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DISCUSSION PAPER

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

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

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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 Lubotsky and Wittenberg (2006) approach, we find that intergenerational persistence estimates increase by 26% to 50% when parents' occupations are considered alongside their education to proxy family socioeconomic background. The increase is particularly strong when education is more evenly distributed in the parents' generation. Furthermore, we assess how the informativeness of each proxy for parental background evolves across countries and over time, and find that maternal characteristics have become increasingly informative in recent decades, in line with rising women's educational attainment and labor force 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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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). While recent estimates show that educational mobility has improved in the region over the last decades, these estimates have relied almost exclusively 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). However, there may be additional dimensions of intergenerational transmission of advantage that are not captured by education alone. Other aspects of parental background, such as occupational status, remain underexplored, particularly in developing countries (see Torche, 2014, 2021). In these contexts, higher exposure to economic volatility can undermine the employment and income opportunities, especially for individuals from disadvantaged families (e.g. Schwandt and Von Wachter, 2019; Arellano-Bover, 2020; Von Wachter, 2020; Stuart, 2022). Indeed, recent contributions show that, beyond improvements in educational mobility, socioeconomic status measured by broader indicators remains highly persistent, with intergenerational mobility trends showing limited progress in Latin America (Neidhöfer et al., 2022).

In this paper, we study mobility patterns in Latin America by expanding the set of proxies for parental background to include not only parents' education but also both the mother's and father's occupations. This aims to provide a better approximation of the circumstances in which children have grown up, i.e., their parental or family background. Our hypothesis, which we test in the empirical analysis, is that incorporating both parents' education and occupation provides a better approximation of the latent parental background, as these proxies capture distinct but complementary aspects. In other words, we examine whether the inclusion of additional proxies for parental or family background, such as each parent's occupation, helps account for a greater share of the variance in children's outcomes, over and above what is captured by parental education alone. By expanding the set of variables used to approximate family background, this study also aligns with the inequality of opportunity literature for Latin America (Bourguignon et al., 2007; Brunori et al.,

2023, among others). This literature incorporates all possible "circumstances" available in the data—such as parental characteristics, birthplace, and gender—to measure the extent to which outcomes are shaped by factors beyond individual control. In this paper, we adopt an intergenerational persistence approach rather than an inequality of opportunity framework. We focus on parental education and occupation as core variables to proxy family socioeconomic background and analyze heterogeneities by gender and place of birth, leveraging the full range of information available.

We apply the methodology proposed by Lubotsky and Wittenberg (2006, henceforth LW) to measure the overall relationship between parental or family socioeconomic background, approximated by the education and occupation of both parents, and children's future outcomes in terms of education and income rank. In this setting, observable parental characteristics should be interpreted as imperfect measures of the latent variable, i.e., parental background. This approach allows for the integration of various proxy measures of a latent variable —in this case, parental background—into a unified framework. Specifically, it yields an intergenerational persistence coefficient constructed as a weighted linear combination of multiple proxies for parental background. Its main advantage is that it offers a better approximation of parental background, with less attenuation bias, while relying on fewer 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 LW approach are only available for Sweden and the United States (Vosters and Nybom, 2017; Vosters, 2018; Adermon et al., 2021). 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. Building on this preliminary contribution, in this paper we analyze several cohorts in five Latin American countries: Brazil, Chile, Ecuador, Mexico, and Panama. These countries account for nearly 60% of Latin America's population and have experienced a significant rise in educational attainment over the past 50 years, with years of schooling nearly doubling across generations. Despite these advancements, income inequality remains high by global standards, pointing to persistent unequal opportunities in labor markets

(Bracco et al., 2020; Arjona, 2021; Alvaredo et al., 2023). In addition, female labor force participation increased from approximately 20% in the 1960s to nearly 70% in recent years, representing a substantial shift in gender dynamics in the region (Chioda and Verdú, 2016; Marchionni et al., 2019; Berniell et al., 2024). This combination of progress and challenges, also shown by other developing countries, provides an ideal setting to explore how the education and occupation of both fathers and mothers can contribute to explaining the variance in children's outcomes.

We find that including parents' occupation as an additional proxy for family background increases intergenerational persistence estimates by between 26% and 50%, compared to using only parental education. Intergenerational persistence shows a clear downward trend for children's years of schooling but it shows a more flat trend when children's income position is considered. Brazil and Ecuador exhibit the most significant improvements in both outcomes, while Mexico and Panama show progress without a monotonically downward trend, and Chile remains relatively stable. We also show that parental occupations provide more information in contexts with more evenly distributed education. Lastly, we find that maternal characteristics have become increasingly informative for approximating latent parental background: while for cohorts born in the 1940s, mothers' education and occupation received substantially lower weights than fathers' in the LW specification, by the late 1980s their estimated contribution became nearly equal. This evolution reflects the increasing statistical relevance of maternal characteristics in intergenerational mobility estimations, in line with rising female educational attainment and labor market participation.

This paper contributes to the literature by offering a more comprehensive analysis of intergenerational mobility trends in Latin America. 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 enables a more comprehensive analysis of intergenerational mobility patterns but also allows for the study of the relevance of each proxy in approximating family background. Our results align with contributions addressing the role of siblings (Jaeger, 2012) and, particularly using the LW approach, extended family members (Adermon et al., 2021), both of which find a higher persistence coefficient than traditional

estimates. In this sense, our contribution lies in extending the scope of parental characteristics rather than incorporating additional family members. Another relevant study using the LW method to expand parental characteristics is Vosters (2018), who finds that, once the father's income is considered, adding his education and occupational categories does not change the estimated persistence coefficient. However, Vosters and Nybom (2017) find that the inclusion of additional proxy measures is relevant to provide more accurate estimates of intergenerational persistence from mothers to children. Since parental income information is often unavailable in developing countries, our findings show that, in such contexts, focusing only on intergenerational education mobility estimates can underestimate the degree of persistence. Overall, our findings highlight the importance of exercising caution when analyzing intergenerational mobility using a single measure of parental background, such as education, especially when this proxy measure is relatively evenly distributed. This is especially important in developing countries, where educational attainment was historically low but access to education has improved significantly in recent decades.

Second, we go beyond measuring intergenerational mobility of education by exploring other indicators such as childrens' income rank (e.g. Chetty et al., 2014) and 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.

Third, we compare the relative statistical informativeness of each parental characteristic included in the LW estimations—namely, the education and occupation of mothers and fathers. In line with the standard interpretation of the LW approach, we understand the estimated weights as indicators of each proxy's relative ability to approximate latent parental background, compared to the other proxies included in the model. Our results show that the weight assigned to maternal characteristics has increased over time.

The comparison of mothers' and fathers' roles has, to the best of our knowledge, so far mostly been limited to estimates for father-son and mother-daughter pairs (e.g., Altonji and Dunn, 1991; Chadwick and Solon, 2002; Kroeger and Thompson, 2016; Schneebaum et al., 2016) or considering cross combinations between parents and children by gender (Brandén et al., 2023). These

contributions suggest that children's outcomes are more strongly related to the characteristics of their same-sex parent. However, recent studies also point to an increasing statistical relevance of maternal characteristics in approximating family background in developed countries, often explained by the rise of women's labor force participation (Engzell and Mood, 2021; Brandén et al., 2023). Our approach complements this line of work by examining whether the informativeness of maternal proxies has increased over time in Latin America, a region that has experienced substantial changes in women's educational attainment and labor market participation in recent decades (Marchionni et al., 2019).

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 allows for the inclusion of multiple proxies for unobserved parental socioeconomic background and assigns weights that reflect their relative contribution to approximating this latent variable. By optimally combining several proxies, the LW approach reduces attenuation bias relative to using a single proxy. Additionally, unlike other methods like factor analysis, the LW approach does not rely on strong assumptions regarding cross-correlations of measurement errors, as we discuss in more detail below.

The LW method 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 persistence parameter β from equation (1).

$$y_{it} = \beta h_{it} + e_{it}. \quad (1)$$

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. Following the original analysis of LW and subsequent applications of their approach to the study of intergenerational persistence (Vosters and Nybom, 2017; Vosters, 2018; Hsu, 2021), we interpret the proxy variables in equation (2) as noisy, yet informative, statistical measures of the unobserved latent factor h_i.

With information on both parents' education and occupation, the methodology allows us to estimate four different ρ_j. As usual when applying the LW methodology, we normalize $\rho_1 = 1$, thus setting the scale of the latent variable equal to the first proxy. It is worth noting that without this normalization, ρ_j from equation (2) is not identified. 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 weight in approximating the latent parental background (h_i). 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}.

Comparing the estimated weights for each proxy allows us to assess their relative statistical importance within the LW approach, in terms of how well each variable approximates the latent parental background. For example, whether fathers' or mothers' characteristics are a better approximation of family socioeconomic background.[1] Importantly, these weights are determined solely by the data structure, eliminating potential bias induced by arbitrary rules such as averaging parents' characteristics or selecting only the one with higher education or occupational status.[2] As LW note, these alternative approaches may either overstate the influence of the parent in a lower-status position (in the case of averages) or understate it (when only the "better" positioned parent

[1] This interpretation is based on an analogous empirical application performed in the original study by LW, where the authors interpret the relative $\hat{\rho}_j$ as how well each proxy–parental income snapshots–approximate the latent variable, namely parental permanent income (see Lubotsky and Wittenberg, 2006, p. 558).

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

is considered).[3] This distinction is particularly relevant for our analysis, as we aim to study how the relative importance of mothers and fathers in approximating parental background has evolved over time. Given that assortative mating is not perfect—with an education correlation of about 0.71 between parents in our data—both parents' characteristics carry potentially distinct and valuable information. In a changing environment such as Latin America, where educational expansion has affected men and women differently and female labor force participation has increased substantially, this approach proves especially useful.

Moreover, the LW estimator relies on classical measurement error assumptions. Specifically, it assumes that the measurement error associated with each proxy (u_{ji}) is uncorrelated with both the latent variable (h_{it}) and the error term in equation 1 (ε_{it}). This implies that the proxies affect the outcome only through their association with the latent parental background. Unlike standard instrumental variable or factor analysis approaches, however, the LW estimator does not require the strong assumption of zero cross-correlations among the measurement errors of the proxies (i.e., $Cov(u_{ji}, u_{jk}) = 0$). This feature is particularly relevant in our context, as different proxies for family background may be affected by common shocks. The LW approach not only relaxes this assumption but also exploits the correlation structure across proxies to improve the estimation of the weights (ρ_j).[4]

After obtaining the LW approximation of the latent variable through the estimated ρ_j for each proxy, the estimated coefficient of correlation between children's outcomes and family background can be obtained as:

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

[3] As shown by Neidhöfer et al. (2018) for parental years of education.

[4] Another method that has been used to estimate intergenerational mobility of income or earnings in contexts where parental incomes are not available in the data, is the two-sample two-stage least squares (TSTSLS) approach (Björklund and Jäntti, 1997; Jerrim et al., 2016; Bloise et al., 2021; Cortes Orihuela et al., 2024). TSTSLS requires an external dataset—usually an older survey—to predict parental income based on observed retrospective characteristics. In contrast, the LW method enables to estimate a composite measure for intergenerational mobility by using multiple proxies within the same dataset, without relying on additional data.

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, namely the education and occupation of both parents:

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

It is worth noting that the LW method does not deal with potential biases in the estimation of ϕ_j. The lower attenuation bias compared to other methods comes solely from a better approximation of h_i, i.e., the consistent estimation of the relative weight of each proxy in approximating parental background (ρ_j).

The estimation results are presented in Section 4. We begin by showing the evolution of $\hat{\beta}$ over time and for each country, controlling for children's gender and age when estimating equations (3) and (5). Specifically, we compare the estimates obtained when using only fathers' and mothers' education as proxies with those obtained by additionally including parental occupation, in order to assess the potential downward bias in intergenerational persistence when occupational information is not included. A higher $\hat{\beta}$ indicates stronger intergenerational persistence, reflecting lower mobility.

Beyond reducing attenuation bias, the LW approach ensures that changes in $\hat{\beta}$ from including additional proxy variables are not merely mechanical. While the LW estimator improves upon single-proxy regressions by optimally combining available information, its performance depends on the quality and independence of the proxies. Indeed, the $\hat{\beta}$ could be biased either upward or downward if y_{it} is a weak instrument for x_{1i}, depending on the sign of this correlation. Additionally, if proxies are highly collinear in Equation (5), the LW estimator may be very similar to that obtained from a single proxy. Vosters and Nybom (2017) illustrate this in their analysis of Sweden and the United States: they find only trivial gains from including any proxy beyond fathers' earnings and show that, once fathers' earnings are considered, their education has no additional explanatory power for children's earnings, due to the high collinearity between the two. Hsu (2021) applies the same proxies to Taiwanese data and reports that adding parental education significantly increases

the LW estimate over the single-proxy model, reflecting a substantially lower degree of collinearity in that case.

After having shown the intergenerational mobility trends, we turn to the analysis of the relative importance of mothers and fathers in approximating parental background, based on the estimated weights ($\hat{\rho}_j$) assigned to each proxy.[5] This comparison does not assess whether including maternal information changes the persistence estimates, but rather examines how, once both parents' characteristics are included, each contributes to approximating the latent variable. Nonetheless, in Section 4, we also report results comparing the weights assigned to education and occupation separately, as well as the persistence estimates obtained when using only mothers' or only fathers' characteristics. The findings reveal consistent patterns across these different specifications.[6]

3 Data

For our analysis we use 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 both parents obtained from retrospective questions. The inclusion of parental occupation is a distinctive feature of these data, as it is rarely available in surveys from the region or other developing countries. Since co-residency can introduce bias in social mobility estimates (Emran et al., 2018; Emran and Shilpi, 2021), we restrict our sample to countries with at least one representative survey with retrospective questions on parental education and occupation. The retrospective questions on parental characteristics are directed at the time the children were 14 or 15 years old, a critical pe-

[5] Interestingly, 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 potentially negative correlation 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.

[6] In Section 4.3, we show that the patterns observed for $\hat{\rho}_j\hat{\phi}_j$ are consistent with those found for $\hat{\rho}_j$.

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

riod for 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.

Children's education is measured in years of schooling, calculated based on traditional household survey questions about the highest level of education attended and whether that level was completed. The other outcome of interest is children's income rank, which we compute within their respective cohort-gender income distributions. Throughout the paper, this variable will be referred to as *income rank*. We create separate income rankings for men and women within each cohort to allow for a gender-specific analysis of children's outcomes, given the extensively studied gender gaps in Latin America (Marchionni et al., 2019, among others) and considering that previous research has shown that these outcomes tend to be more closely linked to the characteristics of the parent of the same gender (Altonji and Dunn, 1991; Chadwick and Solon, 2002; Kroeger and Thompson, 2016; Schneebaum et al., 2016). However, as shown in Figure A.1 in the Appendix Section A.1, the estimates we obtain are similar to those derived from ranking children by cohort only. On the other hand, ranking incomes within cohorts is crucial, particularly to minimize potential measurement errors related to life-cycle profiles, since we only observe a snapshot of children's incomes from our cross-sectional data. For example, Chetty et al. (2014) employ a similar approach and show that their estimates are comparable to those using surnames (Clark, 2015).

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 consistently available in the surveys across all countries: 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 used in previous studies (Vosters and Nybom, 2017; Vosters, 2018; Adermon et al., 2021), we incorporate a set of equations, similar to equation (2), one for each binary indicator of an occupational category, where the value is 1 if the parent had that occupation and 0 otherwise. 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 TSTSLS, 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 one-digit level to classify parents' occupations for Brazil and Mexico, where this information is available. The estimations yield very similar results.[7]

A potential concern when using retrospective questions is recall bias, particularly when respondents report on their parents' characteristics, such as education or occupation. To mitigate this, we control for the children's age in our estimations, as recall bias increases with the respondent's age, making it harder to remember parents' traits the longer the time since the reference age of 14 or 15. Despite these limitations, household surveys remain the best available data source for estimating intergenerational mobility trends, given the lack of long panel data and the coresidency biases in census data. Cross-country comparisons using these surveys have been validated in previous studies (e.g. Neidhöfer et al., 2018; van der Weide et al., 2024). We use similar data to these previous contributions, while this paper's contribution lies in utilizing all available parental information to obtain intergenerational mobility estimates.

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

[7] Additional details can be found in the Appendix Section C.

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 (following Neidhöfer et al., 2018). The sample is then organized into 10 five-year cohorts spanning from 1940 to 1989. Descriptive statistics are included and described in Tables A.1 and A.2 in the Appendix, Section A. For the sake of simplicity, they compare the first and the last cohorts. They show a significant rise in educational attainment across generations, with parental years of schooling nearly doubling over the 50-year period we consider, while children's years of schooling increased by approximately 83%. On average, children's years of schooling rose from 5.9 to 10.8, while parental education increased from 3.2 to 7. Data from the World Development Indicators (WDI) of The World Bank (2024) illustrate similar trends at the national level. Between 1990 and 2022, the average years of schooling increased by 130% in Brazil, 56% in Mexico, 44% in Panama, and 33% in Ecuador and Chile, signaling a remarkable convergence across countries in our sample. However, important differences across countries remain as average years of schooling ranges from 8.3 in Brazil to 11.1 in Chile. This context underscores our argument in Section 5 that parental occupation has become a more informative factor in intergenerational mobility, particularly in settings where parental education is more evenly distributed. Notably, mothers' education increased more than fathers'. This trend coincides with a significant rise in women's labor market participation, as well. According to WDI data, the average female labor participation rate in Latin America, measured as the proportion of women aged 15 and older that is economically active, increased from 42% in 1990 to 51% in 2022, narrowing the gap with advanced economies such as Germany (56%), Canada (61%), and Sweden (62%). Nevertheless, there is still a considerable degree of heterogeneity across Latin American countries: for instance, while female labor participation is 45.8% in Mexico, the percentage of women's labor market is 54.3% in Ecuador. This analysis is particularly important in the context of the countries we analyze, given the heterogeneity in key indicators like educational attainment and labor market participation.

4 Main results

4.1 Intergenerational persistence patterns in Latin America

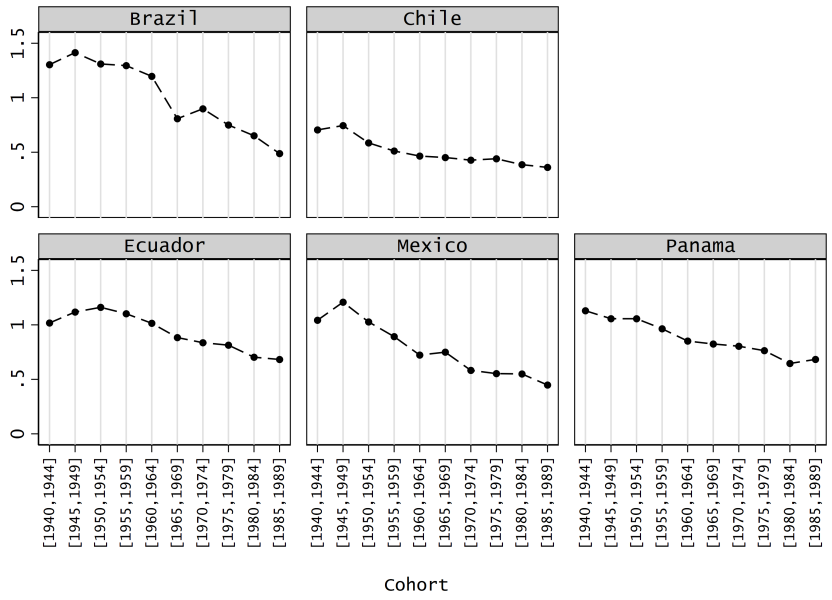
In this subsection, we present the LW-estimated intergenerational persistence coefficients $\hat{\beta}$ from equation (4) by country and birth cohort, considering both parental education and occupation as proxies of family background. The estimations are performed separately for each cohort in each country. Tables A.3 and A4 in Appendix Section A show the average of our main estimates across cohorts. Overall, the countries that experienced the most significant improvements in intergenerational mobility, both in children's years of schooling and income rank, are Brazil and Ecuador. In contrast, Mexico and Panama show some progress but do not exhibit a monotonically decreasing trend in persistence over time. Chile, on the contrary, shows a relatively stable trend.

Figure 1 shows the LW-estimated intergenerational persistence coefficients ($\hat{\beta}$) obtained from equation (4), revealing a general decline over time across the five countries. However, the downward trend is less clear when income rank is used as the outcome variable.[8] While persistence in years of schooling exhibits a monotonically decreasing trend, progress was slower for the first three or four cohorts (i.e., those born before 1960). After this point, the decline in persistence becomes more pronounced. However, this is not the case for children's income rank, which exhibits less clearly monotonically decreasing patterns across countries and birth cohorts. For example, Mexico and Panama exhibit stagnation in intergenerational mobility gains for more recent cohorts when considering income rank. In Latin America, the simultaneous occurrence of upward educational mobility and high persistence at the top of the educational distribution offers a plausible explanation for these dynamics (Neidhöfer et al., 2018). While upward educational mobility has led to greater convergence in years of schooling among children, high persistence at the top may create significant barriers to climbing the social ladder in terms of income.

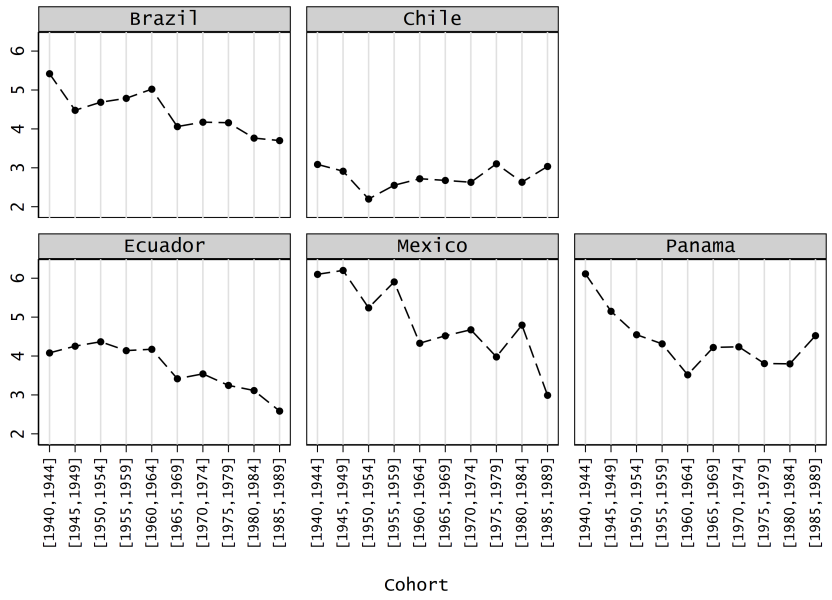
[8] Educational persistence coefficients greater than 1, while theoretically possible, are empirically rare. However, previous studies, such as Neidhöfer et al. (2018) for Brazil, and the World Bank's Global Database on Intergenerational Mobility (GDIM) for countries like Colombia and Guatemala, have reported such values, particularly for cohorts born in the 1940s.

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. The figures show the estimated β from Equation (4) considering both parents' education and occupation as proxies for parental background.

4.2 Relevance of parents' occupation in intergenerational persistence

This subsection shows our findings on the relevance of parents' occupation in explaining intergenerational mobility patterns. Figure 2 presents the LW-estimated intergenerational persistence coefficients $\hat{\beta}$ from equation (4) by country and birth cohort, comparing two specifications: one that uses only parental education as proxies of family background, and another that includes both education and occupation.

The results indicate that traditional estimates based solely on education underestimate intergenerational persistence. On average across cohorts, including parents' occupation increases the estimated persistence by 26% for children's education and by 50% for income rank. Figure A.2 in the Appendix Section B summarizes these results by showing the unweighted average across countries for each cohort. This suggest that, despite being partially correlated, parental education and occupation contribute complementary information, and that omitting occupation may lead to an underestimation of intergenerational persistence.[9]

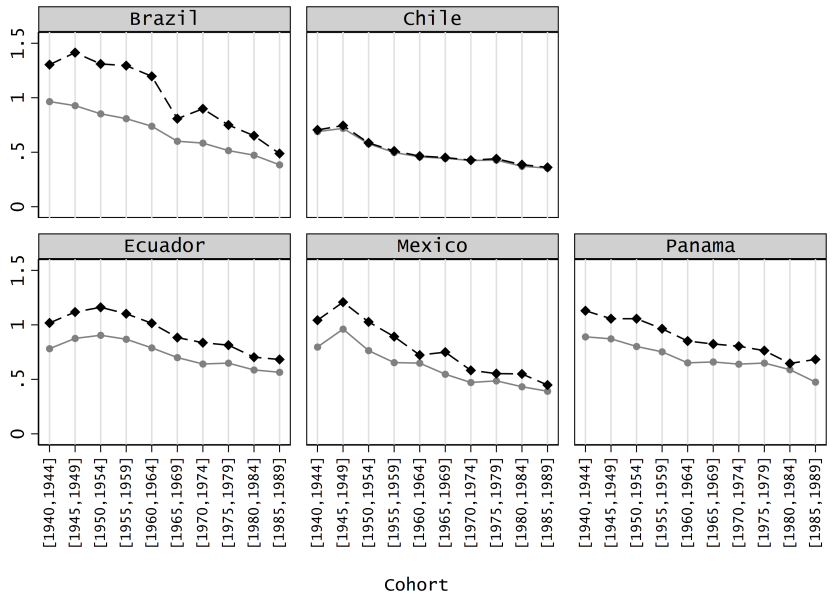
Parental occupation's relevance in explaining intergenerational mobility patterns varies across countries. It appears to have little impact in Chile but is significant in other countries. Although the evolution of the two LW-estimated coefficients is similar, there is some convergence over time, mainly 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.

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, may play a significant role in shaping social mobility. This is consistent with recent evidence in developed countries (Rothstein, 2019; Staiger,

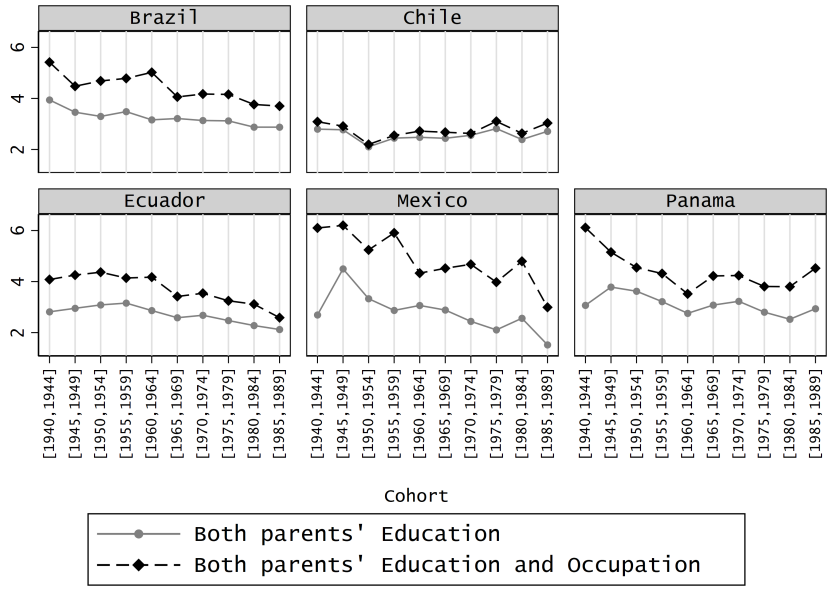
[9]To further illustrate the role of parents' occupation in explaining intergenerational mobility patterns, Figures A.3 and A.4 in the Appendix Section B presents the relative evolution of the weight of occupation compared to education in approximating parental background, i.e., their relative estimated ρ. The results show a similar pattern to that described in Figure 2: a stagnant or decreasing importance of parental occupation in approximating parental background. As shown in the same Appendix Section, this occurred alongside an increasing dispersion in parental years of schooling. In Section 5, we delve deeper into this relationship.

Figure 2: 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. The figures show the estimated β from Equation (4). In gray, estimates only considering both parents' education as proxies for parental background; in black, estimates also considering both parents' occupational categories.

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 the children's generation in societies where access to education was more equal in the parents' generation.

Additionally, we investigate heterogeneities in the reported patterns for the estimated persistence coefficients. In the Appendix, we show estimations of intergenerational persistence by children's gender and birthplace. Figures A.5 and A.6 in the Appendix Section B show 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. Also, in Figures A.7 and A.8 in the Appendix Section B, 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 areas, although the evolution of the coefficients does not show substantially different patterns by place of birth, especially when explaining children's education.

4.3 The role of mothers in approximating parental background

Previous studies have examined the relative influence of mothers' and fathers' characteristics on children's outcomes, but the evidence remains inconclusive. Some research based on twin and adoption designs finds stronger effects from fathers (e.g., Silles, 2017), while others emphasize the role of mothers (e.g., Amin et al., 2015). Instrumental variable approaches often suggest a greater impact of maternal education (Lundborg et al., 2014). As noted by Holmlund et al. (2011), no consistent pattern emerges. These differences may reflect heterogeneity in effects, differences in identification strategies, or variations in sample size and composition (Pronzato, 2012; Lundborg et al., 2014; Agüero and Ramachandran, 2020).

Building on this literature, we take a different approach. Rather than estimating the causal effect of each parent on children's outcomes, we rely on the LW framework to compare how the relative importance of mothers' and fathers' characteristics in approximating latent parental background has

evolved over time. Specifically, we use the coefficients ρ_j estimated from Equation (3) and compute the ratio of the weights assigned to maternal and paternal proxies. As discussed in Section 2, this comparison should not be interpreted in causal terms, but rather as an indication of how strongly each parent's characteristics are associated with the latent factor.

Figure 3 shows how the relative weight of maternal versus paternal proxies has changed over time for both children's education and income rank. First, the figure shows that the ratio is generally below one, indicating that mothers' characteristics tend to be less informative than fathers' in approximating family background. Second, the results reveal that mothers' education and occupation have become increasingly important over time, particularly when considering education as the children's outcome. While mothers' characteristics were about 20% less informative for cohorts born in the early 1940s, they become nearly as informative as fathers' for those born in the late 1980s. This pattern suggests that, over time, maternal education and occupation have become increasingly relevant proxies for parental background. Moreover, Figure 3 shows that including parents' occupation as a proxy for family socioeconomic status reduces the relative weight of mothers' characteristics. Still, their contribution remains significant, and the overall trend is similar with or without the inclusion of parents' occupation as a proxy variable.

Across countries, the results suggest a common upward trend in the relative weights of mothers' characteristics when analyzing children's years of education. For younger cohorts, mothers' characteristics become at least as important as fathers', although this trend appears to level off in Ecuador and Mexico. In contrast, for children's income rank, the relative importance of mothers' characteristics in approximating parental background remains stable across younger cohorts in all the countries studied. As mentioned before, Tables A.3 and A4 in Appendix Section A report the average across cohorts of our main estimates. These tables show that parental education plays the most important role in approximating parental background, while agricultural and employee categories represent the most relevant occupations. Additionally, the consistently smaller sum of the estimated $\hat{\rho}_j$ coefficients for mothers suggests that, as expected, the "non-employed" category (omitted in the regressions) is more relevant for mothers than for fathers. In Section 5, we ex-

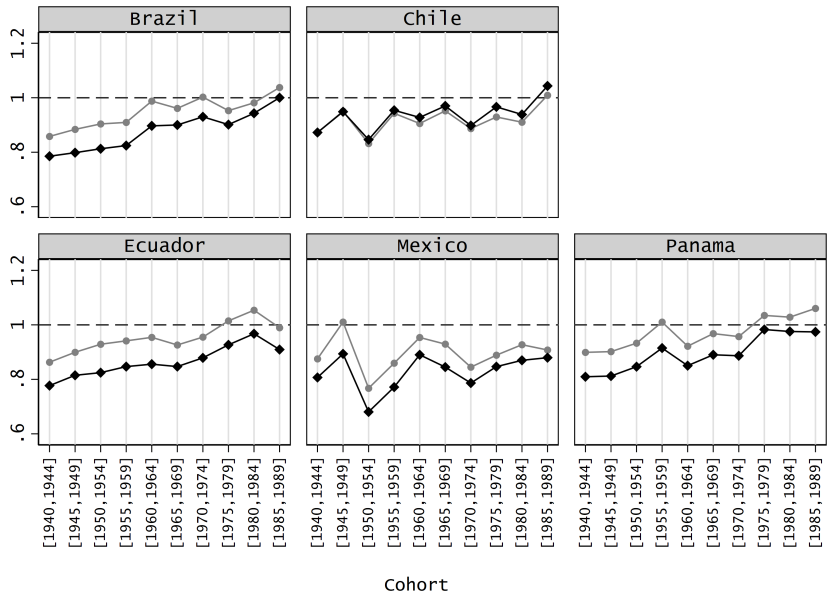
plore the potential mechanisms behind these heterogeneous patterns and their correlation with the evolution of female education and labor market participation.

As a robustness check, we conducted several complementary exercises. First, Figure A.9 in Appendix Section B presents the estimated persistence coefficient from Equation (4), using only mothers' characteristics, compared to the results using both parents' characteristics. Second, Figure A.10 shows the estimated $\rho \cdot \phi$ coefficients for mothers and fathers from a model that considers the characteristics of only one parent. Third, Figure A.11 presents estimates based on a model with two separate latent variables, one for each parent. Overall, the results exhibit patterns similar to those described earlier. Importantly, the results in Figure A.10 suggest that using ρ or $\rho \cdot \phi$ leads to very similar conclusions. Given this, we prefer to focus on ρ as our measure of the relative importance of proxies in approximating parental background, since, unlike ϕ, it is the parameter that is consistently estimated under the LW assumptions (see Section 2).

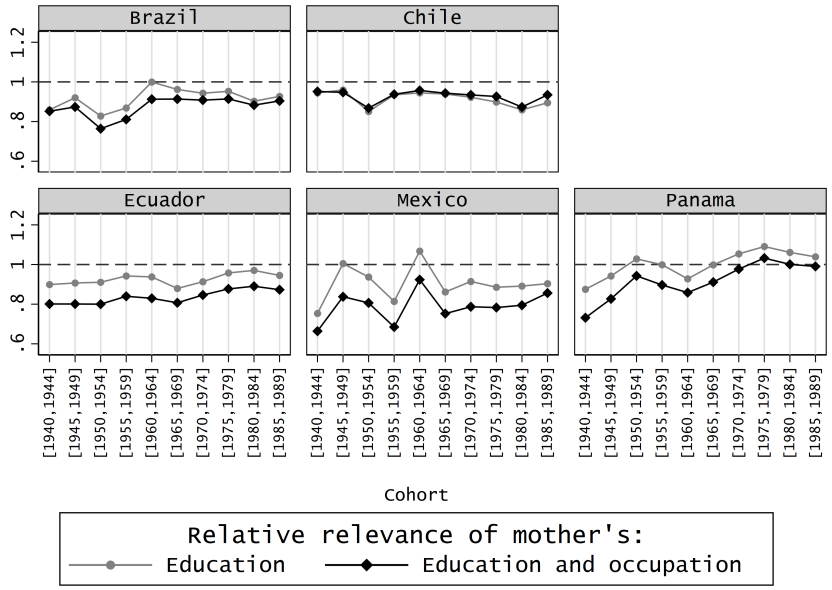
In Appendix Section B, Figures A.13 and A.14 show this analysis by children's gender. The estimates suggest that the proxies for maternal characteristics have become increasingly informative in approximating family background for both sons and daughters, but more so for the latter. This result aligns with previous studies showing that children's outcomes are more strongly related to the characteristics of their same-sex parent (Altonji and Dunn, 1991; Chadwick and Solon, 2002; Kroeger and Thompson, 2016; Schneebaum et al., 2016). For the four youngest birth cohorts, mothers' relative weights exceed 1 for daughters, while they follow a flatter pattern for sons in the same cohorts. Additionally, Figures A.15 and A.16 present the analysis by birthplace. The findings reveal that mothers' characteristics tend to be relatively more informative for children born in rural areas compared to urban areas. Nonetheless, the increasing trend in this indicator remains quite similar across places of birth.

Figure 3: The relevance of mothers' vs. fathers' characteristics in approximating parental socioeconomic background, 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 mothers' characteristics in children's parental background, compared to fathers'. The figures show the ratio of mothers' over fathers' estimated ρ_j from Equation (3). In gray, estimates only comparing both parents' education; in black, estimates also considering both parents' occupational categories.

5 Mechanisms

This section offers a stylized analysis intended to shed light on the mechanisms underlying the findings discussed in Section 4. It is important to note that the correlations presented here do not imply causal relationships, as omitted variables not fully captured in our strategy might mediate these relationships. Nevertheless, they serve as a preliminary step toward understanding the underlying mechanisms driving our results and inspire future research.

The analysis in subsection 5.1 helps evaluate the potential downward bias when using only parental education to explain children's outcomes. Importantly, the educational advancements in Latin America contributed to reducing, and in some countries even reversing, the educational gap between women and men. Table A.2 in the Appendix Section A shows that while the education levels of both fathers and mothers increased, mothers' education saw the most significant growth, effectively closing the initial gender gap in educational attainment. Additionally, as also shown in Table A.2 in Appendix Section A, the rise in women's participation in the labor market was remarkable, corroborating findings from previous studies (Marchionni et al., 2019). Moreover, recent contributions for developed countries have shown that the increase in mothers' relevance in parental background is closely related to their increased labor participation (Engzell and Mood, 2021; Brandén et al., 2023). For these reasons, Section 5.2 explores how these factors may have changed the relative importance of mothers' characteristics in approximating parental socioeconomic background.

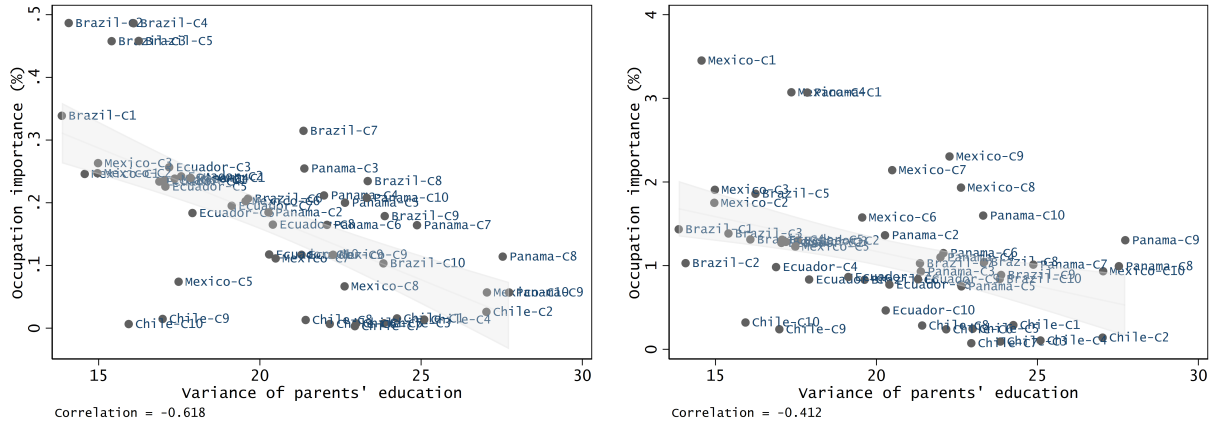
5.1 Parental occupation and education inequality

Figure 4 illustrates the correlation between the relevance of parental occupation and educational inequality in the parents' generation across countries and cohorts, each point representing estimates for a specific cohort within a given country. Educational inequality is measured by the variance in the highest level of education attained by either parent. The relevance of parental occupation refers to the percentage increase in the LW-estimated intergenerational persistence coefficient (β) when

parents' occupation is included as a proxy, relative to a specification that only includes parental education. The figure shows a clear negative correlation between these variables for both 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 educational inequality in the parents' generation is associated with a decrease in the relevance of parental occupation for intergenerational mobility, specifically, by 1.8 percentage points when considering children's years of education, and by 6.2 percentage points when considering their income rank. This decline represents a reduction of approximately 3.5% to 10% relative to the average importance of parental occupation. This result suggests that the variation in parental occupations becomes a more informative indicator of parental background and intergenerational mobility in contexts where parental education is more evenly distributed. In settings with high educational inequality among parents, parental occupations are also likely to exhibit substantial variation. However, in such cases, parental education already accounts for most of the differences in parental background, leaving limited additional information to be captured by parental occupations. Conversely, as educational inequality decreases, disparities in parental occupations gain greater significance in explaining variations in parental background and intergenerational mobility. In contrast, when inequality in parental education is high, educational attainment tends to play a more dominant role in shaping these outcomes. This interpretation is consistent with theoretical models emphasizing the role of social status and non-educational channels in the intergenerational transmission of advantage. As shown by Zhong (2013), when educational attainment becomes more equal, family networks and occupational status become more relevant in securing access to better jobs. Similarly, models by Fershtman and Weiss (1993) and Fershtman et al. (1996) highlight how status-seeking behavior can distort occupational allocation and reinforce persistence, especially when education alone no longer differentiates candidates.

A valid concern regarding this result could be that it is largely driven by the number of parental occupation categories available. In Appendix Section C, we show that the intergenerational persistence estimates using finer occupational definitions (one-digit ISCO classification), which we can

Figure 4: Parents' occupation relevance and parental education variance. Children's education (left) and income rank (right)



Source: own estimates based on household surveys.
Notes: each dot represents estimates for a specific cohort (c) within a given country. We use the variance in the highest level of education attained by either parent as a measure of educational inequality in the parental generation. "Occupation importance (%)" refers to the percentage difference between the LW-estimated β including and excluding parents' occupation. The linear approximation includes 90% confidence intervals.

apply to Brazil and Mexico, are consistent with our main results, suggesting that the relationship in Figure 2 is robust to broader occupational categories. Furthermore, as noted above, the number of categories we use is similar to previous studies focused on developed countries (Vosters and Nybom, 2017; Vosters, 2018; Adermon et al., 2021).

Moreover, it is important to note that our application of the LW approach assumes that parental characteristics—such as education, occupation, and income—contribute to intergenerational mobility only through their correlation with parental socioeconomic status. In contexts of high educational inequality, education strongly correlates with income, making it a more robust proxy for socioeconomic status. However, as educational inequality decreases, education alone becomes less effective in capturing differences in income, increasing the relevance of parental occupation in explaining intergenerational mobility. Future research could further refine these estimates by incorporating direct measures of parental income when such data become available.

These findings highlight the need for caution when relying solely on educational measures of parental background in intergenerational mobility analyses. As education becomes more ac-

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.

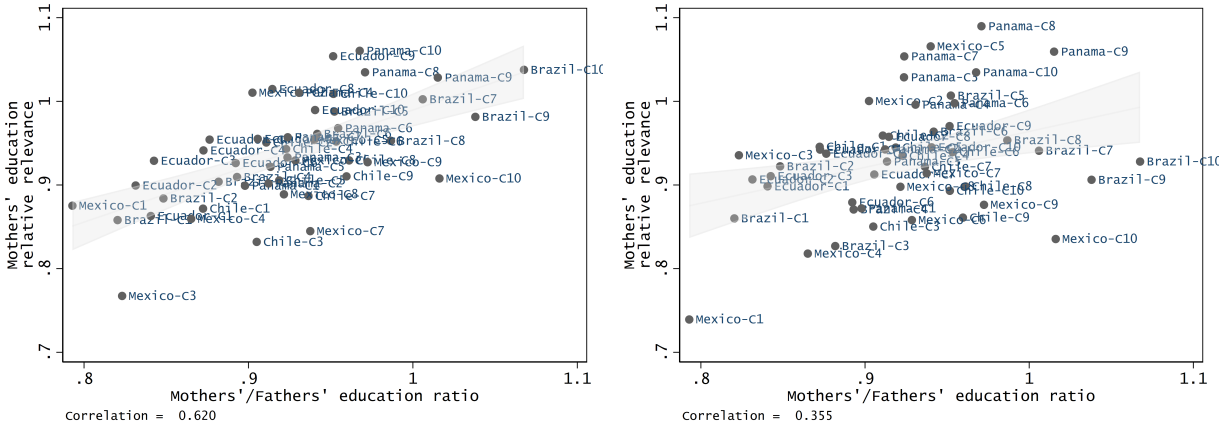
Notes: Columns 1 and 5 report the partial correlation between the relevance of parental occupation in LW estimates and parental education inequality for children's education and income rank, respectively. Columns 2 and 6 show the estimated relationship between the increase in mothers' relative educational attainment and the informativeness of their education in approximating parental background. Lastly, Columns 3 and 4, and 7 and 8, report the correlation between mothers' labor force participation and occupational diversification, and the informativeness of their occupation in approximating parental background. All coefficients are estimated by OLS and include cohort fixed effects.. "Occupation relevance" refers to the percentage point difference between the LW-estimated β including and excluding parents' occupation. "Mothers' education" refers to the percentage point difference between mothers' vs. fathers' education weight. "Mothers' occupation" refers to the percentage point difference between mothers' vs. fathers' occupation weight. The value in the last row indicates the average of the dependent variable. Robust standard errors indicated in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. .

cessible, parental occupation plays a greater role in explaining intergenerational mobility patterns. Therefore, traditional approaches may yield less accurate estimates of intergenerational persistence, especially in the context of changing access to education in Latin America. As noted in Section 2, these results suggest that the higher estimated β obtained with an expanded set of proxy variables for family background is not merely mechanical: the relevance of parental occupation depends critically on on the degree of inequality in the distribution of parental education.

5.2 Mothers' education and labor market participation

Latin America has made considerable improvements in female access to education and the narrowing or even reversal of the educational gender gap in recent decades has been well-documented (Marchionni et al., 2019). In Figure 5, we explore the relationship between the increasing access of women to education over time and the importance of mothers' education in approximating parental background. The analysis reveals a positive correlation, showing that as mothers' access to schooling increases, so does the relative importance of their education as a proxy for parental background. 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 ratio of mothers' to fathers' education is associated with a 3.9 to 7.3 percentage point (between 4.2% and 8% of the average) increase in the relevance of mothers' education. In the Appendix Section D, Figures A.19 and A.20 show that although both fathers' and mothers' education levels have risen over time, the increase in mothers' education is more pronounced and shows a stronger correlation with its relative importance in approximating parental background. Moreover, in Appendix Section D, Figure A.23 shows that the increased importance of mothers in approximating parental background is primarily driven by greater access to education for mothers, particularly in households with less educated fathers. In the rest of the fathers' education distribution, assortative mating remained relatively stable, and although the mother-to-father education ratio increased, it did so less significantly. The largest increase in this ratio occurred in households with fathers with lower education, which are also the households where assortative mating decreased.

Figure 5: Mothers' education relevance and mothers' to fathers' education ratio. Children's education (left) and income rank (right)

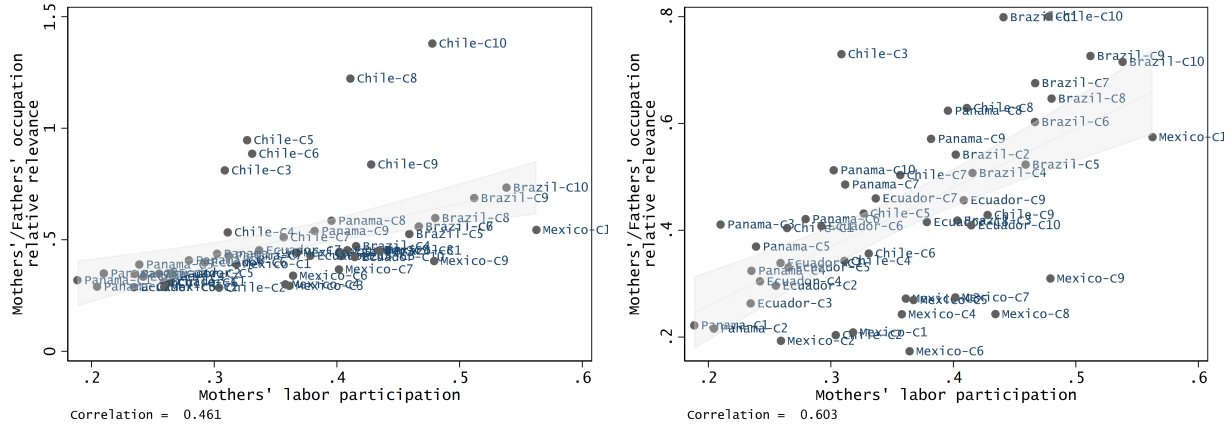


Source: own estimates based on household surveys.
Notes: each dot represents estimates for a specific cohort (c) within a given country. "Mothers' education relative relevance" refers to the percentage difference between the LW-estimated difference between mothers' vs. fathers' education weight. The linear approximation includes 90% confidence intervals.

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; Berniell et al., 2024). Figure 6 and columns 3 and 7 from Table 2 show a positive correlation between mothers' labor market participation and the importance of their occupation in approximating family background. The regression analysis with country fixed effects 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 7 and columns 4 and 8 from Table 2 reveal a positive correlation between the diversification of mothers' occupations and their relevance in approximating family background. A 10% increase in the variance of mothers' occupations is related to an 8% to 12% increase in the relevance of their occupations.

We complement these findings with Figures A.21 and A.22 in the Appendix Section D, which show that the relationship shown in Figure 6 is driven by increases in mothers' labor participation, as the fathers' employment rate remains close to one and shows no relationship with mothers'

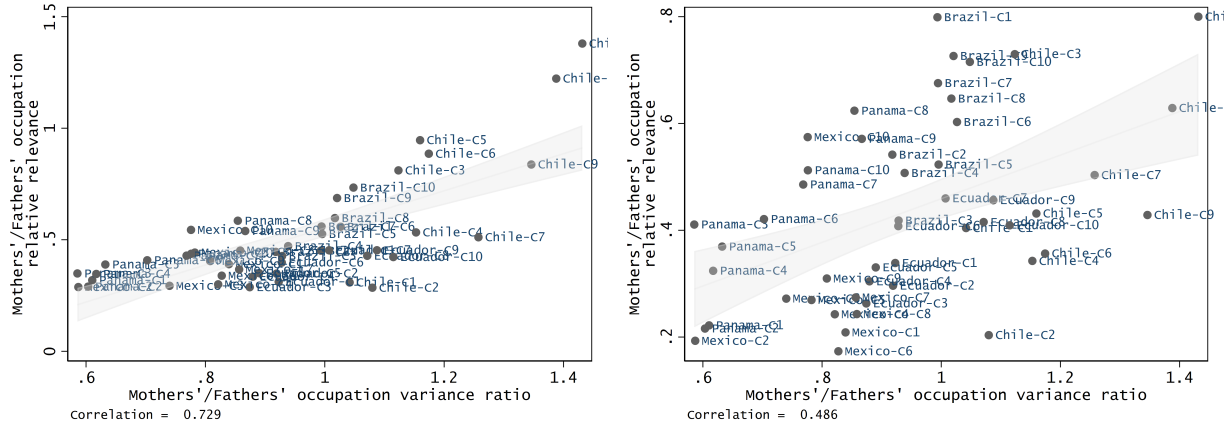
Figure 6: Mothers' occupation relevance and labor market participation. Children's education (left) and income rank (right)



Source: own estimates based on household surveys.
Notes: each dot represents estimates for a specific cohort (c) within a given country. "Mothers'/fathers' occupation relative relevance" refers to the percentage difference between the LW-estimated difference between mothers' vs. fathers' occupation weight. The linear approximation includes 90% confidence intervals.

occupational relevance. Furthermore, as Figure A.22 shows, the growing importance of mothers' occupations is explained by both increased employment diversification among mothers and decreased diversification among fathers. These findings align with recent contributions highlighting the close connection between the rising relevance of maternal employment and intergenerational persistence in the United States, attributed to the increased labor force participation of women (Engzell and Mood, 2021; Brandén et al., 2023). Overall, our analysis highlights the important role of educational and labor market advancements of women in the study of current intergenerational mobility trends in Latin America.

Figure 7: Mothers' occupation relevance and relative occupation variance. Children's education (left) and income rank (right)



Source: own estimates based on household surveys.
Notes: each dot represents estimates for a specific cohort (c) within a given country. "Mothers'/fathers' occupation relative relevance" refers to the percentage difference between the LW-estimated difference between mothers' vs. fathers' occupation weight. The linear approximation includes 90% confidence intervals.

6 Conclusions

This paper addresses two important gaps in the literature on intergenerational mobility in Latin America. Firstly, it measures intergenerational mobility trends going beyond traditional estimates focused solely on education. Secondly, it addresses the evolution of the changing role of mothers' characteristics. Previous studies often rely on a single measure of family background or social status, which might not fully capture the complexity of social mobility dynamics. By integrating parents' education and occupation as proxy measures of family background, we offer a more comprehensive analysis. We apply the Lubotsky and Wittenberg (2006, LW) approach, which is better suited for this type of analysis than other methods commonly used in the literature, such as TSTSLS or factor analysis.

Our findings reveal that relying solely on parents' education as a proxy for family background can lead to significantly underestimate intergenerational persistence, with estimates being 26% to 50% lower compared to when parents' occupation is included alongside education. Moreover, we find that, while fathers' characteristics continue to hold greater importance, the relative importance

of mothers' education and occupation in approximating family background has increased over time, coinciding with their improved access to education and participation in the labor market.

These results underscore the importance of using indicators beyond education to measure social mobility, particularly in developing countries that have shown recent improvements in educational access. Our analysis offer a methodological guide for estimating intergenerational mobility more consistently, demonstrating that robust estimates can be obtained from a single survey without requiring additional data, as in TSTSLS approaches. Additionally, building on the original contribution of LW, we argue that when permanent income data is unavailable, incorporating all accessible parental characteristics provides a more comprehensive explanation of the variance in children's outcomes.

Future research could delve into specific mechanisms, such as the transmission of skills, preferences, social capital, and networks, as well as the role of firms, all of which may influence intergenerational persistence. In this paper, we implicitly account for these factors as drivers of parental education and occupation. Understanding how these mechanisms operate in shaping intergenerational mobility is an exciting avenue for future research. Another interesting empirical question is the extent to which adding parental income to intergenerational mobility models improves their explanatory power in the Latin American context. This could help evaluate whether parental income merely reflects broader parental characteristics, such as education and occupation, or whether it adds unique information to parental background.

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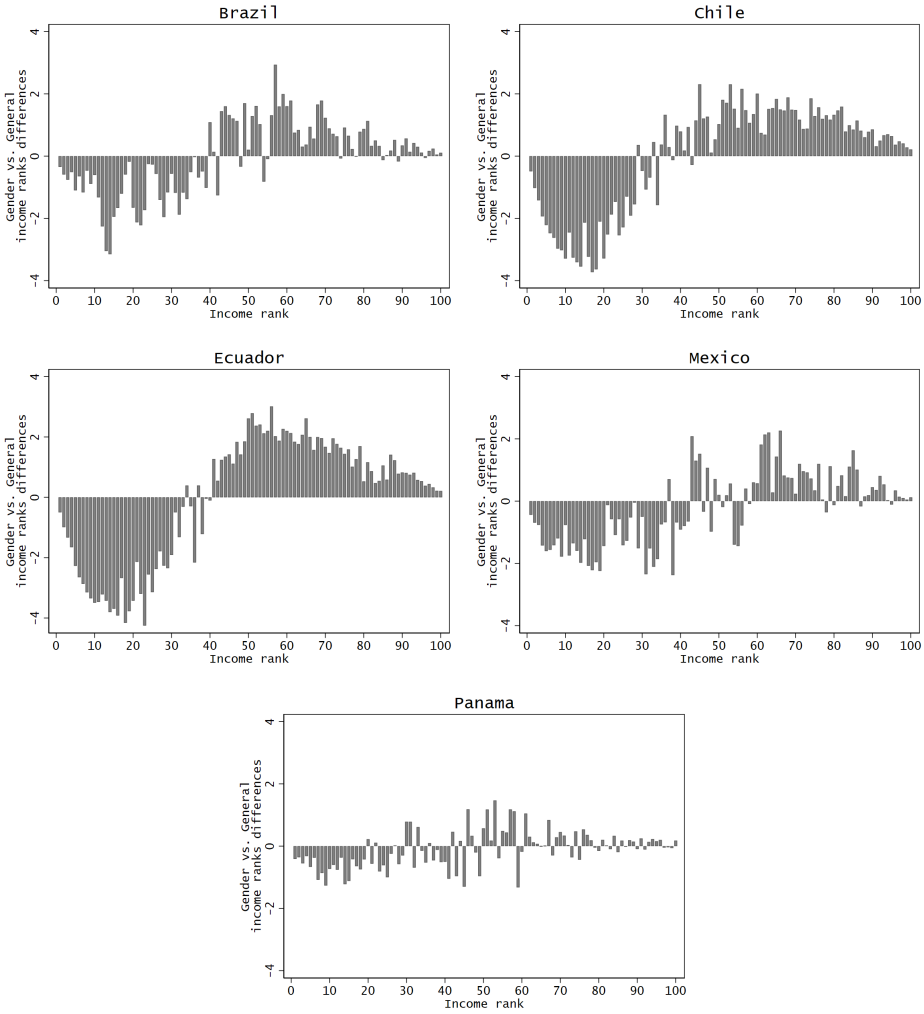
Online Appendix

A Descriptive statistics

A.1 Income ranks comparison

Figure A.1: Income ranks comparison: within and not within gender



Source: own estimates based on household surveys.
Notes: The y-axis shows the average difference for each of the cohort-gender income ranks (that we use in this paper) compared to the cohort income ranks, i.e., not computed within gender.

A.2 Children's characteristics

Table A.1: Children's descriptive statistics

	Children's cohort	Age	% Male	Education (years)	Income rank
Brazil					
	All	45.2	46.6	8.9	50.8
	[1940-1944]	72.0	41.8	4.9	49.1
	[1985-1989]	27.1	47.2	11.1	51.0
Chile					
	All	44.6	41.1	10.9	58.1
	[1940-1944]	66.8	45.3	7.9	60.6
	[1985-1989]	23.6	34.8	12.0	59.4
Ecuador					
	All	40.8	47.6	8.5	51.8
	[1940-1944]	59.7	48.5	5.4	51.1
	[1985-1989]	27.1	44.4	10.2	53.7
Mexico					
	All	41.7	60.8	8.6	51.0
	[1940-1944]	63.0	86.1	4.5	48.4
	[1985-1989]	26.6	46.5	10.9	52.3
Panama					
	All	41.4	47.2	9.1	54.2
	[1940-1944]	59.2	50.0	6.9	54.5
	[1985-1989]	23.0	48.4	10.0	57.6
Average					
	All	42.7	48.7	9.2	53.2
	[1940-1944]	64.1	54.3	5.9	52.7
	[1985-1989]	25.5	44.3	10.8	54.8

Source: own estimates based on household surveys.

Table A.2: Parents' descriptive statistics

		Father							Mother						
			Occupation (%)							Occupation (%)					
	Children's cohort	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
	[1940-1944]	2.3	3.5	12.9	58.9	19.7	0.7	4.3	1.8	0.6	7.2	28.0	4.6	3.7	55.9
	[1985-1989]	5.7	5.4	18.2	27.1	43.3	0.9	5.3	6.0	1.5	7.6	13.5	20.9	10.2	46.2
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
	[1940-1944]	4.8	4.0	28.1	.	66.9	0.0	1.0	4.2	0.7	7.6	.	12.3	5.0	74.3
	[1985-1989]	9.2	3.5	23.0	.	72.3	0.0	1.2	8.7	0.8	7.6	.	30.6	7.9	53.2
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
	[1940-1944]	4.0	1.7	20.4	58.5	17.6	0.0	1.8	3.4	0.1	9.1	12.0	3.0	1.4	74.3
	[1985-1989]	6.4	0.7	26.5	41.9	29.7	0.1	1.1	6.0	0.3	14.5	10.8	11.4	4.3	58.6
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
	[1940-1944]	2.3	1.7	11.2	65.4	16.6	0.4	4.7	1.8	0.0	5.7	12.4	6.3	3.3	72.3
	[1985-1989]	6.7	4.9	26.4	12.3	37.8	0.4	18.2	6.8	0.8	16.8	2.5	21.9	6.0	52.1
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
	[1940-1944]	3.8	2.7	19.3	51.3	23.2	0.2	3.2	3.4	0.4	5.0	3.5	6.1	3.1	81.9
	[1985-1989]	7.4	7.2	18.8	28.5	43.9	0.1	1.4	7.2	1.2	3.5	1.9	18.1	5.0	70.3
Average															
	All	5.0	3.2	20.4	40.8	39.0	0.2	4.5	4.7	0.8	8.7	9.5	12.7	4.4	65.9
	[1940-1944]	3.4	2.7	18.4	58.5	28.8	0.3	3.0	2.9	0.4	6.9	14.0	6.5	3.3	71.8
	[1985-1989]	7.1	4.3	22.6	27.5	45.4	0.3	5.4	7.0	0.9	10.0	7.2	20.6	6.7	56.1

Source: own estimates based on household surveys.

Table A.3: Summary of main estimates. Children's education

		Father						Mother					
		Education	Occupation					Education	Occupation				
Country	Parameter		Employer	Self-employed	Agricultural	Employee	Domestic Service		Employer	Self-employed	Agricultural	Employee	Domestic Service
Brazil	ρ	1	0.0165	0.0195	0.0991	0.0657	0.0006	0.9478	0.0032	0.0104	0.0615	0.0279	0.0035
Chile		1	0.0068	0.0046	0.0000	0.0032	0.0001	0.9190	0.0020	0.0035	0.0000	0.0194	0.0064
Ecuador		1	0.0040	0.0325	0.0901	0.0535	0.0001	0.9526	0.0010	0.0155	0.0285	0.0208	0.0020
Mexico		1	0.0088	0.0141	0.0715	0.0582	0.0003	0.8964	0.0028	0.0108	0.0110	0.0274	0.0035
Panama		1	0.0049	0.0129	0.0794	0.0601	0.0002	0.9714	0.0018	0.0066	0.0113	0.0408	0.0025
Brazil	ϕ	0.3111	1.9869	1.2903	0.9946	1.3423	1.2713	0.3301	0.8241	0.7848	1.9090	0.2136	0.3905
Chile		0.2578	1.2465	0.7044	0.0000	0.6300	1.3185	0.2547	0.8459	0.2671	0.0000	0.2128	0.4282
Ecuador		0.3307	1.6639	1.1577	0.7044	1.3227	1.3916	0.3859	1.8384	0.7206	1.3578	0.5392	0.7339
Mexico		0.3125	1.5429	0.7599	0.8327	0.8145	0.9917	0.3165	0.7849	0.6845	1.0471	0.4470	0.5520
Panama		0.2919	0.7768	0.7057	1.4608	0.8369	1.7517	0.3751	2.4034	0.9163	1.5465	0.8557	0.8421

Source: own estimates based on household surveys. Simple average across cohorts.

Table A.4: Summary of main estimates. Children's income rank

		Father						Mother					
		Education	Occupation					Education	Occupation				
Country	Parameter		Employer	Self-employed	Agricultural	Employee	Domestic Service		Employer	Self-employed	Agricultural	Employee	Domestic Service
Brazil	ρ	1	0.0186	0.0116	0.0781	0.0488	0.0006	0.9160	0.0038	0.0062	0.0537	0.0246	0.0063
Chile		1	0.0098	0.0047	0.0000	0.0126	0.0002	0.9151	0.0035	0.0059	0.0000	0.0221	0.0063
Ecuador		1	0.0049	0.0358	0.0954	0.0539	0.0003	0.9260	0.0014	0.0183	0.0268	0.0207	0.0019
Mexico		1	0.0157	0.0254	0.1024	0.0685	0.0003	0.9028	0.0055	0.0143	0.0123	0.0175	0.0051
Panama		1	0.0100	0.0130	0.0840	0.0599	0.0004	1.0010	0.0015	0.0064	0.0107	0.0420	0.0048
Brazil	ϕ	0.0180	0.1245	0.0467	0.0495	0.0336	0.0743	0.0129	0.0970	0.0262	0.1017	0.0286	0.0456
Chile		0.0133	0.0990	0.0765	0.0000	0.0771	0.1918	0.0127	0.1078	0.0329	0.0000	0.0227	0.0349
Ecuador		0.0135	0.0717	0.0562	0.0695	0.0514	0.1233	0.0130	0.1381	0.0422	0.0396	0.0250	0.0360
Mexico		0.0159	0.0987	0.0475	0.1327	0.0431	0.0818	0.0148	0.1151	0.0629	0.0894	0.0425	0.0459
Panama		0.0118	0.1270	0.0965	0.1050	0.1066	0.0649	0.0181	0.0890	0.0521	0.1013	0.0375	0.0747

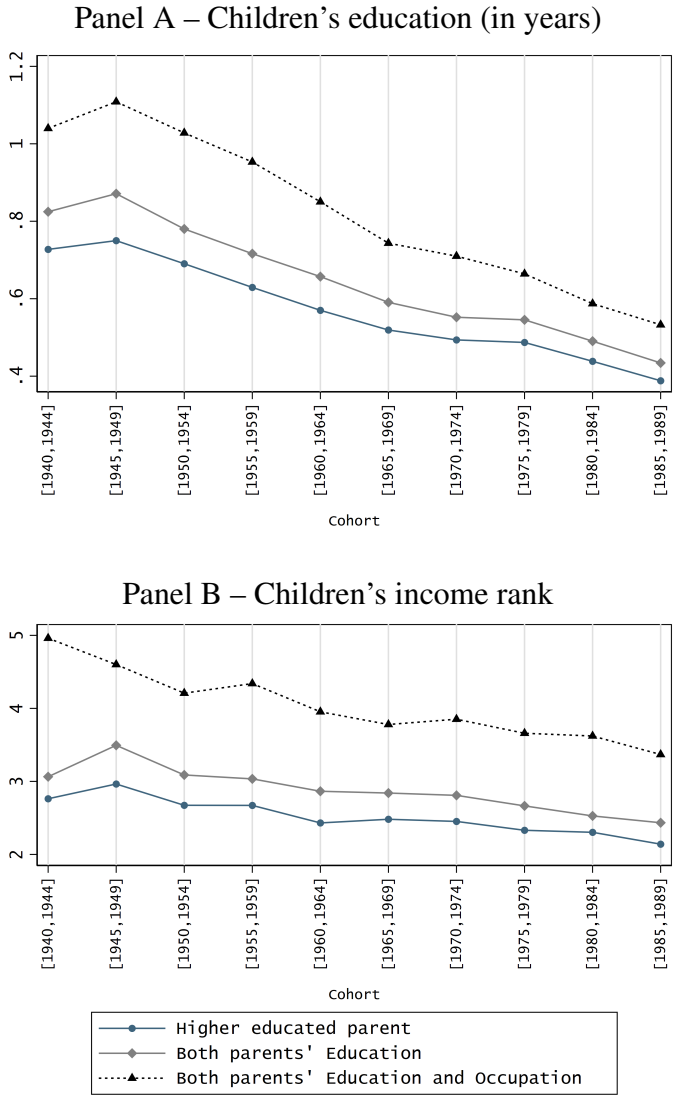
Source: own estimates based on household surveys. Simple average across cohorts.

B Additional results

B.1 Relevance of parents' occupation in intergenerational persistence

B.1.1 Unweighted average

Figure A.2: Intergenerational persistence (unweighted average). LW estimates

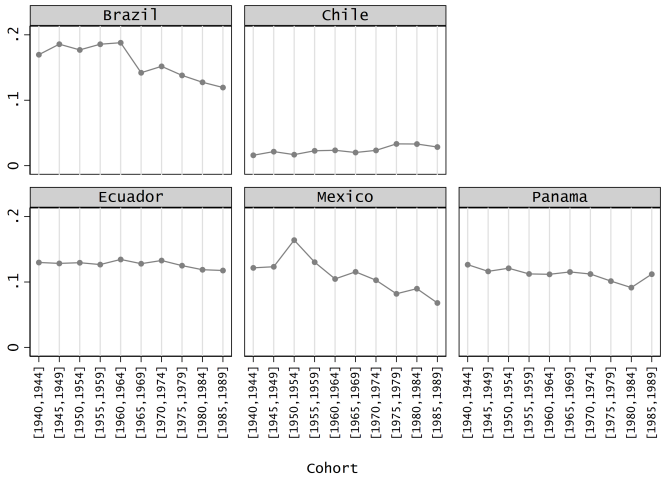


Source: own estimates based on household surveys.
Notes: Estimated intergenerational persistence coefficients. The figures show the estimated β from Equation (4). In blue, estimates only considering the higher education among parents. In gray, LW estimates only considering both parents' education as proxies for parental background; in black, LW estimates also considering both parents' occupational categories.

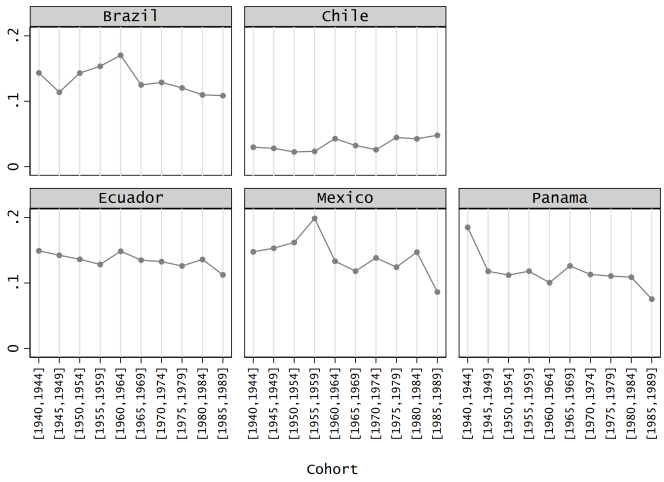
B.1.2 Ratio of occupation vs education weights

Figure A.3: Ratio of ρ_j estimates: occupation relative to education

Panel A – Children's education (in years)

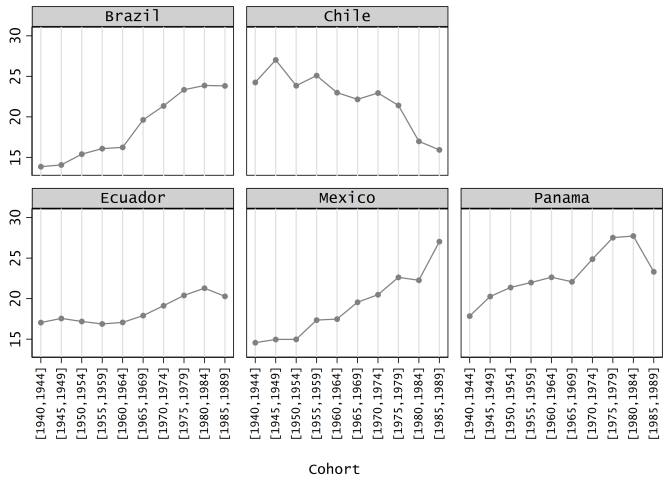


Panel B – Children's income rank



Source: own estimates based on household surveys.
Notes: LW estimated ρ_j coefficients. The figures show the ratio of occupation over education estimated ρ_j from Equation (3).

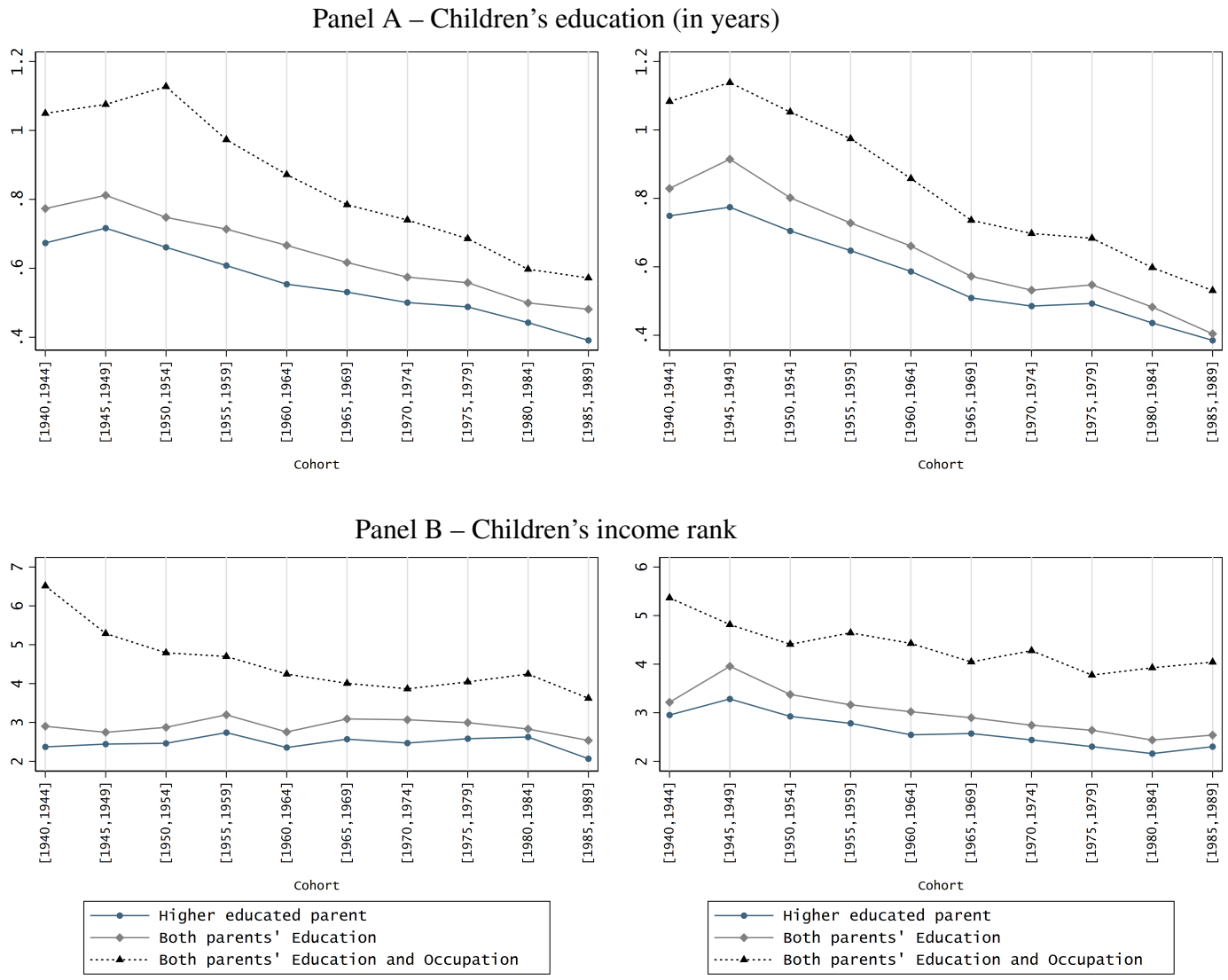
Figure A.4: Parental dispersion in years of schooling



Source: own estimates based on household surveys.
Notes: Parental dispersion in years of schooling measured by the variance of parental education.

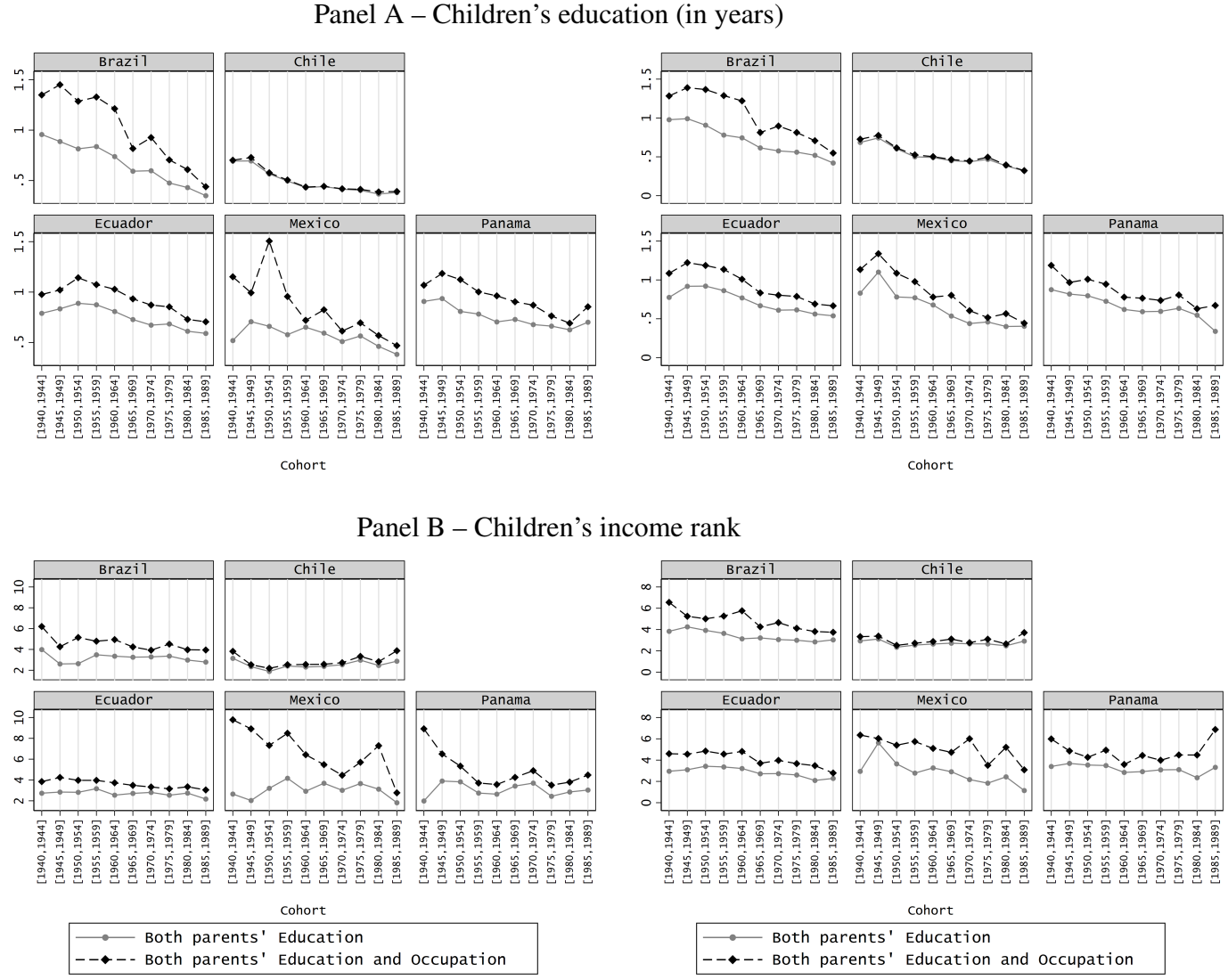
B.1.3 Sons and daughters

Figure A.5: Intergenerational persistence (unweighted average). LW estimates. Daughters (left) and sons (right)



Source: own estimates based on household surveys.
Notes: Estimated intergenerational persistence coefficients. The figures show the estimated β from Equation (4). 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 parents' occupational categories.

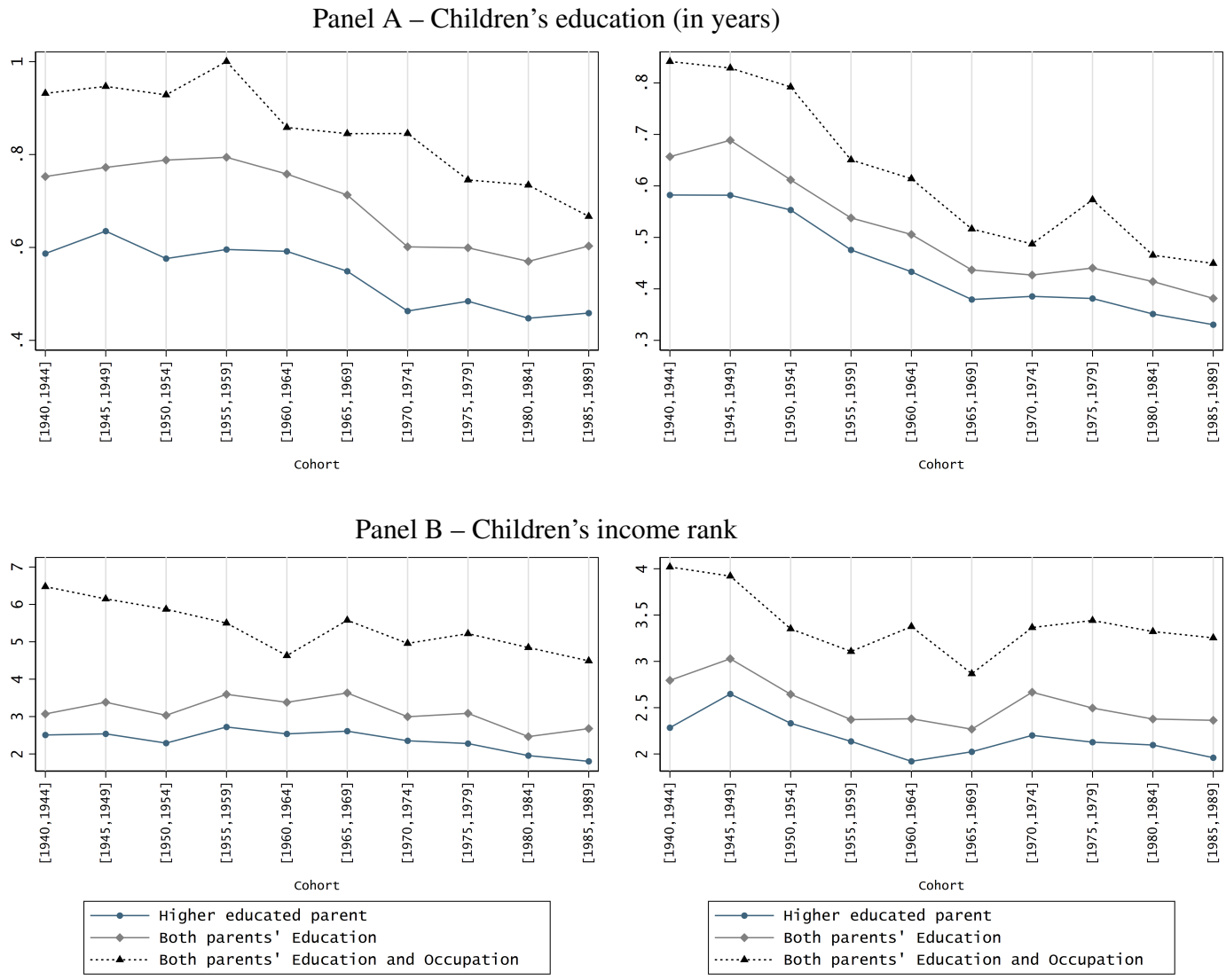
Figure A.6: Intergenerational persistence by country. LW estimates. Daughters (left) and sons (right)



Source: own estimates based on household surveys.
Notes: LW estimated intergenerational persistence coefficients. The figures show the estimated β from Equation (4). In gray, estimates only considering both parents' education as proxies for parental background; in black, estimates also considering both parents' occupational categories.

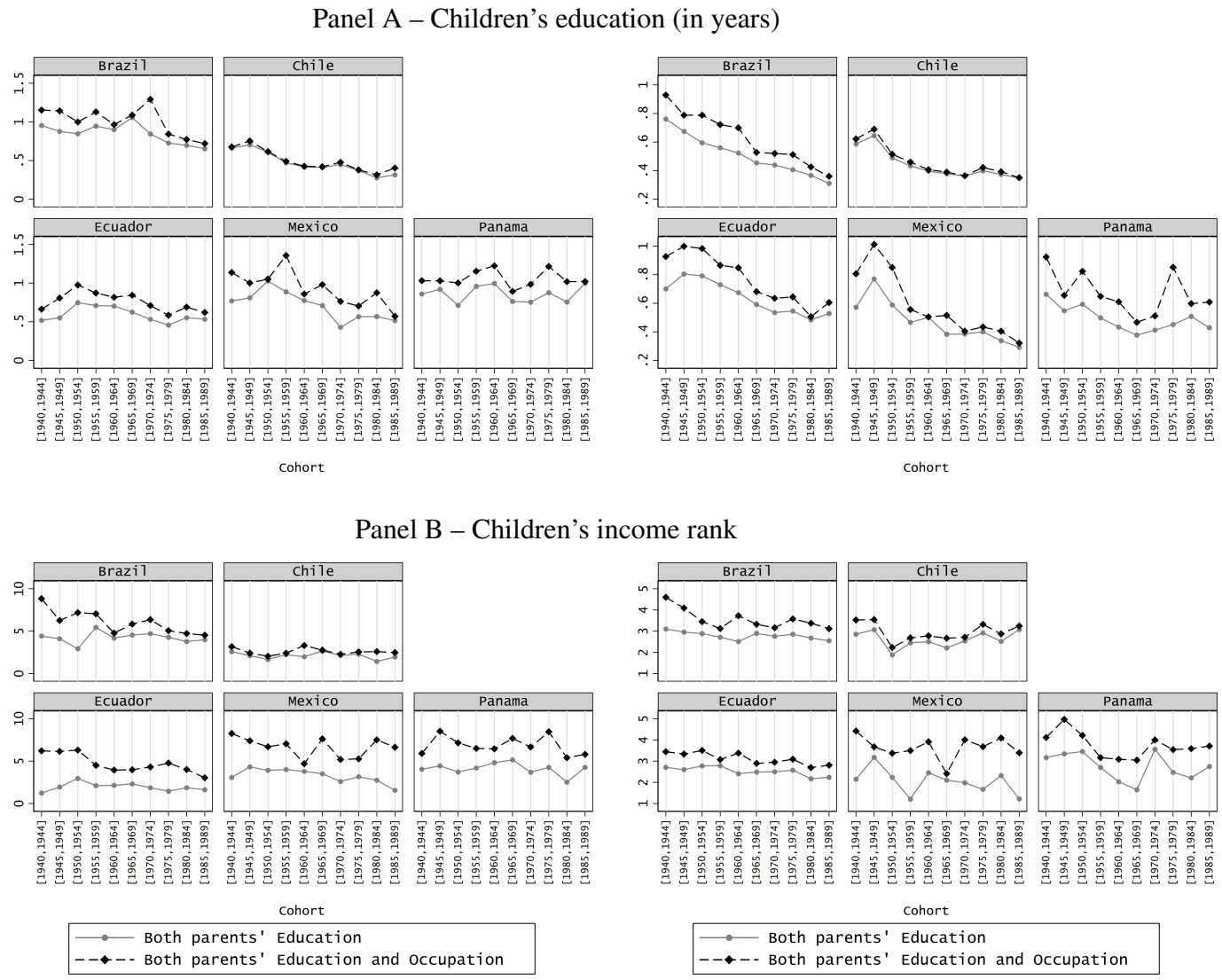
B.1.4 Urban and rural birth zones

Figure A.7: Intergenerational persistence (unweighted average). LW estimates. Rural (left) and urban (right) birth zones



Source: own estimates based on household surveys.
Notes: Estimated intergenerational persistence coefficients. The figures show the estimated β from Equation (4). 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 parents' occupational categories.

Figure A.8: Intergenerational persistence by countries. LW estimates. Rural (left) and urban (right) birth zones



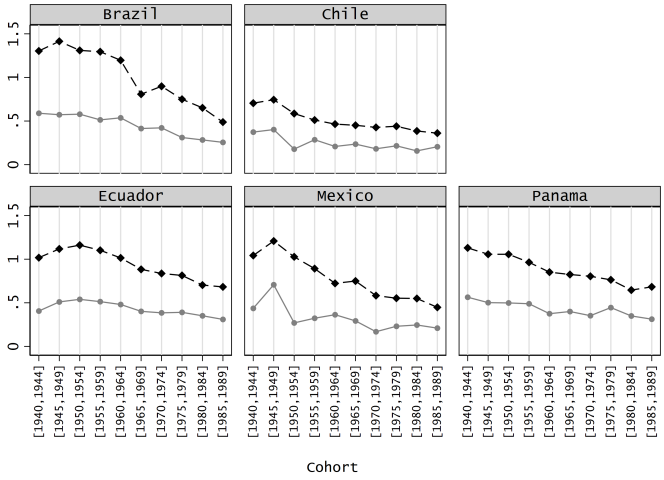
Source: own estimates based on household surveys.
Notes: LW estimated intergenerational persistence coefficients. The figures show the estimated β from Equation (4). In gray, estimates only considering both parents' education as proxies for parental background; in black, estimates also considering both parents' occupational categories.

B.2 The role of mothers in parental background

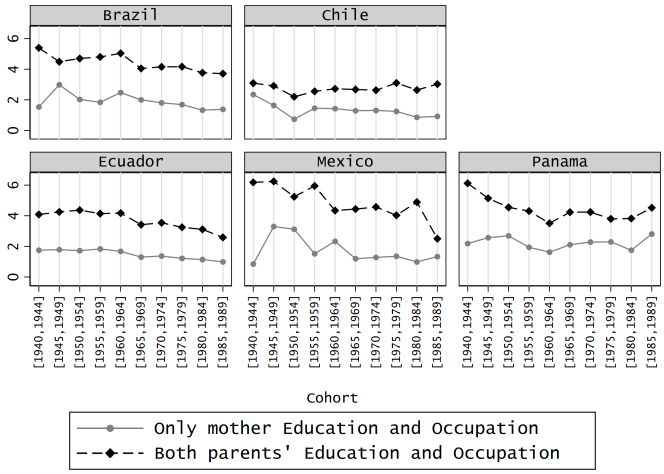
B.2.1 Beta estimates: only mothers' or both parents characteristics

Figure A.9: Beta estimates ($\sum_j \rho_j * \phi_j$) only considering mothers' characteristics compared to both parents' characteristics. Education (left) and Education and Occupation (right)

Panel A – Children's education (in years)



Panel B – Children's income rank

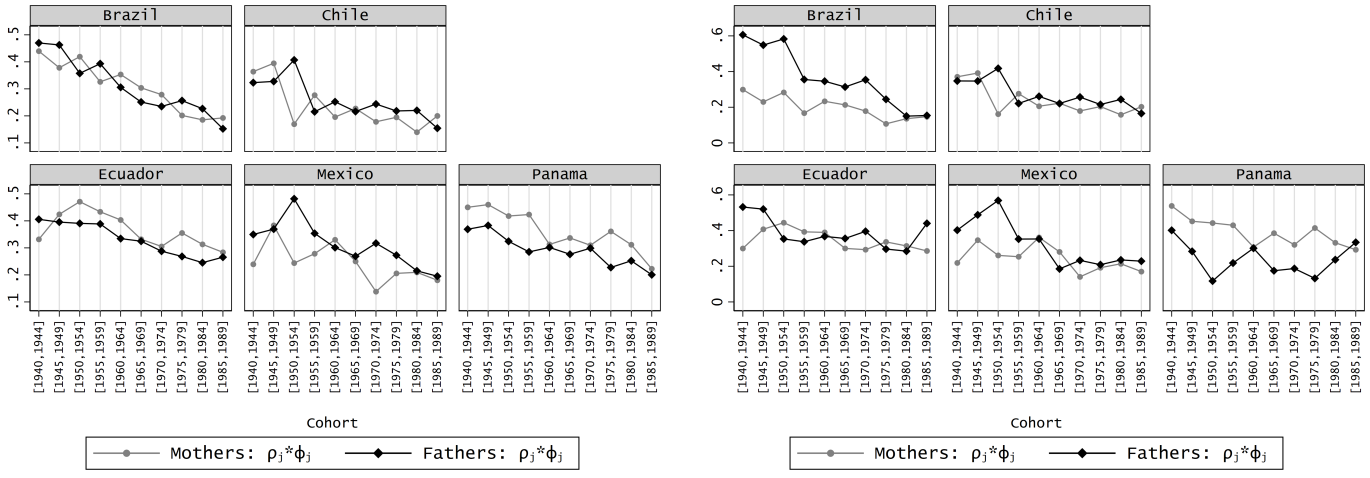


Source: own estimates based on household surveys.
Notes: LW estimated persistence coefficients. The figures show the estimated β from Equation (4). In gray, estimates only considering mothers' characteristics; in black, considering both parents' characteristics.

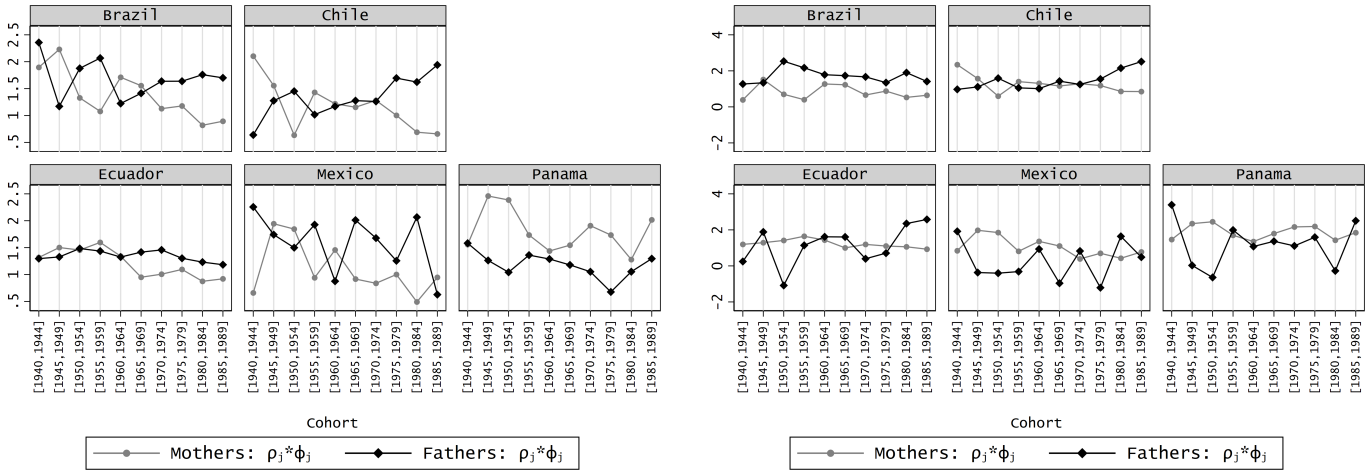
B.2.2 Beta estimates only considering mothers or fathers

Figure A.10: Beta estimates ($\sum_j \rho_j * \phi_j$) for mothers and fathers separately estimated. Education (left) and Education and Occupation (right)

Panel A – Children's education (in years)



Panel B – Children's income rank

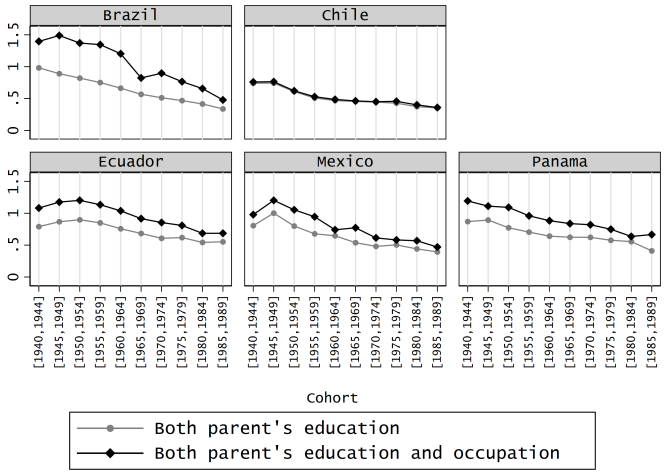


Source: own estimates based on household surveys.
Notes: LW estimated persistence coefficients. The figures show the estimated β from Equation (4) separately estimated for mothers and fathers. In gray, estimates only considering mothers' characteristics; in black, only considering fathers' characteristics.

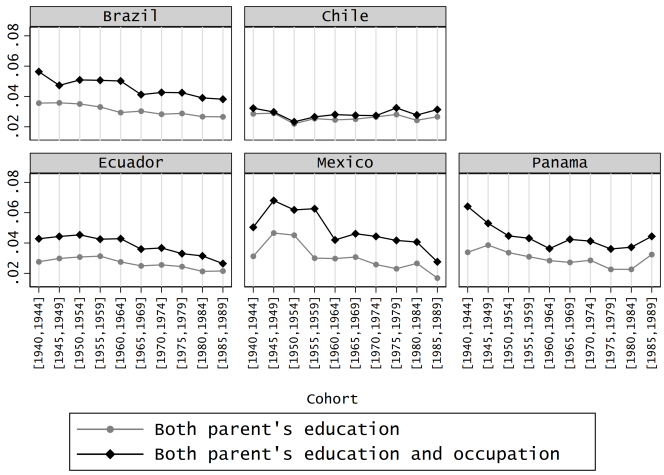
B.2.3 Beta estimates from a model with one latent variable for each parent

Figure A.11: Beta estimates ($\sum_j \rho_j * \phi_j$) considering a latent variable for each parent.

Panel A – Children's education (in years)



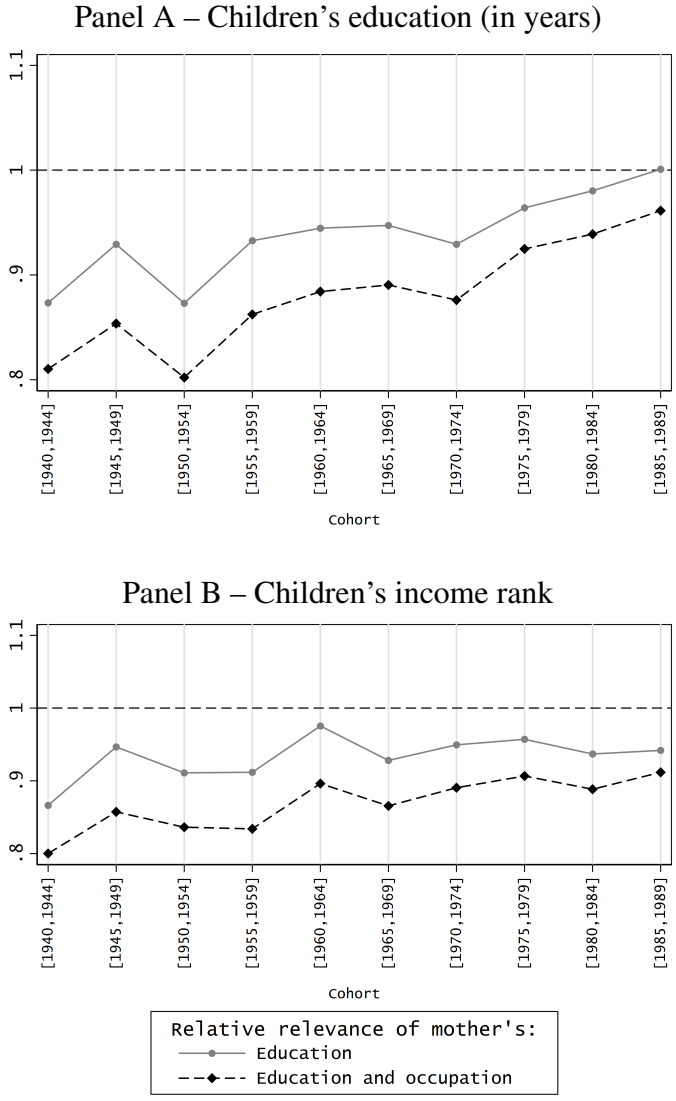
Panel B – Children's income rank



Source: own estimates based on household surveys.
Notes: LW estimated persistence coefficients for a model with two latent variables, one for each parent. The figures show the estimated β from Equation (4). In gray, estimates only considering both parents' education as proxies for parental background; in black, estimates also considering both parents' occupational categories.

B.2.4 Unweighted average

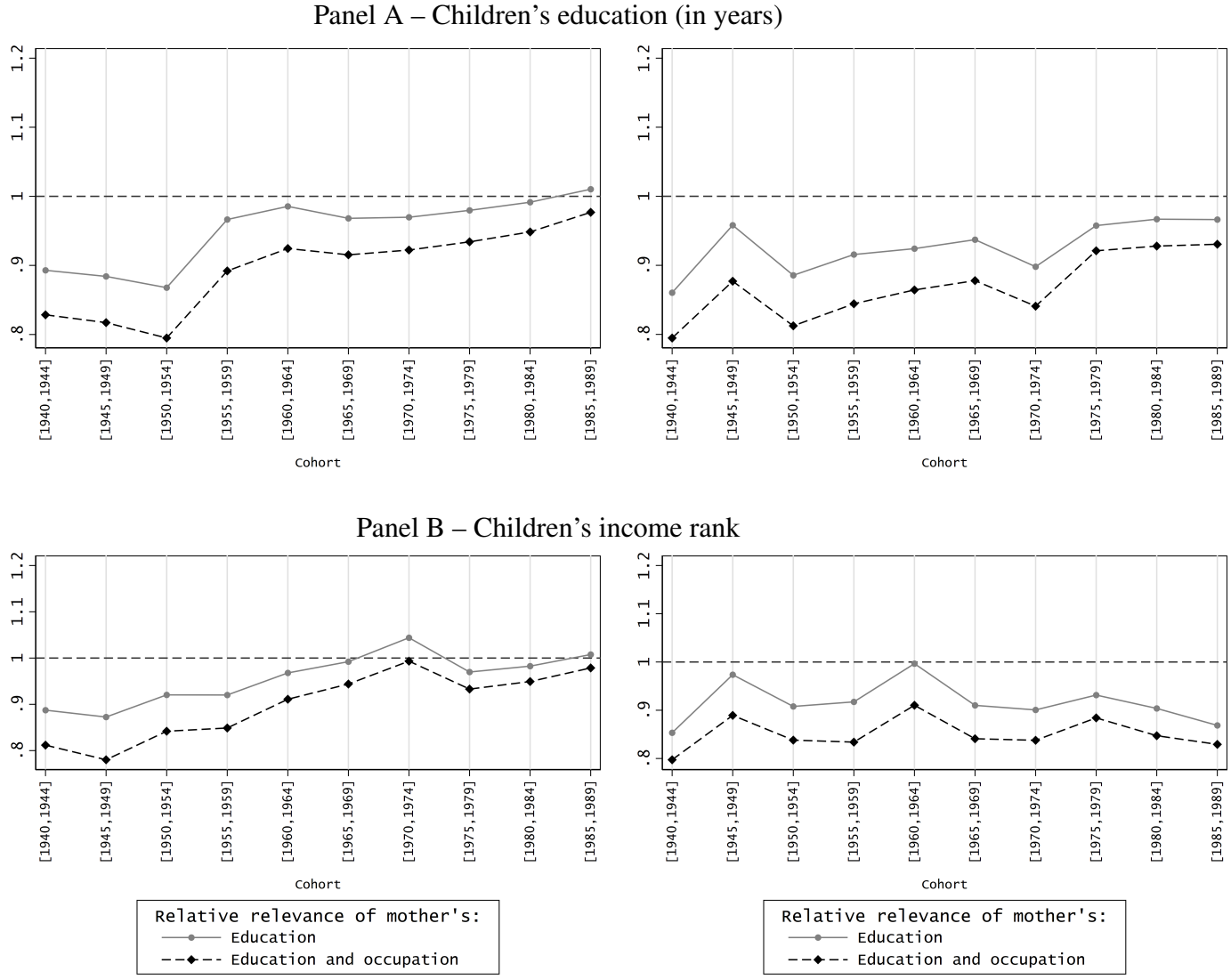
Figure A.12: The relevance of mothers' vs. fathers' characteristics in parental socioeconomic background, by country. Unweighted average



Source: own estimates based on household surveys.
Notes: LW estimated intergenerational relative weight of mothers' characteristics in children's parental background, compared to fathers'. The figures show the ratio of mothers' over fathers' estimated ρ_j from Equation (3). In gray, estimates only comparing both parents' education; in black, estimates also considering both parents' occupational categories.

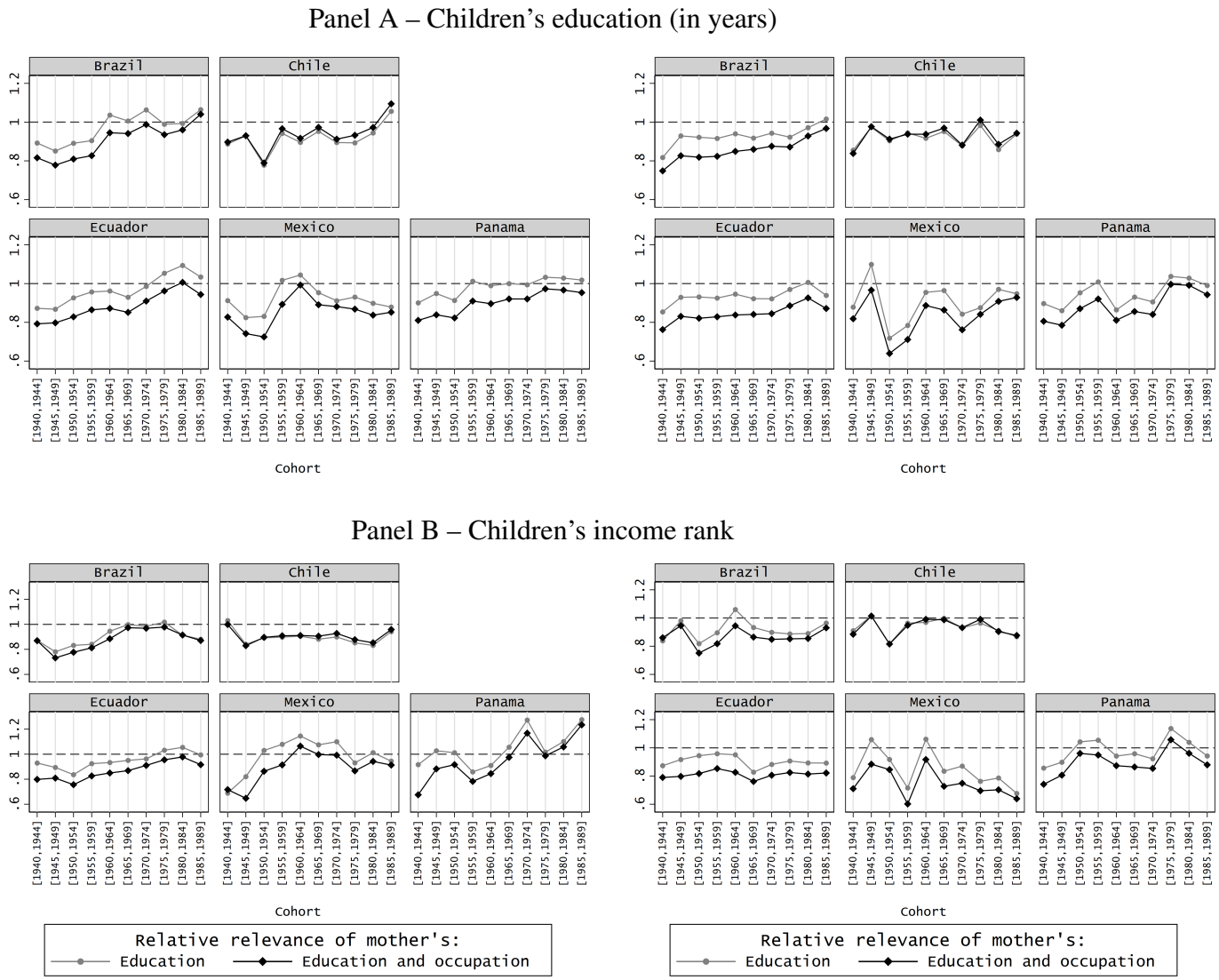
B.2.5 Sons and daughters

Figure A.13: The relevance of mothers' vs. fathers' characteristics in parental socioeconomic background, by country (unweighted average). Daughters (left) and sons (right)



Source: own estimates based on household surveys.
Notes: LW estimated intergenerational relative weight of mothers' characteristics in children's parental background, compared to fathers'. The figures show the ratio of mothers' over fathers' estimated ρ_j from Equation (3). In gray, estimates only comparing both parents' education; in black, estimates also considering both parents' occupational categories.

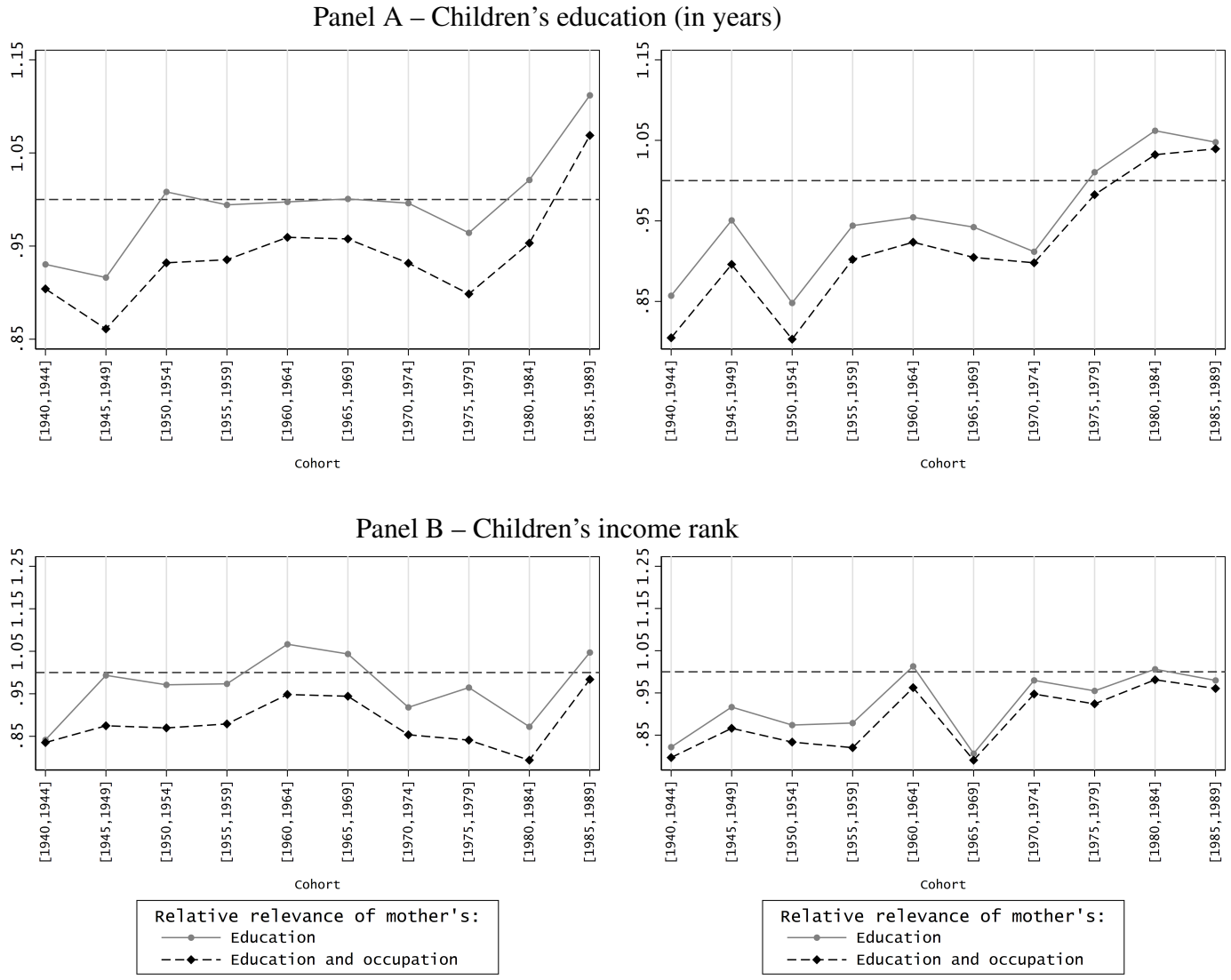
Figure A.14: The relevance of mothers' vs. fathers' characteristics in parental socioeconomic background, by country. Daughters (left) and sons (right)



Source: own estimates based on household surveys.
Notes: LW estimated intergenerational relative weight of mothers' characteristics in children's parental background, compared to fathers'. The figures show the ratio of mothers' over fathers' estimated ρ_j from Equation (3). In gray, estimates only comparing both parents' education; in black, estimates also considering both parents' occupational categories.

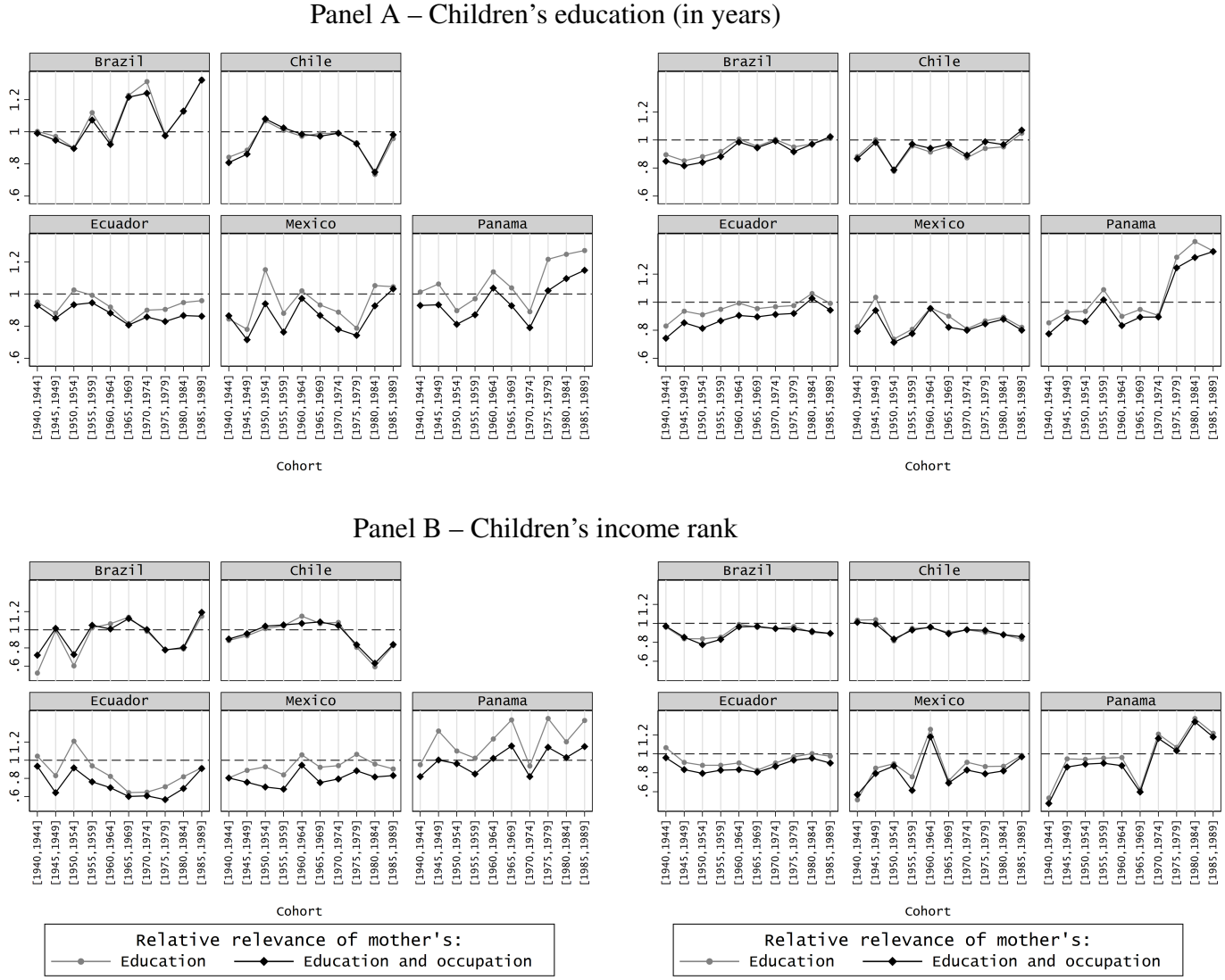
B.2.6 Urban and rural birth areas

Figure A.15: The relevance of mothers' vs. fathers' characteristics in parental socioeconomic background, by country (unweighted average). Rural (left) and urban (right) birth areas



Source: own estimates based on household surveys.
Notes: LW estimated intergenerational relative weight of mothers' characteristics in children's parental background, compared to fathers'. The figures show the ratio of mothers' over fathers' estimated ρ_j from Equation (3). In gray, estimates only comparing both parents' education; in black, estimates also considering both parents' occupational categories.

Figure A.16: The relevance of mothers' vs. fathers' characteristics in parental socioeconomic background, by country. Rural (left) and urban (right) birth areas

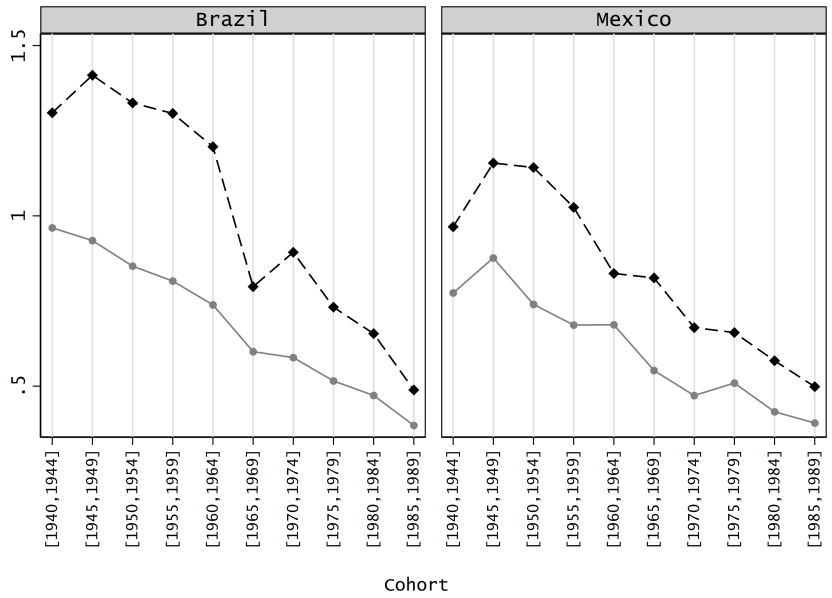


Source: own estimates based on household surveys.
Notes: LW estimated intergenerational relative weight of mothers' characteristics in children's parental background, compared to fathers'. The figures show the ratio of mothers' over fathers' estimated ρ_j from Equation (3). In gray, estimates only comparing both parents' education; in black, estimates also considering both parents' occupational categories.

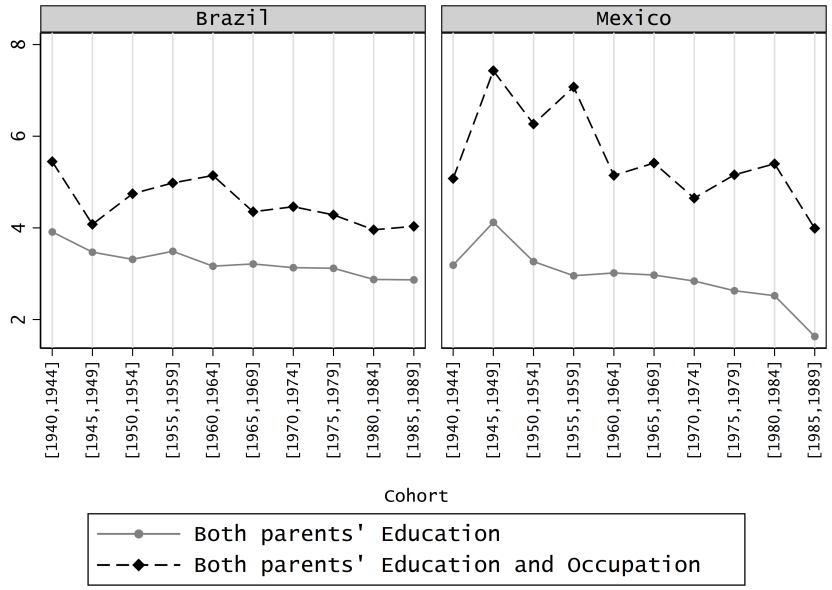
C Broader Occupation definition

Figure A.17: Intergenerational persistence by country. LW estimates using ISCO codification

Panel A – Children's education (in years)



Panel B – Children's income rank

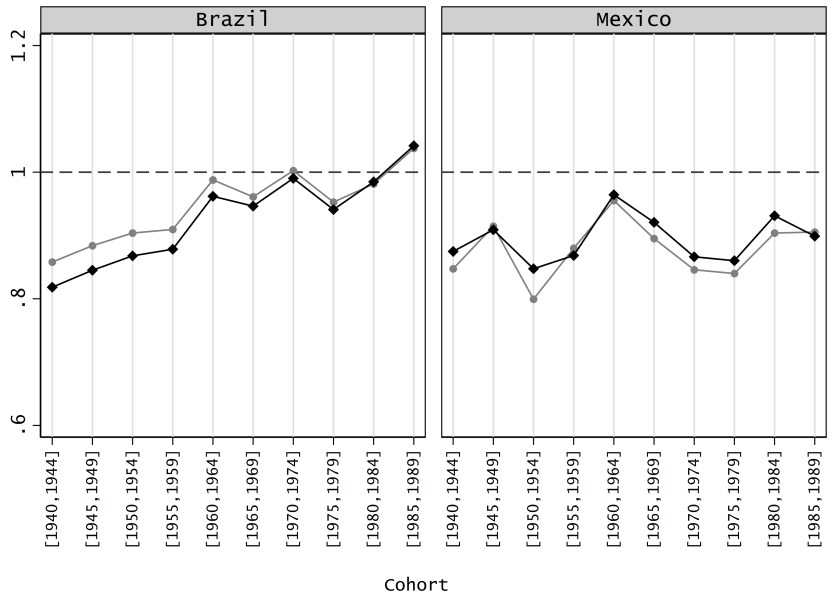


Source: own estimates based on household surveys.

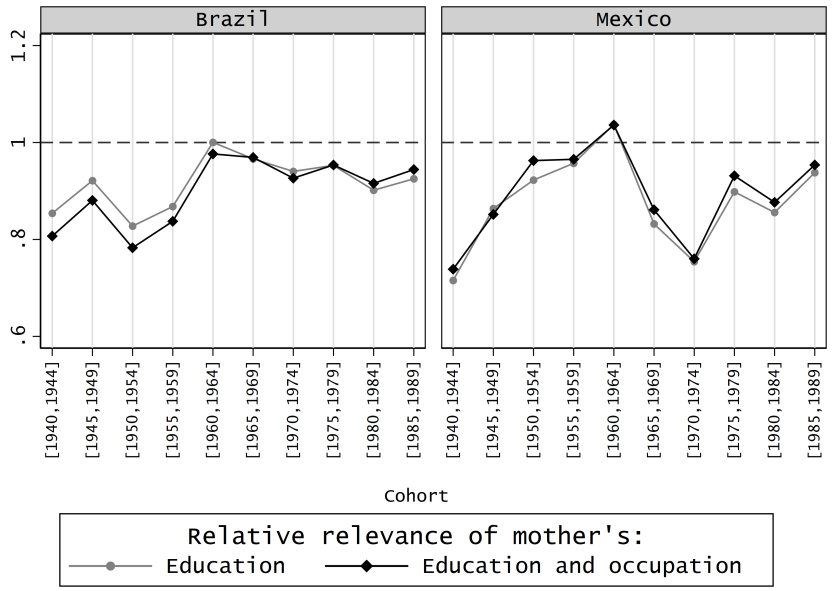
Notes: LW estimated intergenerational persistence coefficients. The figures show the estimated β from Equation (4). In gray, estimates only considering both parents' education as proxies for parental background; in black, estimates also considering both parents' occupational categories. 9 occupational categories were considering following one-digit ISCO (International Standard Classification of Occupations) classification.

Figure A.18: Relevance of mothers' characteristics by country using ISCO codification

Panel A – Children's education (in years)



Panel B – Children's income rank



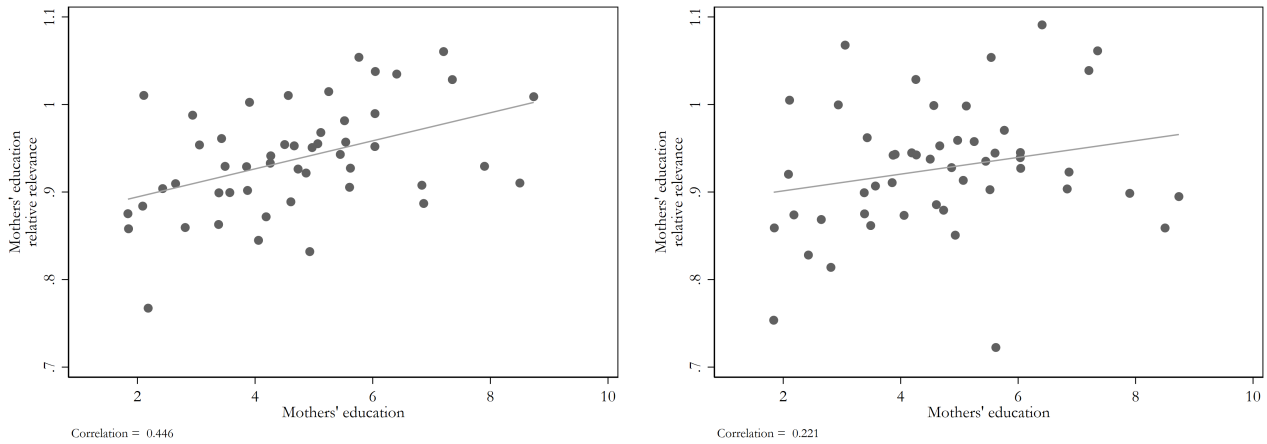
Source: own estimates based on household surveys.

Notes: LW estimated intergenerational relative weight of mothers' characteristics in children's parental background, compared to fathers'. The figures show the ratio of mothers' over fathers' estimated ρ_j from Equation (3). In gray, estimates only comparing both parents' education; in black, estimates also considering both parents' occupational categories. 9 occupational categories were considering following one-digit ISCO (International Standard Classification of Occupations) classification.

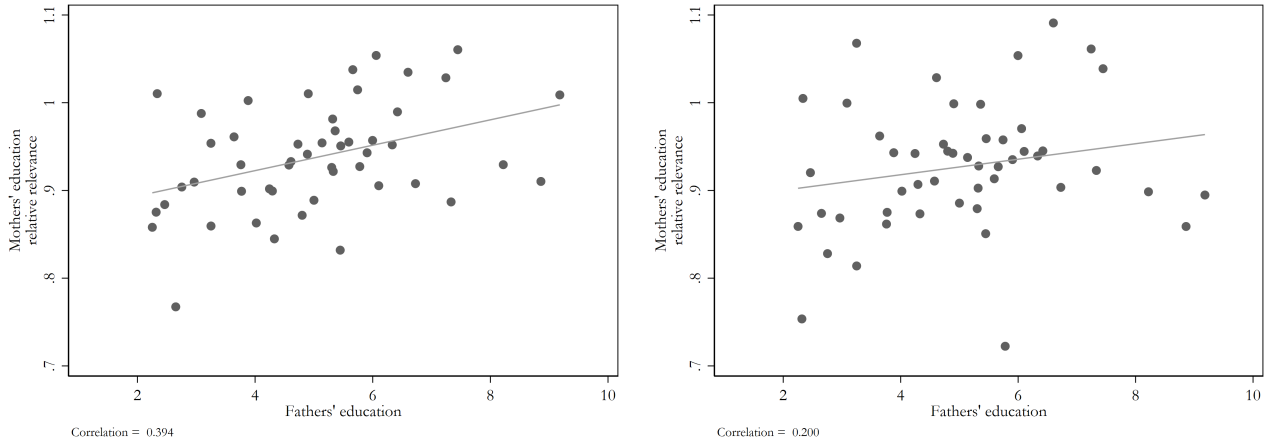
D Mechanisms: complementary results

Figure A.19: Mothers' education relevance and parental education. Children's education (left) and income rank (right)

Panel A – Mothers's education (in years)

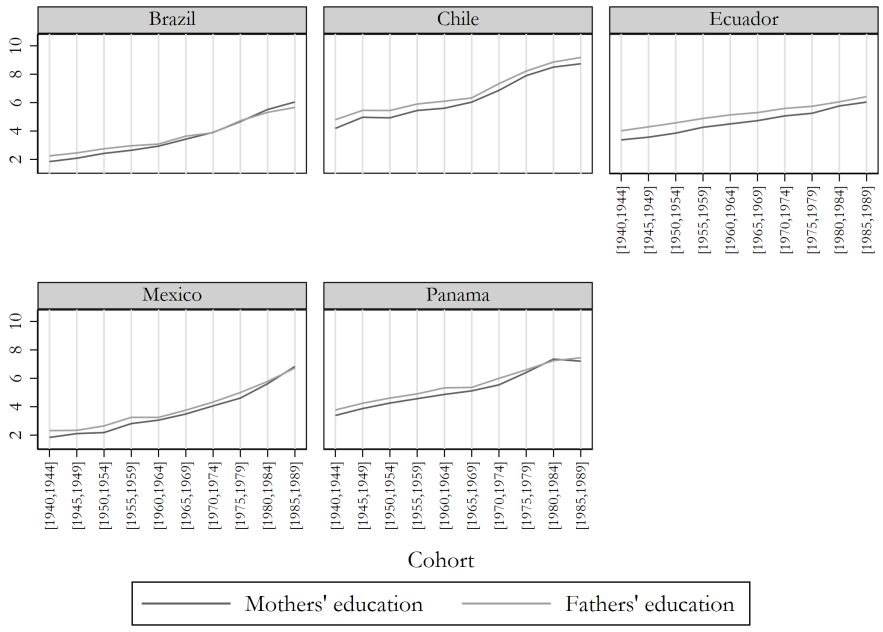


Panel B – Fathers's education (in years)



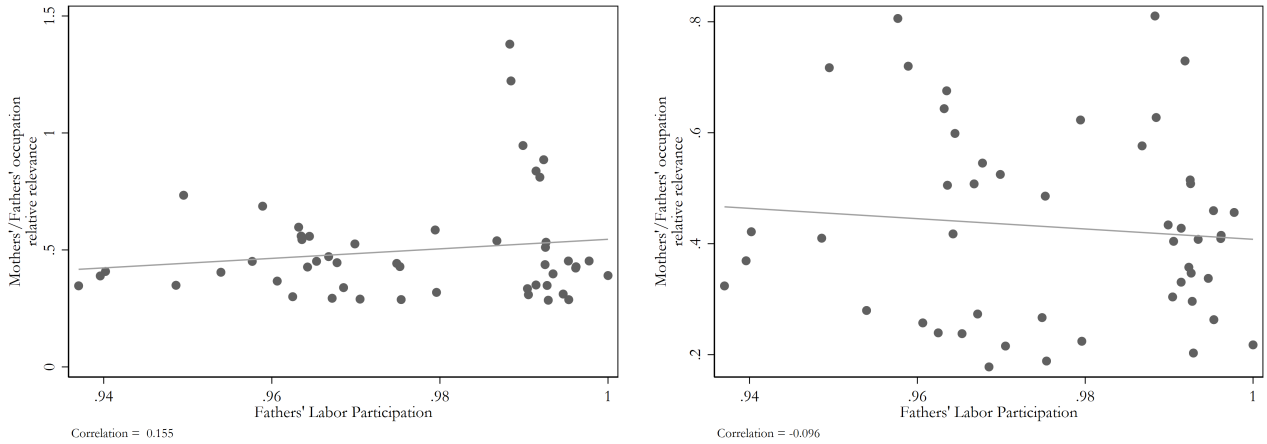
Source: own estimates based on household surveys.
Notes: the variance of parental education was considered as inequality measure. "Mothers' education relative relevance" refers to the percentage difference between the LW-estimated difference between mothers' vs. fathers' education weight.

Figure A.20: Mothers' and fathers' education by children cohort



Source: own estimates based on household surveys.

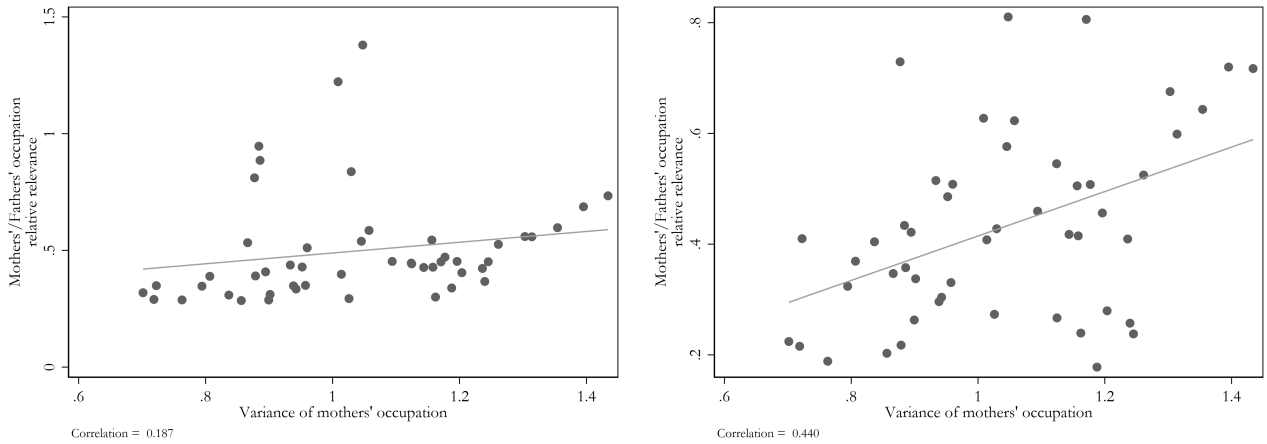
Figure A.21: Mothers' occupation relevance and father labor participation. Children's education (left) and income rank (right)



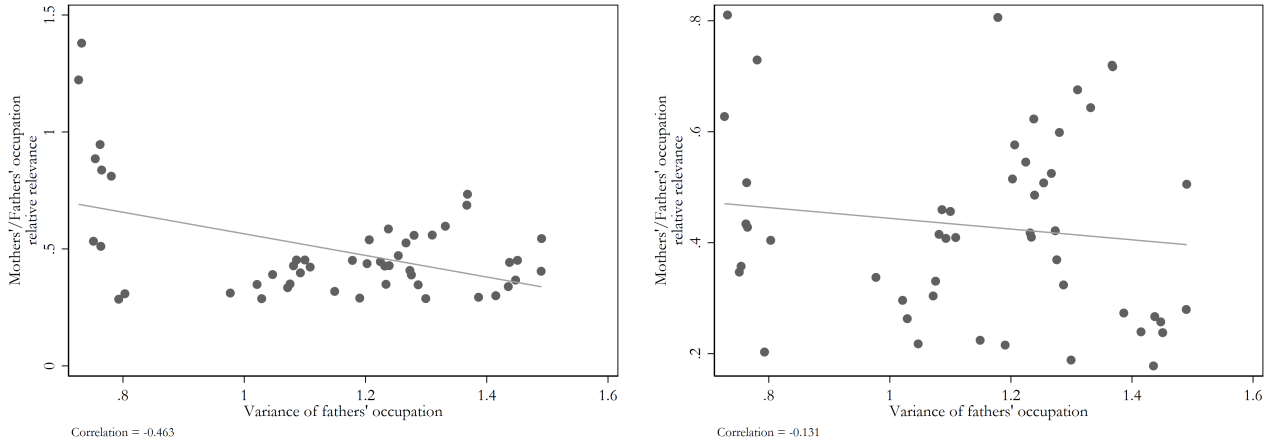
Source: own estimates based on household surveys.
Notes: the variance of parental education was considered as inequality measure. "Mothers' education relative relevance" refers to the percentage difference between the LW-estimated difference between mothers' vs. fathers' education weight.

Figure A.22: Mothers' occupation relevance and parental occupation variance. Children's education (left) and income rank (right)

Panel A – Mothers' occupation variance

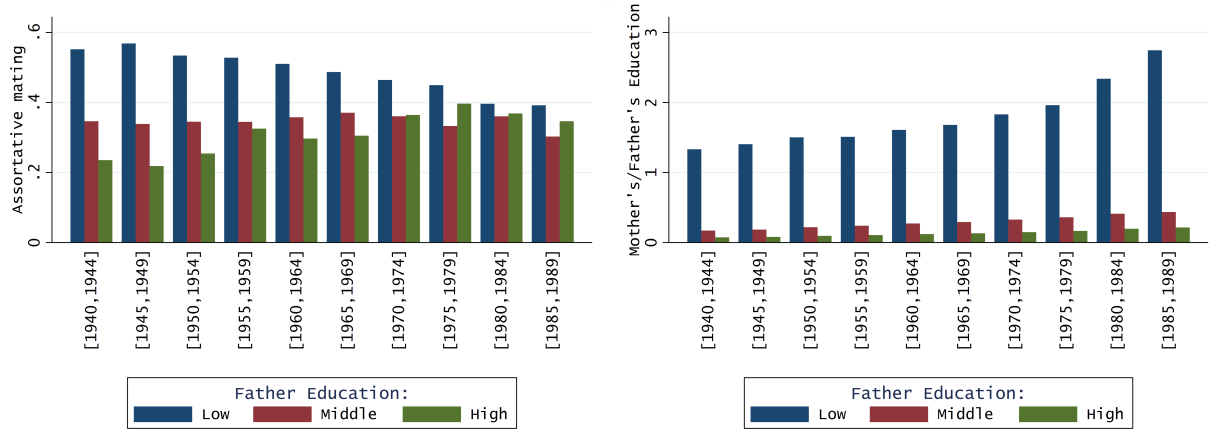


Panel B – Fathers' occupation variance



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

Figure A.23: Assortative mating. Mothers' and fathers' education



Source: own estimates based on household surveys.
Notes: assortative mating is measured based on the Spearman correlation coefficient between mothers' and fathers' years of education. The numbers depicted in the figures correspond to the correlation for different samples according to fathers' years of schooling: low (0-3), middle (4-9), and high (10 or more). The Spearman correlation using the entire sample is 0.71.

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