(0.0741)	(0.00646)***	(0.00656)***	(0.00135)***	(0.00152)***	(0.00264)***
R2	0.813	0.792	0.648	0.71	0.671	0.723	0.753	0.788	0.774
Men	-0.0007	-0.0015	0.0009	-0.1320	0.0158	0.0144	-0.0009	-0.0072	-0.0048
	(0.000691)	(0.000996)	(0.000743)	(0.0526)**	(0.00744)**	(0.00681)**	(0.00136)	(0.00190)***	(0.00262)*
R2	0.663	0.679	0.558	0.806	0.727	0.768	0.819	0.877	0.852

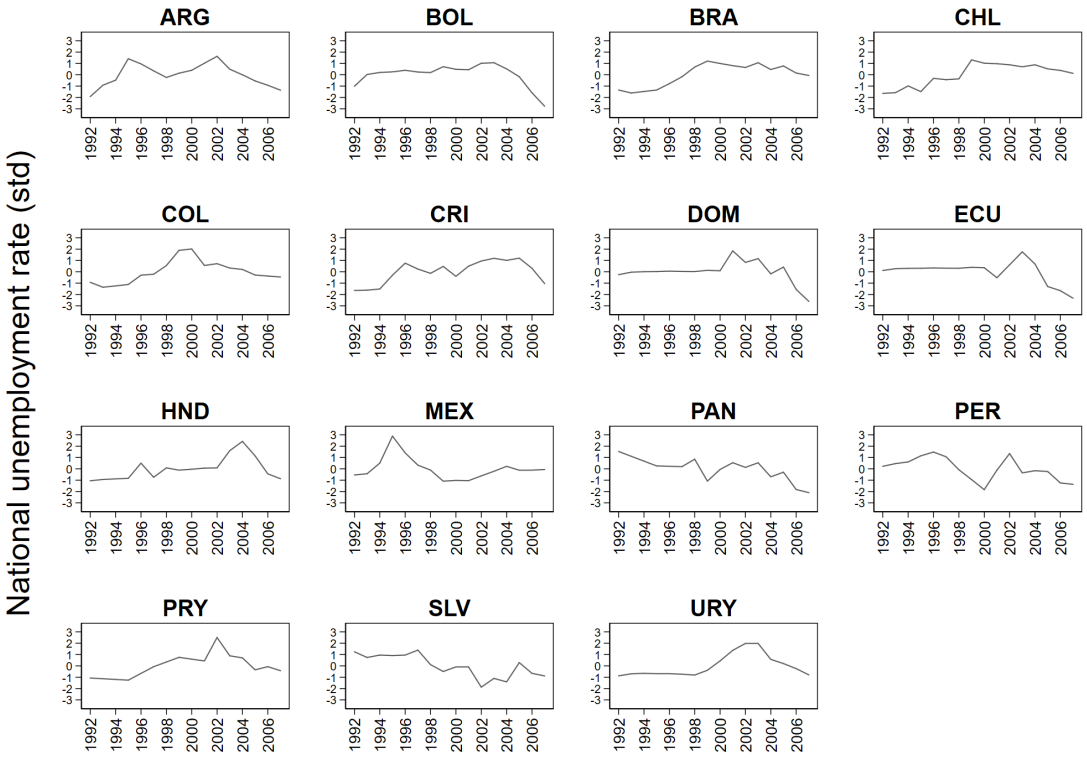
Notes: The table shows coefficients β from estimating equation (1) for cohorts of women and men, separately. For each gender, the sample is a panel of 14 cohorts in 15 countries observed over the period 2001-2017. These cohorts were born between 1974 and 1987, they possibly entered the labor market between 1992 and 2007 at ages 18-20 (except in panel C, where graduation year is assumed as the year of labor market entry), and they are between 27 and 30 years old by the time we observe their outcomes. The values of the LFP, employment, unemployment rates, head of household and married range from 0 to 1. Number of observations in Panels A and B is 756 in all models except for Hours and Hourly wage (744) and Married (700). In Panel C, the number of observations is 1837, 1816, and 1709 respectively. In Panel D, the number of observations is 740, 728, and 684 respectively, and in Panel E they are 717, 705, and 663. Standard errors clustered at the country*cohort level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A.5: Robustness Tests (Cont.)

	LFP	Employed	Unemployed	Hours	Log Hourly wage	Lag Labor income	% of HH labor income	Head of HH	Married
Panel D: Excluding episodes where std. unemployment rate at 18-20 > 1									
Women	0.00592	0.00767	-0.00299	0.367	0.0569	0.0580	0.00874	0.0145	-0.0206
	(0.00355)*	(0.00328)**	(0.00269)	(0.145)**	(0.0116)***	(0.0119)***	(0.00253)***	(0.00257)***	(0.00665)***
R2	0.825	0.791	0.616	0.725	0.631	0.707	0.649	0.712	0.654
Men	-0.00280	-0.00362	0.00122	0.0546	0.0420	0.0420	-0.00112	-0.0109	-0.0150
	(0.00128)**	(0.00186)*	(0.00157)	(0.117)	(0.0142)***	(0.0126)***	(0.00339)	(0.00429)**	(0.00719)**
R2	0.647	0.586	0.512	0.819	0.726	0.755	0.660	0.759	0.680
Panel E: Excluding episodes where std. unemployment rate at 18-20 > 0.75									
Women	0.00468	0.00638	-0.00252	0.471	0.0559	0.0618	0.00765	0.0161	-0.0174
	(0.00385)	(0.00370)*	(0.00301)	(0.160)***	(0.0132)***	(0.0134)***	(0.00287)***	(0.00267)***	(0.00768)**
R2	0.830	0.796	0.621	0.725	0.627	0.706	0.655	0.719	0.646
Men	-0.00254	-0.00222	-0.00003	0.0673	0.0387	0.0415	-0.000362	-0.0100	-0.0126
	(0.00148)*	(0.00209)	(0.00168)	(0.130)	(0.0156)**	(0.0136)***	(0.00388)	(0.00484)**	(0.00815)
R2	0.644	0.585	0.528	0.819	0.726	0.756	0.660	0.754	0.684

Notes: The table shows coefficients β from estimating equation (1) for cohorts of women and men, separately. For each gender, the sample is a panel of 14 cohorts in 15 countries observed over the period 2001-2017. These cohorts were born between 1974 and 1987, they possibly entered the labor market between 1992 and 2007 at ages 18-20 (except in panel C, where graduation year is assumed as the year of labor market entry), and they are between 27 and 30 years old by the time we observe their outcomes. The values of the LFP, employment, unemployment rates, head of household and married range from 0 to 1. Number of observations in Panels A and B is 756 in all models except for Hours and Hourly wage (744) and Married (700). In Panel C, the number of observations is 1837, 1816, and 1709 respectively. In Panel D, the number of observations is 740, 728, and 684 respectively, and in Panel E they are 717, 705, and 663. Standard errors clustered at the country*cohort level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Figure A.1: Unemployment Rates at Labor Market Entry by Country



Notes: Figures show the evolution of the unemployment rates standardized within country based on data from The World Development Indicators and SEDLAC.

B Harmonized Dataset of Household Surveys

Our analysis is based on microdata from cross-section national household surveys for 15 Latin American countries for the period 2001-2017. The countries included are: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Honduras, Mexico, Panama, Paraguay, Peru, and Uruguay. Table A.1 above lists the surveys used for each country.

Since household surveys are not uniform across Latin American countries, we make all possible efforts to make statistics comparable across countries and over time by using similar definitions of variables in each country/year, and by applying consistent methods of processing the data. Specifically, surveys were processed following the protocol of the Socioeconomic Database for Latin America and the Caribbean (SEDLAC), a joint project between CEDLAS at the Universidad Nacional de La Plata and the World Bank.

The website of that project includes information on the household surveys and the construction of labor and income variables.[12] In what follows we reproduce some of the main definitions regarding variables used in our paper.

Employed: people who have work at least one hour in the last week or who have not worked for exceptional reasons (e.g., strikes, illness, vacations). It includes non-wage employment but does not include unpaid domestic work.

Unemployed: people who are not employed (according to the previous definition), and who have actively looked for work in the last week, or who have not looked for extraordinary reasons (illness, vacations, etc.) and would have done otherwise.

Hours of work: hours worked in the last week. Overtime hours are included, but those due to extraordinary reasons are excluded.

Labor income: reported monthly income from all labor sources. It includes payments for overtime hours, but those due to extraordinary reasons are excluded. Specifically:

- Labor incomes include all payments related to work, including salaried work, self-employment and other non-specified situations.
- Labor incomes include monetary and non-monetary payments. The latter are usually converted to monetary values by National Statistical Offices (NSOs).
- For workers who declare that they are employers in the main activity, withdrawals of money or products are included as labor income, as well as wages and salaries assigned, commissions and any other income received periodically for being the owner of a firm or part of a partnership. Distribution of profits is not included unless it is understood to be the normal form of payment.

[12] https://www.cedlas.econo.unlp.edu.ar/wp/en/estadisticas/sedlac/

- For salaried workers, wages, salaries, commissions, tips and overtime payments are included as labor income. Extraordinary or unusual labor income such as bonuses, prizes, vacation bonuses and severance payments are not included.
- In the case of self-employed workers, all income from independent activities net of expenses incurred to generate them are included as labor income.
- All negative incomes, outliers and those codified as inconsistent by NSOs are recorded as missing.

Hourly wages: computed from reported labor income and hours of work.