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Social Mobility in Mexico. What Can We Learn from Its Regional Variation?

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Abstract

We run rank-rank regressions to estimate relative and absolute upward intergenerational social mobility of wealth in Mexico. At the national level, social mobility is low and the intergenerational persistence rate is high: 0.62. In terms of absolute upward mobility, those born in households at the 25th percentile reach, on average, the 35th percentile. At the regional level, the estimations show a clear north-south gradient: the children of poor parents show greater upward mobility with increasing distance from the south, the country's poorest region. Notably, the opportunities to move up the social ladder are fewer and less compact than in Canada or the United States: in Mexico, inequality of opportunity by place of birth is greater. The variables most correlated with social mobility at the regional level seem to show an association between lower social mobility and higher inequality of opportunity in human capital accumulation and access to work and income throughout the life cycle.

Keywords

Social mobility; Inequality; Intergenerational persistence; Regional economics; Mexico

JEL Classification

D63; J62; N36; O54; R10

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Original version

English

Résumé

Nous effectuons des régressions de rang pour estimer la mobilité sociale intergénérationnelle ascendante relative et absolue en termes de richesse au Mexique. Au niveau national, la mobilité sociale est faible et le taux de persistance intergénérationnelle est élevé: 0,62. En termes de mobilité ascendante absolue, les personnes nées dans des ménages au 25^{e} centile atteignent, en moyenne, le 35^{e} centile. Au niveau régional, les estimations montrent un net gradient nord-sud: les enfants de parents pauvres montrent une plus grande mobilité ascendante avec une distance croissante du sud, la région la plus pauvre du pays. Notamment, les possibilités de gravir les échelons sociaux sont moins nombreuses et moins compactes qu'au Canada ou aux États-Unis: au Mexique, l'inégalité des chances selon le lieu de naissance est plus grande. Les variables les plus corrélées à la mobilité sociale au niveau régional semblent montrer une association entre une mobilité sociale plus faible et une plus grande inégalité des chances dans l'accumulation de capital humain et l'accès au travail et aux revenus tout au long du cycle de vie.

Mots-clés

Mobilité sociale, inégalités, persistance intergénérationnelle, économie régionale, Mexique

Introduction

Recent years have seen a growing interest in social mobility, both in academic and political circles. Social mobility is defined as a shift in children's position in the distribution of wealth or income relative to their parents (Chetty et al. 2014a). While there is increasing evidence from economists and sociologists of a dramatic reduction in social mobility during the second part of the twentieth century (Chetty et al. 2017), politicians have found it difficult to properly discuss and solve the problem within current policy frameworks (Social Mobility Commission 2017). There is, therefore, a need to close the gap between evidence and policy. One way to contribute to this objective is through further study of the links between social mobility and public policy using data at the regional level. This is a key approach, as there has been an increase in recent years in the spatial concentration of economic gains within countries.

In this paper, we estimate the geographical variation in social mobility in Mexico and analyze its covariates, with the objective of identifying policy prescriptions for low mobility areas. A major aim is to analyze the relationship between inequality and social mobility. Previous evidence has shown that a high level of inequality has negative consequences for the economy and society. It reduces the duration of economic growth spells (Berg et al. 2012), and it reduces the growth elasticity of poverty reduction: the greater the level of inequality, the larger the economic growth rate required to achieve the same amount of poverty reduction (Ferreira and Ravallion 2011). Inequality has social and psychological consequences as well: increased competition for status and greater class division, anxiety, and stress (Buttrick and Oishi 2017; Layte and Whelan 2014; Layte et al. 2019). Health, social cohesion, and the avoidance of teenage pregnancy also deteriorate with higher levels of inequality (Wilkinson and Pickett 2018).

These relationships are likely to be behind the observation that inequality makes it more difficult to achieve higher social mobility. The so-called Great Gatsby Curve (Corak 2013; Krueger 2012), the cross-country negative relationship between economic inequality and intergenerational social mobility, is one of the recent key findings. Economic literature points to inequality of opportunity as the main mechanism behind the negative correlation between economic inequality and social mobility. In John Roemer's approach (1998), for instance, the high persistence in economic achievement across generations is explained by family circumstances, that is, by conditions beyond individual control, rather than by individual effort. The consequence of a high level of inequality of opportunity is not only a persistent high level of economic inequality, but also a lower rate of economic growth (Aiyar and Ebeke 2019; Marrero and Rodríguez 2013). Therefore, social mobility becomes an important

outcome indicator of both economic success and social justice.

Until recently, economists believed that public policies were better designed when targeted at people rather than at places (Austin et al. 2018). However, with the spatial concentration of economic gains within countries and the associated social problems in lagging regions, there has been a reappraisal of the importance of place-based policies to achieve shared and inclusive growth (Shambaugh and Nunn 2018). This paper is a contribution to the recent literature on the importance of regional differences in economic outcomes for public policy prescriptions.

Mexico is an interesting case study for inter-regional analysis. Changes in the regional pattern of economic growth and income convergence (Davalos et al. 2015; Esquivel 1999) and the variety of employment cycles at the subnational level (Delajara 2013) are associated with its greater openness to international trade in recent decades. These developments have benefited certain regions more than others; while regional economic performance is highly heterogeneous, nationwide average values indicate a poor overall outcome. The per-capita rate of economic growth has been low since the 1980s, while poverty and inequality have remained at high levels. Moreover, preliminary estimates of social mobility at the subnational level indicate a wide range of outcomes, which are roughly correlated with regional differences in economic performance (Delajara and Graña 2018; Orozco-Corona et al. 2019; Vélez-Grajales et al. 2018). All these results seem to suggest that a relationship should be visible between inequality, growth, and opportunities in social mobility measures and indicators of relative prosperity across regions. This type of analysis has been done for developed countries where more data is available, but it is also important to build evidence for less developed countries with higher levels of inequality and lower state capacity across national territories.

In this paper, we estimate comparable measures of absolute and relative intergenerational social mobility for the 32 states of Mexico, an analysis that represents a step forward in the type of social mobility estimated and the discussion of its policy implications.1 We study social mobility in the dimension of wealth from household survey data (Torche 2015b), exploiting two large social mobility datasets to compute wealth indices for men and women, 25-64 years old, and for their parents. The indices capture the variation across households and generations in household assets, home characteristics, appliances, access to services, and years of schooling. The analysis of social mobility relies on the comparison of the percentile rank of the interviewees in the current national distribution of wealth and that of their parents in the distribution of their

1. Previous studies have estimated intergenerational social mobility by gender (Torche 2015a), skin color (Campos-Vazquez and Medina-Cortina 2019), and by region (Vélez-Grajales et al. 2018). In general, social mobility in Mexico is low. There is economic persistence for women, for people with darker skin color, and people born in the southern region. There have been no studies at the state level or attempts to understand cross-state differences.

generation (as in Chetty et al. 2014a,b). We run rank-rank regressions at the national, regional, and state levels in order to estimate the intergenerational persistence of inequality in wealth and the degree of absolute upward mobility in the national distribution of wealth.

At the aggregate national level, we find that social mobility is low. The average rate of intergenerational persistence of inequality in wealth is high: 0.62. In terms of absolute upward mobility, those who were born in households at the 25th percentile of the national distribution of wealth reached, on average, the 35th percentile. In terms of transition probabilities, we find that about 50 percent of individuals remain in either the bottom or top quintiles of the wealth distribution from one generation to the next. Finally, in comparative terms, Mexico shows a substantially lower degree of social mobility than advanced countries like Canada, the United States, or other OECD countries.

In addition, social mobility measures vary considerably across the states of Mexico. Absolute upward social mobility is larger in the richer and more equal north than in the poorer and more unequal south. While those in the south who grow up in poor households (those in the 25th percentile of the national distribution of wealth in the previous generation) remain as poor as their parents, those from equally poor households in the central and northern regions move up several percentile ranks in the national distribution of wealth from one generation to the next. Intergenerational persistence of wealth is also higher in the south than in the north. The case of Chiapas, the poorest state in the country, is especially noteworthy: the rank of adults in the current national distribution of wealth is lower than their parents' rank in the distribution of the previous generation (the 25th percentile).

Comparisons of our social mobility estimates at the subnational level for Mexico with those found for Canada (Connolly et al. 2019) and the United States (Chetty et al. 2014a,b) yield a much lower mobility measure in Mexico. First, no Canadian province and only the U.S. states of Maryland and Mississippi have an intergenerational persistence of inequality as high as that estimated for Mexico. Second, close to 60 percent of the population of Mexico lives in states with an upward social mobility rate that is lower than the lowest level estimated for a U.S. state. Third, the degree of heterogeneity in social mobility estimates is larger in Mexico than in Canada or the U.S. In these more developed countries, a person's probability of moving up the social ladder is determined to a much lesser degree by where they are born.

Our analysis also aims to uncover key socioeconomic covariates of social mobility across the states of Mexico. We believe this finding will help improve the policy prescriptions for low mobility regions. We find that key covariates of the intergenerational persistence of inequality in wealth are overcrowding of households, inequality in such overcrowding, and

teenage employment. For absolute upward mobility, the most relevant variables are overcrowding, annual average growth of per capita GDP from 1990 to 2016, and teenage employment. Overcrowding could be related to early parental investment in human capital (Heckman and Mosso 2014): parental inputs are crucial to developing cognitive and social skills in children. Similarly, the teenage employment variable reflects the opportunities offered to youth to remain in school or to have a quality first job. Finally, it is difficult to promote mobility if there is low economic growth. Chiapas, for example, presents a negative average growth rate of per capita GDP from 1990 to 2016; its absolute social mobility is negative.

The paper is organized as follows. In Section 1, we discuss the Mexican context of a low rate of economic growth, high levels of poverty and inequality, and low social mobility. The main characteristics of the data used in our analysis, and their sources, are presented in Section 2. The methodology followed to estimate the degree of intergenerational social mobility is discussed in Section 3. We present and discuss the econometric results in Section 4, where we also comment on the results of our robustness checks, and compare our intergenerational social mobility estimates for the Mexican states with those of Canada and the United States. Section 5 relates our social mobility findings to the economic and social conditions of the Mexican states in 1990. In Section 6, we offer some policy prescriptions derived from these findings and in Section 7 some final remarks.

1. The Mexican context

Mexico is an upper middle-income country with high levels of poverty and income inequality, inequality of opportunity and low levels of social mobility. As a result of the 1980s economic crisis, it implemented several pro-market reforms in the 1980s and 1990s, including trade liberalization (access to GATT in 1985 and NAFTA in 1994), privatization of state enterprises and the banking system, and inflation controls. However, it has not been able to grow like other economies, especially those in Asia like China or South Korea, or even like Chile. Mexico's average annual per capita GDP growth rate during the period 1990-2017 was 1.5 percent. However, the rate was much lower in the last 12 years of that period: only 0.8 percent. During the same period, China grew at rates exceeding 10 percent, Chile and South Korea grew at rates between 5 and 6 percent, and the world average was 2.2 percent. Mexico had weak economic growth in this period, and has not been able to substantially reduce poverty or inequality.

Figure 1 shows the main trends in these variables in the Mexican economy, constructed from data from the World Bank (2019), Coneval (2019), and Campos-Vazquez and Lustig (2017). Per capita GDP has been unstable, affected largely by macroeconomic crises in 1995, 2002, and 2009. Overall growth has been positive but not inclusive. Extreme poverty (measured by income, with a poverty line defined as the minimum needed to acquire a basket of food; Coneval 2019) has not substantially decreased in the whole period. The proportion of persons living in extreme poverty was just above 20 percent in 1992, while in 2016 it was just below that. From 2004 to 2016 there was a small increase in the percentage of people living in poverty.[2] In recent years, inequality has been high, with a Gini coefficient close to 0.5.[3] Although it declined in the period 1990-2005 (consistent with previous findings; see Campos-Vazquez and Lustig 2017), it has remained unchanged since 2005. Both measures show a decline in inequality from the mid-1990s to 2010 of approximately 10 percent (from 0.55 to 0.5). Inequality of oppportunity, that refers to all conditions beyond individual control, rather than by individual effort, explains at least half of total inequality observed in Mexico (Vélez-Grajales et al. 2018).

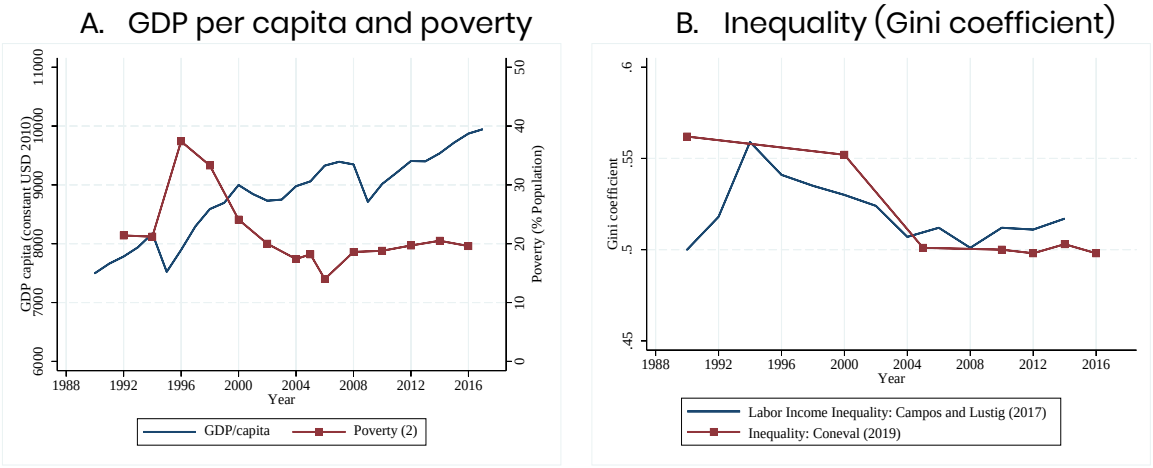
Intergenerational social mobility results are strongly correlated to those of poverty and inequality. Persistence is high in the bottom and top quintile (Vélez-Grajales et al. 2013). Approximately 50 percent of those born in the bottom quintile remain there in adulthood. For those born in the top quintile, persistence is slightly higher. Our own results below (Table 1) show a persistence of 49.7 percent at the bottom and 54 percent at the top. Upward mobility, the percentage of individuals born in the bottom quintile that move to the top quintile in

2 Total poverty (using not only a basket of food but also expenses for clothing and transportation) follows the same pattern as extreme poverty.

3 It is difficult to construct a harmonized series of inequality as the survey has changed over time. We use two different measures, one from Campos-Vazquez and Lustig (2017) that refers to labor income inequality, and one from Coneval (2019) that uses census and household survey data on total income.

adulthood, is less than 5 percent and low in comparison with other countries (Orozco et al. 2019; Vélez-Grajales et al. 2013). Our own results show an upward mobility rate of 2.6 percent (Table 1, first row and last column).

Figure 1: Per capita GDP, poverty, and inequality in Mexico, 1990-2017



Notes: GDP per capita from World Bank (2019), using the USD 2010 constant series. Poverty from Coneval (2019) income poverty measures. Coneval is the government institute responsible for official poverty measurements in Mexico. The numbers reported here are for food poverty (pobreza alimentaria), which uses a poverty line based on minimum food expenses). Inequality is calculated using the Gini coefficient from labor income in Campos-Vazquez and Lustig (2017) and total income in Coneval (2019). Coneval uses census and household survey data.

Finally, regional economic differences are large and persistent: the north is richer and the south is poorer, a situation that has not changed since at least 1895 (Campos-Vazquez and Velez-Grajales 2012; Campos-Vazquez et al. 2017). In 2010, extreme poverty was close to 50 percent in Chiapas, 38 percent in Guerrero, and 35 percent in Oaxaca. In Mexico City and the northern state of Nuevo Leon, two of the richest states in the country, extreme poverty was less than 10 percent. Moreover, in 2018, GDP per person was close to $42,000 USD in Mexico City and $30,000 USD in Nuevo Leon, while in Chiapas it was $6,200 USD (all in PPP). In recent years there has been economic divergence, as the poorest states in the south have had lower economic growth than the richest states (southern states like Campeche, Chiapas, and Tabasco, for example, had lower GDP per person in 2018 than in 1990).

2. Data

In this study, we use data from two nationwide surveys explicitly designed for the analysis of intergenerational social mobility. The first one is the 2016 Module of Intergenerational Social

Mobility (Módulo de Movilidad Social Intergeneracional, MMSI) of the Mexican National Institute of Statistics and Geography (Instituto Nacional de Estadística y Geografía, INEGI). The second one is the 2017 ESRU Social Mobility Survey (ESRU-EMOVI) of the Centro de Estudios Espinosa Yglesias (CEEY). Both surveys are representative of the Mexican resident adult population (aged 25-64), with sample sizes of 32,481 and 17,665 households, respectively. We combine these two datasets to have ample sample size for the analysis of social mobility in each of the 32 states of Mexico.

Both surveys include socioeconomic and demographic data on interviewees aged 25-64 and the corresponding data for their parents' household when the interviewees were 14 years old. This data allows for a comparison of their origin and destination, that is, their educational, occupational, and socioeconomic achievement relative to that of their parents, within the social and economic structure. In general, the surveys' questionnaires capture information in four areas: education, occupation, socioeconomic level (wealth), and perception of social mobility. They also include reference questions about sociodemographic characteristics of the informant, their father, mother, and/or main provider.

We estimate the degree of intergenerational social mobility for the dimension of wealth, computing wealth indices separately for each survey. The wealth level is imputed from the data on household assets, home characteristics, appliances and access to services, and years of schooling, using a principal component analysis (Torche 2015a,b). These indices are estimated for both the interviewees and their parents (to capture wealth in their household of origin). We then calculate the percentile rank (0-100) of the interviewee and their parents in the distribution of wealth of the corresponding generation (Chetty et al. 2014a,b). Each interviewee is assigned to their state of residence at age 14. The two datasets are then combined using the percentile rank in the distribution of wealth of the interviewees. This procedure produces more than 41,000 child-parent pairs of percentile ranks at the national level.

Comparisons between the two surveys, as well as descriptive statistics, are included in the supplementary materials. In particular, we compare summary statistics of household assets and access to goods and services in each survey. We also repeat this comparison for the combined surveys and the intercensal survey of 2015, for selected Mexican states (those with the largest number of observations in the combined dataset). Socioeconomic characteristics are similar in the combined and intercensal surveys. This suggests consistency across datasets and greater confidence that the results are representative at the subnational level.

3. Methods

We calculate several measures of intergenerational social mobility. The first is absolute upward mobility, which refers to the expected percentile rank in the distribution of wealth of adults whose parents were in the 25th percentile in the distribution of wealth of the previous generation. The second is the intergenerational persistence of inequality, and its complement, relative social mobility, which refer to the difference in expected rank between individuals with high and low parental wealth. The rest of the statistics refer to points in the intergenerational transition matrix: we report the degree of persistence in the bottom and top quintiles across generations, as well as the percentage starting in the bottom quintile and reaching the top quintile. In total, we calculate five statistics that depict the panorama of social mobility in Mexico.

To calculate absolute upward mobility and intergenerational persistence, we estimate rank-rank regressions for each state in Mexico. That is, we estimate the relationship between the rank of adults in the current national distribution of wealth and the rank of their parents in the national distribution of wealth of the previous generation. Following Chetty et al. (2014a,b), for region (or state) c and family i, we define the linear relation $R_{ic} = \alpha_c + \beta_c P_{ic} + \varepsilon_{ic}$, where R_{ic} is the rank of children and P_{ic} is the rank of their parents (when the adult interviewed was 14 years old). Thus, the slope and the intercept of the regression vary by region or state.[4]

In this context, the degree of intergenerational persistence is the difference between the expected rank (in the current national distribution of wealth) of the children born to parents ranked at the top and bottom of the previous generation's distribution, namely, $\overline{R_{100,c}} - \overline{R_{0,c}} = 100\beta_c$. Intergenerational persistence is then the slope β_c. Relative mobility is simply one minus the slope parameter β_c. Absolute upward mobility is the expected rank in the current wealth distribution of those children whose parents were on average below the median in the previous generation's distribution. This is equivalent to estimating the expected rank in the present wealth distribution of children with parents in the 25th percentile in the previous generation's distribution, or $\overline{R_{25,c}} = \alpha_c + \beta_c \times 25$.

The rest of the statistics are calculated using a transition matrix. We calculate the percentage of individuals with parents in the bottom and top quintiles of the national wealth distribution

4 Rank-rank regressions have several advantages over conventional log-log regressions; see Solon (1992), Dahl and Deleire (2008), and Chetty et al. (2014a). They allow us to obtain estimates of intergenerational absolute upward social mobility that are comparable across geographic areas. It also makes it possible to determine the source of the advantage in mobility of one geographical area over another: whether it is an improvement among the children of poor households or a decline among the children of wealthy households. The economic significance of the estimates, however, relies on the assumption that the values of the variable in a given area—in our case, the wealth index, which is used to rank children and their parents—have little effect on the national distribution of the values of that variable (Chetty et al. 2014b, p. 1562). This limitation applies mainly when we study social mobility across large regions of the country, but it is less limiting when we estimate social mobility at the state level.

who remain in those same quintiles during adulthood. We also compute the percentage of individuals moving from the bottom to the top quintile from one generation to the next.[5]

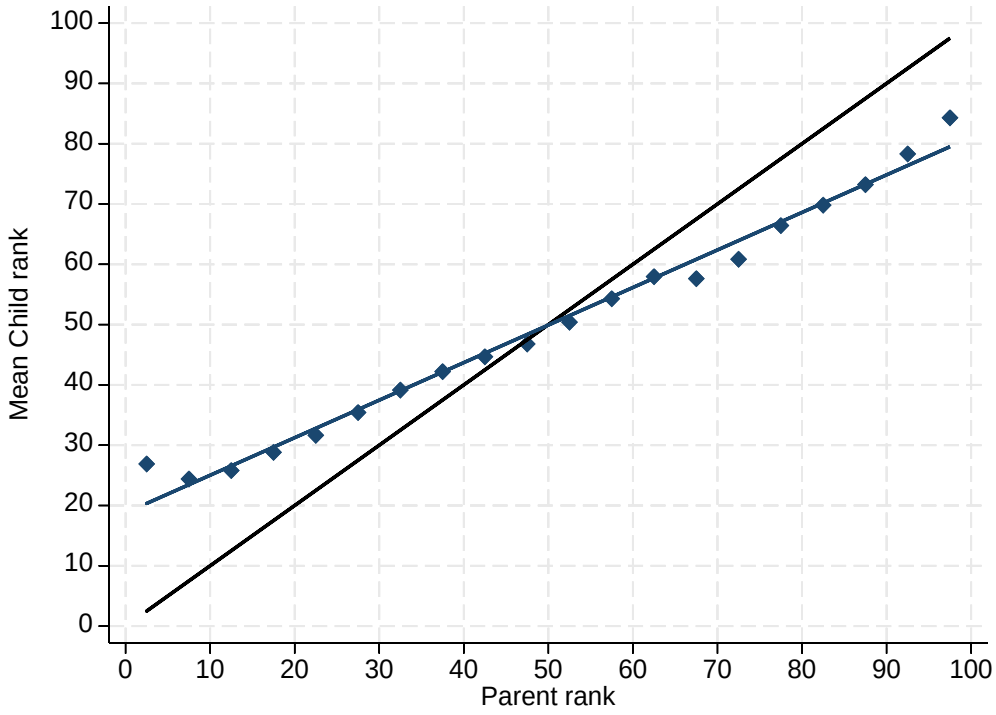
4. Results

4.1. Social Mobility in Mexico

The relationship between adult children's wealth rank and their parental wealth rank is shown in Figure 2. As in Chetty et al. (2014b), the relationship is linear. The figure yields clear evidence of intergenerational socioeconomic mobility at the national level in Mexico, but as we show below, the degree of mobility is small. Wealth is highly correlated across generations (the intergenerational persistence of inequality is 0.62), and the chance that a person born at the 25th percentile can rise to a much higher socioeconomic status in adulthood is small (the absolute upward mobility indicator is 35). Persistence at the bottom and top of the distribution is close to 50 percent (49.7 percent and 54.0 percent, respectively; Table 1, row 1). The chances of moving from the first to the top quintile are very low, only 2.6 percent. The results confirm the view that wealth mobility in Mexican society is low.

5 It is important to recall here that the wealth index, over which the percentile ranks are computed, includes schooling as one of its components. Given that educational achievement in Mexico varies significantly within and across generations with age and sex, in some of the specifications of the model we control for these variables to obtain estimates of the social mobility indicators that are free from demographic bias. The results from these specifications, shown in the Supplementary Materials, indicate that social mobility estimates in which we do not control for age and sex are upper bounds, while the ranking of states according to their degree of mobility remains mostly unchanged. In other words, the main estimates are conservative, as controlling for age and gender shows even less social mobility.

Figure 2. Average wealth rank of children by parental wealth rank



Notes: Authors' calculations using the MMSI 2016 and ESRU-EMOVI 2017 (41,303 observations). The x-axis is the parental wealth rank and the y-axis the average current adult wealth rank. The 45-degree line is included to show the hypothetical scenario of zero intergenerational mobility. Each dot is the average wealth rank of current adults given a certain parental wealth rank. The intergenerational persistence estimate is 0.62 (0.006).

4.2. Main Results at the State Level

A main goal of this paper is to estimate social mobility in Mexico at the regional level and analyze its variation. The main results are shown in Table 1 (figures similar to Figure 2 for each state are provided in the Supplementary Materials). There is a large heterogeneity in the degree of social mobility among states. Northern states consistently display higher average wealth ranks for children of poor parents than those found at the national level. Persistence in the bottom quintile is also low in these states, and the chances of moving from the bottom to top quintile are the highest in the country. Relatively large social mobility estimates are also found in the northwest and in many states of the north-central region. High degrees of social mobility are less common in the central states (with the exception of Mexico City), and not observed at all in the south, which is the poorest region in the country.

Table 1. Social Mobility in Mexico

	No. of observations	Intergenerational persistence (β_c)		Absolute upward mobility ($\overline{R_{25,c}} = \alpha_c + \beta_c \times 25$)		Q1-Q1	Q5-Q5	Upward mobility (Q1-Q5)
Mexico	41,303	0.62	(0.006)	34.6	(0.228)	49.7	54.0	2.6
A. North	6,412	0.51	(0.010)	42.2	(0.555)	28.9	52.5	4.9
Baja California	733	0.46	(0.039)	43.9	(1.918)	18.1	51.6	11.7
Chihuahua	1,149	0.52	(0.022)	45.6	(1.124)	27.2	59.8	4.6
Coahuila	1,233	0.46	(0.028)	42.7	(1.316)	30.1	48.0	0.8
Nuevo León	1,113	0.49	(0.029)	46.0	(1.472)	27.9	56.6	7.1
Sonora	1,189	0.54	(0.026)	35.8	(1.234)	36.2	44.6	4.6
Tamaulipas	995	0.51	(0.028)	39.6	(1.246)	28.3	49.0	4.8
B. Northwest	5,936	0.45	(0.011)	40.9	(0.501)	27.1	45.0	4.5
Baja California Sur	783	0.42	(0.037)	44.8	(1.579)	41.7	47.8	4.6
Durango	1,241	0.47	(0.029)	40.6	(1.115)	24.0	49.7	5.1
Nayarit	1,086	0.52	(0.034)	35.9	(1.175)	42.6	44.7	6.1
Sinaloa	1,522	0.42	(0.025)	41.4	(0.907)	25.2	40.0	2.9
Zacatecas	1,304	0.44	(0.027)	42.6	(0.963)	21.2	49.9	5.4
C. North Central	6,630	0.50	(0.009)	38.6	(0.493)	32.3	48.2	3.2
Aguascalientes	1,154	0.51	(0.032)	40.2	(1.338)	13.6	53.7	6.5
Colima	1,043	0.54	(0.037)	35.5	(1.405)	40.2	56.6	3.4
Jalisco	1,651	0.43	(0.023)	41.7	(0.986)	21.0	46.0	3.6
Michoacán	1,474	0.48	(0.024)	37.9	(0.834)	28.3	43.6	2.8
San Luis Potosí	1,308	0.58	(0.023)	35.8	(0.857)	48.1	56.7	2.9

D. Central	11,704	0.64	(0.008)	36.6	(0.512)	44.3	60.6	3.1
Estado de México	1,760	0.67	(0.027)	33.8	(1.117)	52.4	60.4	2.5
Guanajuato	1,349	0.58	(0.027)	35.7	(1.083)	41.4	48.1	0.8
Hidalgo	1,010	0.52	(0.042)	39.7	(1.532)	65.6	48.7	1.6
Querétaro	826	0.64	(0.032)	37.0	(1.413)	44.9	52.3	3.7
Mexico City	3,821	0.56	(0.023)	43.5	(1.244)	13.4	66.8	4.3
Morelos	899	0.59	(0.031)	35.2	(1.283)	51.1	53.5	2.6
Puebla	1,174	0.61	(0.029)	34.0	(1.119)	49.3	57.6	3.0
Tlaxcala	865	0.46	(0.053)	38.0	(1.826)	31.7	47.3	4.0
E. South	10,621	0.63	(0.008)	28.2	(0.319)	64.4	43.5	1.5
Campeche	1,149	0.50	(0.037)	36.2	(0.933)	41.7	45.5	1.5
Chiapas	1,587	0.62	(0.029)	21.3	(0.559)	77.5	28.6	1.3
Guerrero	1,441	0.60	(0.029)	27.4	(0.739)	65.6	48.7	1.6
Oaxaca	1,276	0.58	(0.035)	28.9	(0.821)	60.9	51.7	2.3
Quintana Roo	638	0.57	(0.035)	33.5	(1.230)	51.1	38.9	3.2
Tabasco	1,428	0.54	(0.025)	27.6	(0.683)	54.9	35.4	0.9
Veracruz	1,723	0.66	(0.024)	30.1	(0.731)	65.1	44.9	1.1
Yucatán	1,379	0.58	(0.025)	32.5	(0.732)	52.1	45.6	1.3

Notes: Authors' calculations using the MMSI 2016 and ESRU-EMOVI 2017 (41,303 observations).

A clear regional pattern of social mobility emerges from the regression results. Intergenerational absolute upward mobility (the r_{25} statistic) is larger in the northern regions than in the southern ones (Table 1). In the south, the expected rank in the current national distribution of wealth of those brought up in poor households (those in the 25th percentile of the national distribution of wealth in the previous generation) is just 28.2. This means that on average those who grow up in poor households in the south can expect to stay almost as poor as their parents were (in relative terms). The estimate at the national level is 34.6 (first row), so the prospect for the poor in the south is well below that which applies for the average Mexican. Of particular note is the poorest state in the country, Chiapas (where the Zapatistas

rebelled in 1994). Absolute upward mobility is 21.3, well below the cutoff of 25, meaning that in relative terms, individuals born in Chiapas at the 25th percentile in the national distribution are poorer today than their parents were. Other poor states like Guerrero and Oaxaca also show low rates of upward mobility.[6]

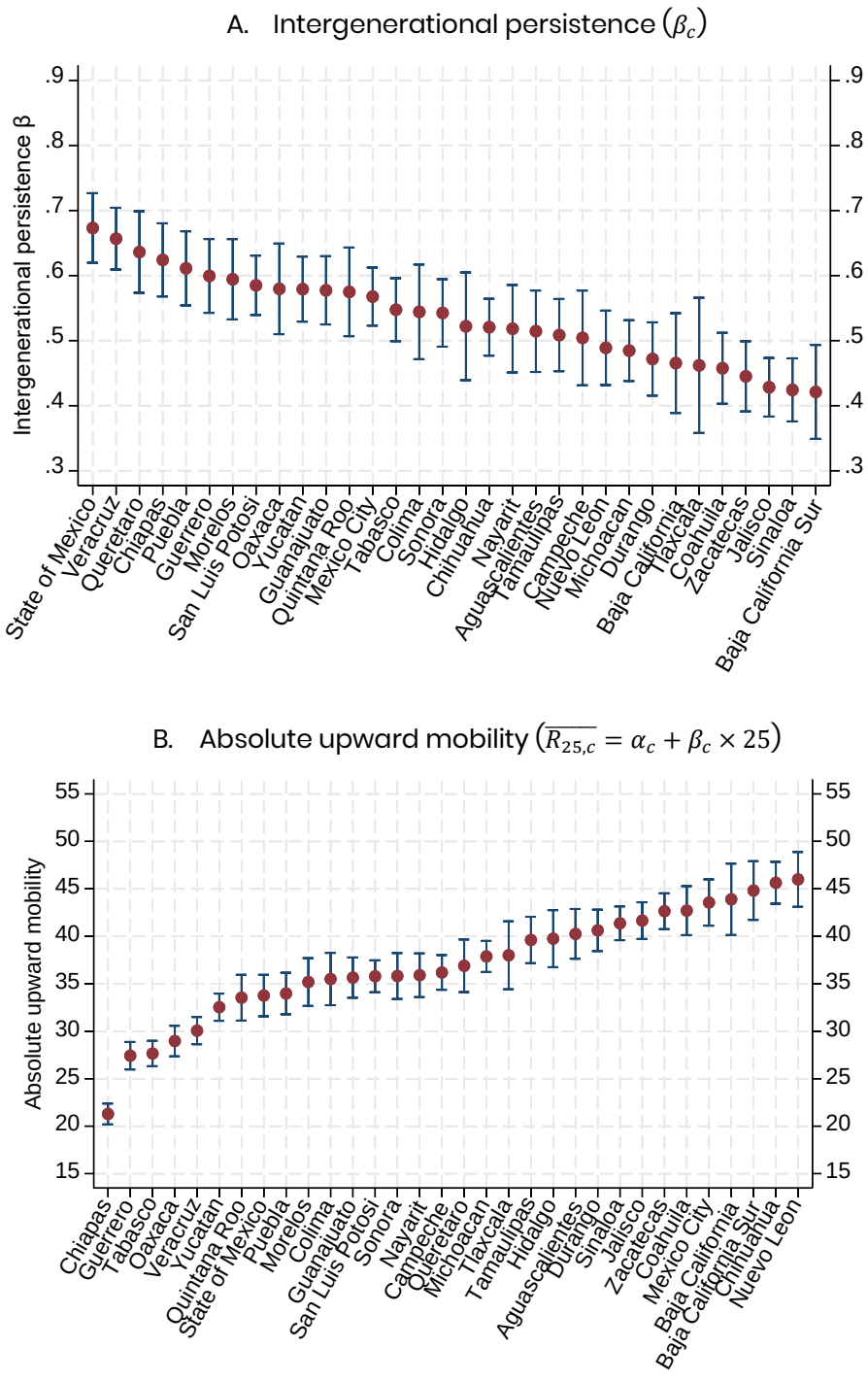
Social mobility improves directly with the latitude of the region of origin. Absolute upward mobility is 36.6 in the central region; 38.6 in the north-central region, 40.9 in the northwest, and 42.2 in the north. Relative intergenerational social mobility, i.e., the percentage reduction from one generation to the next in the gap between the ranks of the rich and poor in the national distribution of wealth [the $100 - (r_{100} - r_0)$ statistic], is also higher in the north than in the south: 55 in the northwest, 49 and 50.4 in the north and north-central regions, and only 36.5 and 37.4 in the central and southern regions.

The estimates at the level of individual states allow for further consideration of the different experiences with social mobility across geographical units in Mexico. Figure 3 is a graphical representation of the results presented in Table 1. The ten states with the highest intergenerational persistence of inequality in wealth (equal to or greater than 0.5; panel A) are in the south (Veracruz, Chiapas, Guerrero, Oaxaca, and Yucatán) and the central region (Estado de México, Querétaro, Puebla, and Morelos). At the other extreme, the ten states with the lowest intergenerational persistence of inequality are in the northwest (Baja California Sur, Sinaloa, Zacatecas, and Durango: four of the five states in this region), the north (Coahuila, Baja California, and Nuevo León), and the north-central region (Jalisco and Michoacán).

With the exception of Nayarit, Sonora, and Tamaulipas, all the states in the north and northwest have absolute upward mobility indicators greater than 40 (Figure 3, panel B). Together with Mexico City, the northern states (Nuevo León, Chihuahua, Baja California Sur, and Baja California) have the highest upward mobility rates in the country. However, when we exclude Mexico City, the states of the central region have lower than average absolute upward mobility, with little variation: from a minimum of 33.8 (Estado de México) to a maximum of 39.7 (Hidalgo). In the south, the degree of absolute upward mobility is also quite similar across states; values vary between 27.4 (Guerrero) and 33.5 (Quintana Roo), with two outliers: Chiapas (21.3), at the lower end of the scale, and Campeche (36.2), at the higher end. Except for Campeche, social mobility in all of the southern states is lower than in any state of the central region. That is, seven out of the eight southern states have the lowest values of absolute upward mobility in the country.

6 In Section 6, we discuss the covariates of social mobility. However, this particular result calls for further comment. From 1990 to 2016, the southern states did not see an increase in their per capita GDP. In fact, Campeche, Chiapas, and Tabasco have a lower per capita GDP today than in 1990 (economic activity in Campeche and Tabasco relies mostly on oil production, which has been declining in recent years). The rest of the country, however, did experience growth in per capita GDP. It is thus likely that individuals in the rest of the country benefited from growth, while those in the south did not: their relative standard of living worsened.

Figure 3. Summary of main results: Intergenerational persistence and absolute upward mobility



Notes: Authors' calculations using the MMSI 2016 and ESRU-EMOVI 2017 (41,303 observations). 95 percent confidence intervals are shown.

4.3. Robustness Checks

The relationship between children's and parents' wealth ranks may change due to non-linearities or outliers. We thus implement three robustness checks. First, we estimate a median instead of a linear regression, and find that the regional gradient of social mobility remains unchanged (see Supplementary Materials). The intergenerational persistence of inequality in wealth is lowest (i.e., relative social mobility is highest) in the northwest region (0.54), presents intermediate values in the north-central and northern regions (0.62), and is highest in the south and central regions (0.73 and 0.76). These values are larger than those estimated with the linear regression (0.45, 0.50, 0.51, 0.63, and 0.64, respectively), which means that the relationship between children's wealth and parental wealth is stronger in the median ranks of the parents' wealth distribution.

Second, we run separate OLS regressions for subsamples of the data. We define two subsamples according to the wealth rank of parents: above and below the 50th percentile of the parents' wealth distribution. We find that the intergenerational persistence of inequality is greater for child-parent pairs if parents are above the 50th percentile. However, the north-south gradient of social mobility estimates remains unchanged. The estimates of absolute upward mobility are also robust to these controls. The ranking of regions according to this measure of mobility does not change if we consider only observations for parents below the 50th percentile (see Supplementary Materials).

Given that 17.6 percent of the interviewees do not reside in the state where they lived when they were 14 years old, in a third robustness exercise we checked whether the ranking of states according to the degree of social mobility changed if observations for these individuals were excluded from the analysis. As expected, for Mexico as a whole, social mobility estimates are slightly lower if these migrants are not considered (see Supplementary Materials). Intergenerational persistence of inequality increases from 0.62 to 0.65, and absolute upward mobility decreases from 34.6 to 32.7. The rankings of states by their degree of social mobility, however, barely changes. In particular, southern states predominate among those with the lowest mobility estimates, and northern and northwestern states among those with the highest mobility.

4.4. International Comparison

How do these social mobility estimates for Mexico, its regions, and its states compare to those for other countries and regions? A full comparison is hard to obtain because available estimates for different countries and regions were obtained from datasets that differ in sources, coverage, and quality. Our estimates for Mexico come from surveys in which data were obtained through a complete and careful interview with the adult child, reporting on

their current situation and, retrospectively, on the situation of their parents' households when they were 14 years old. Estimates for other countries rely on administrative sources, like linked tax data for parents and their adult children. Our estimates refer to social mobility in a measure of wealth rather than income.[7] Our wealth index is computed from the interviewee's report of their own as well as their parental households' appliances, services, and years of education; we believe the retrospective nature of the data is less critical in this case than it would be in the case of income. Finally, our survey data are representative of the population aged 25-64 at the national and regional levels, which ensures a high level of confidence. We consider, however, that our estimates are conservative and indicative of a lower bound in intergenerational persistence.[8]

A comparison of our estimates for intergenerational persistence at the bottom of the distribution (Q1-Q1)[9] and of upward intergenerational mobility (Q1-Q5)[10] with those for France, Italy, the United Kingdom, and Sweden clearly demonstrates the lower social mobility in the Mexican economy. The Q1-Q1 and Q1-Q5 shares are 30 percent and 11 percent in those European countries (Alesina et al. 2018), while in Mexico the figures are 50 percent and 2.6 percent, respectively. In the southern states of Mexico, mobility is even lower: 65 percent and 1.5 percent.

Intergenerational social mobility is also much higher in Canada and the United States than in Mexico. In this case we compare our estimates with those of Connolly et al. (2019) and Chetty et al. (2014b), calculating weighted averages at the state or province level from their county estimates using as weights the population in each county. These authors' definitions and estimates for intergenerational persistence and absolute upward mobility are similar to those used in the current study. The results are shown in Figures 4 and 5.

Figure 4 shows maps of intergenerational persistence estimates (panel A) and upward social mobility estimates (panel B). No Canadian province has levels of intergenerational persistence as high as those observed in Mexico. For the United States, the highest value for intergenerational persistence (in the range 0.4-0.45) is found in Maryland and Mississippi; these are the values observed in the highest-mobility regions of Mexico (Figure 4, panel A).

7 The ESRU-EMOVI survey collects information on household income for the current generation. Interviewees are asked to choose an income range. Analysis of these data shows that the midpoint of the income range is directly associated with the wealth index of the household. Thus, the average rank of the households in the distribution of income increases one to one with their rank in the distribution of wealth, as shown in the Supplementary Materials.

8 Household surveys include some measurement error: recall errors, the richest households are not included in the sample, etc. Tax data usually do not suffer from these errors. Hence, it is expected a priori that studies of social mobility using survey data yield higher values for mobility estimates than equivalent tax data studies.

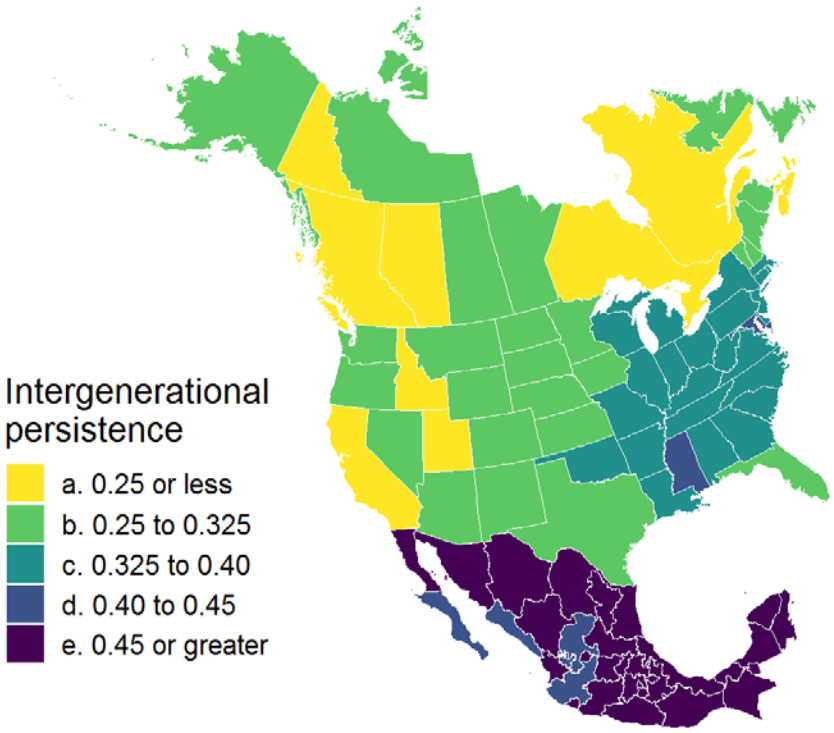
9 The share of individuals born to parents in the first quintile who are currently living in the first quintile.

10 The share of individuals born to parents in the first quintile who are currently living in the top quintile.

Figure 5 shows cumulative distribution functions of the estimates using population at the state or province level as weights. The figure is useful in depicting the variability in the estimates within and across countries. Each point represents the percentage of people living in states with an intergenerational elasticity or upward mobility estimate depicted on the x-axis. As seen in panel A, there seems to be more relative social mobility (lower persistence of inequality) in Canada than in the United States. Both countries, however, are far ahead of Mexico. Only a very small percentage of the population in Mexico enjoys rates of relative social mobility that reach the lower bounds of those estimated for the United States. Moreover, the slope of the cumulative functions is much steeper in Canada and the U.S. than in Mexico, signaling a greater degree of variation or inequality in social mobility estimates in the latter country.

Figure 4. Map of social mobility: Canada, Mexico, and the United States

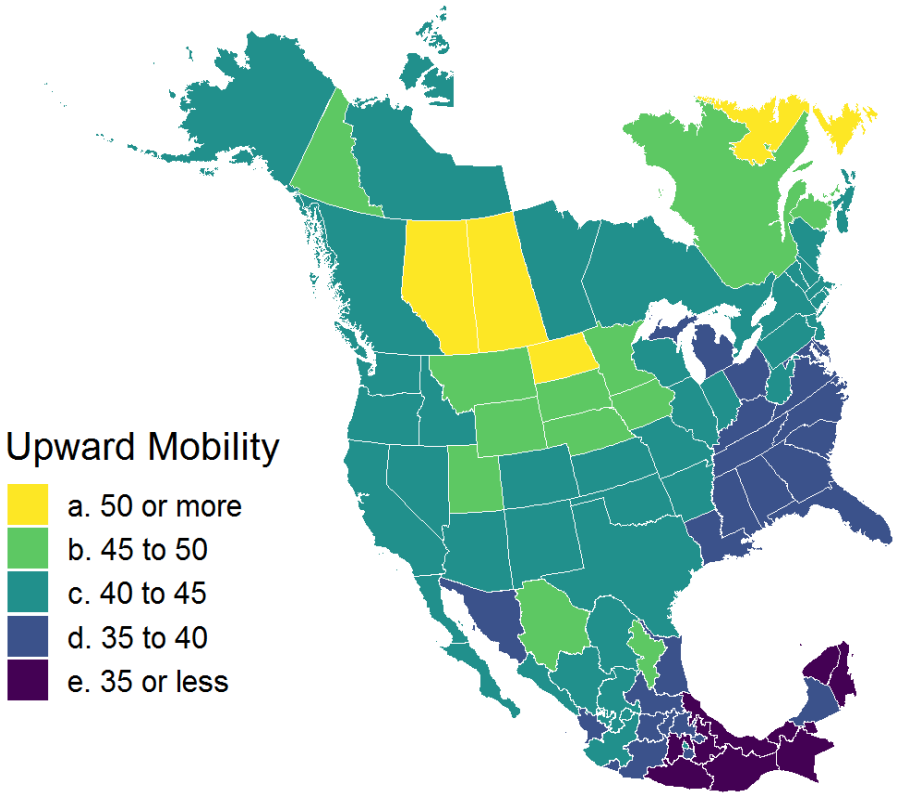
A. Intergenerational persistence (β_c)



Notes: Authors' calculations. Canadian data obtained from Connolly et al. (2019); U.S. data from Chetty et al. (2014b). Both provide estimates at the county level. Data was aggregated at the state level using population at the county level as a weighting factor.

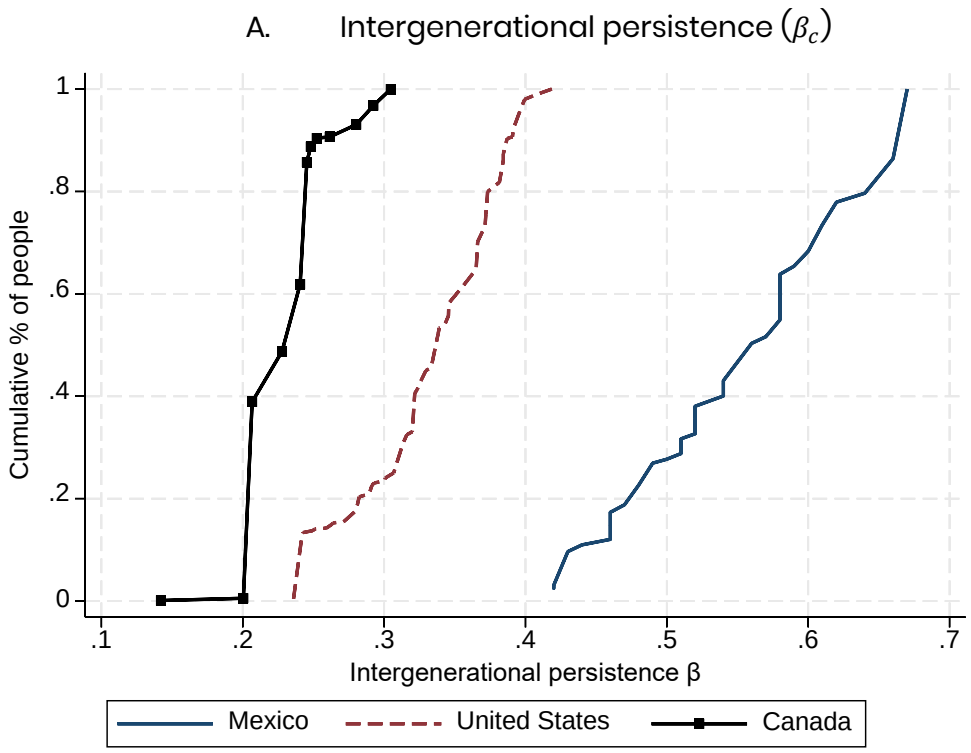
Figure 4. Map of social mobility: Canada, Mexico, and the United States

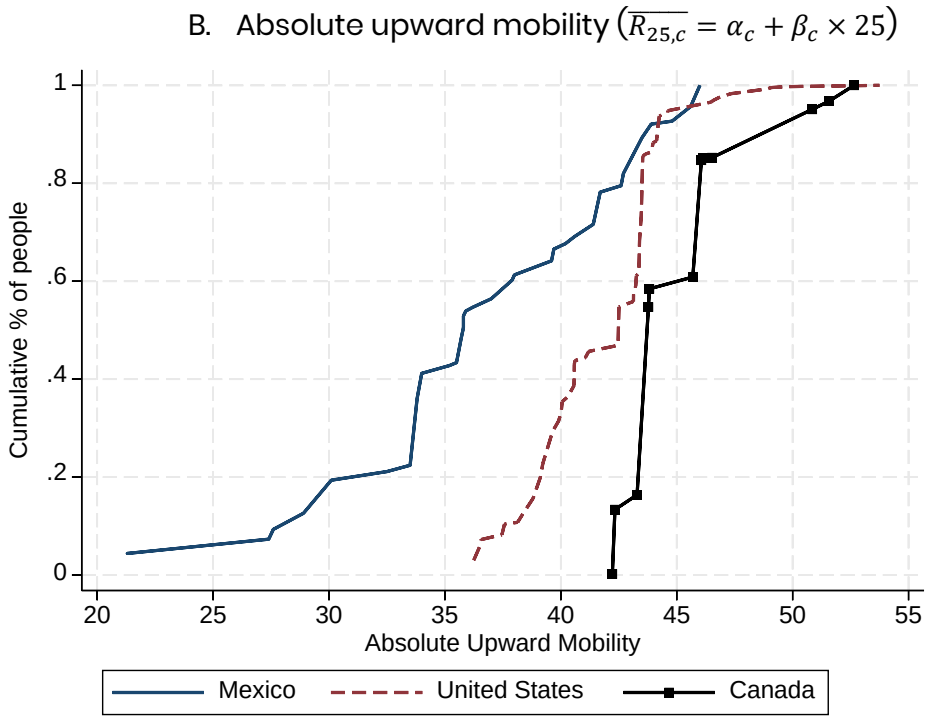
B. Absolute upward mobility $\left(\overline{R_{25,c}} = \alpha_c + \beta_c \times 25\right)$



Notes: Authors' calculations. Canadian data obtained from Connolly et al. (2019); U.S. data from Chetty et al. (2014b). Both provide estimates at the county level. Data was aggregated at the state level using population at the county level as a weighting factor.

Figure 5. Cumulative distribution functions of social mobility: Canada, Mexico, and the United States





Notes: Authors' calculations. Canadian data obtained from Connolly et al. (2019); U.S. data from Chetty et al. (2014b). Both provide estimates at the county level. Data was aggregated at the state level using population at the county level as a weighting factor. Y-axis is the cumulative proportion of people with at least the value on the x-axis.

Differences between the three North American countries are less dramatic in estimates of intergenerational absolute upward social mobility, but Mexico still lags behind the U.S. and Canada (Figure 4, panel B). No Canadian province has an absolute upward mobility value below 40, which places social mobility in Canada on a par with countries like Sweden (Heidrich 2017). In the U.S., about 30 percent of the population lives in states with absolute upward mobility values below 40, mainly in the southeastern part of the country. Even in southern Italy, a relatively poor region with low social mobility by European standards, absolute upward mobility is 36-39 (Acciari et al. 2019). In Mexico the population living in states with upward mobility values below 35 exceeds 40 percent. There is also greater heterogeneity than in Canada or the U.S. The states of Mexico can be broadly classified into three groups: those in the north and northwest, with relatively high rates of upward social mobility; those in the central region, with rates similar to those in the southeastern U.S.; and those in the south, with the lowest rates in North America. Close to 60 percent of the population in Mexico lives in areas with an upward mobility rate below the lowest rate in the U.S., and 80 percent below the lowest rate in Canada (Figure 5, panel B).

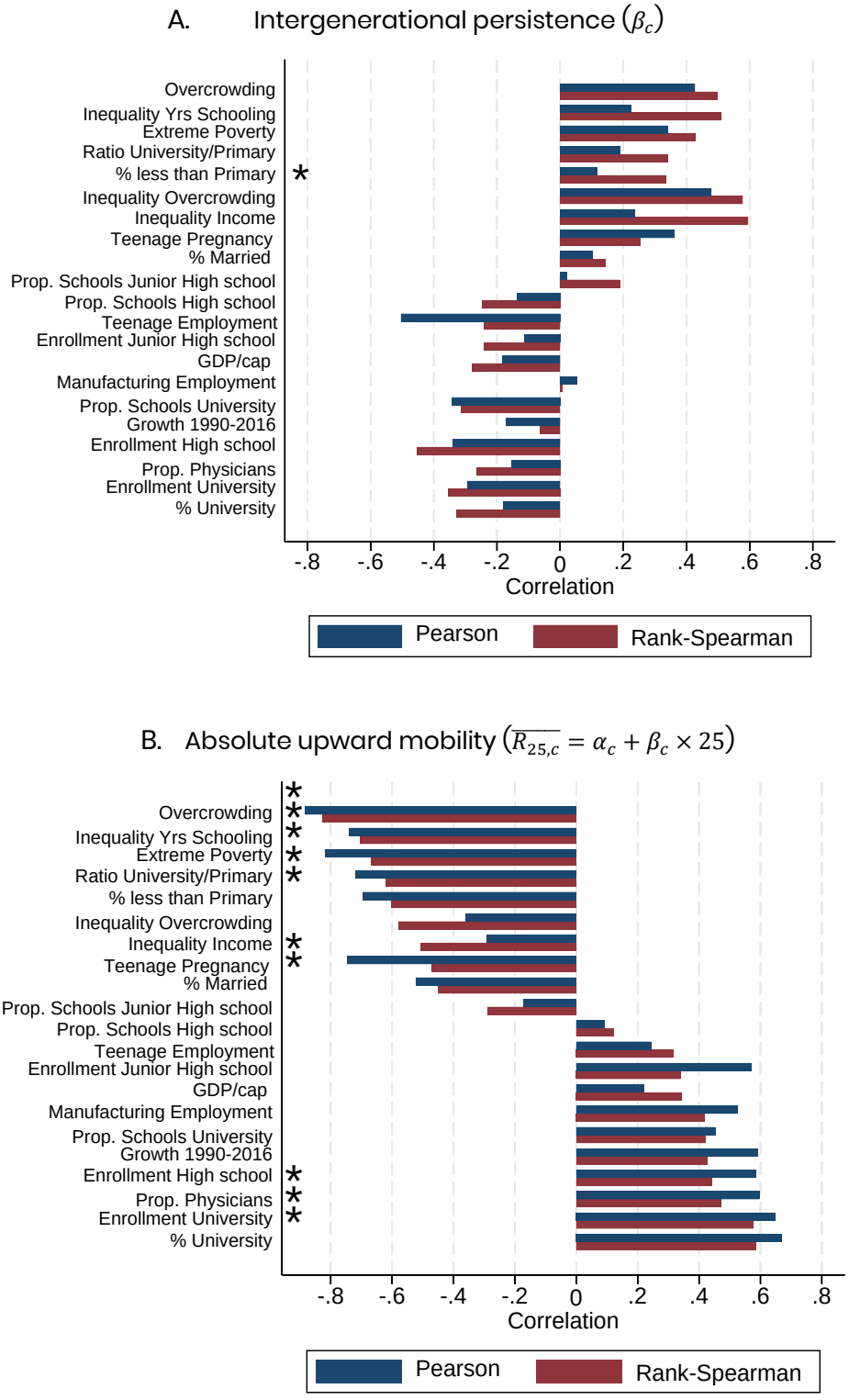
5. Correlations with Social Mobility

In the previous section, we have shown that the degree of social mobility varies significantly across Mexico. Social mobility is likely to be higher in environments with lower inequality of opportunity. In this section, we analyze the correlation between intergenerational social mobility and socioeconomic development across states. The following variables are from the 1990 population census micro-data: overcrowding (number of rooms / household size) and its Gini inequality; Gini inequality in years of schooling for individuals at least 25 years old; percentage of population with less than primary education; percentage of population with university education; ratio of the latter two variables (for individuals at least 25 years old); female teenage pregnancy (ages 15-19); teenage employment (ages 15-19); manufacturing employment (ages 20-65); and percent married (at least 25 years old). The Gini income inequality and extreme poverty in 1990 are obtained from Coneval (2019) and the number of physicians per 100,000 people in 1990 from Frenk (1995). We calculate per capita GDP and average annual growth in per capita GDP from 1990 to 2016 using data from the National Institute of Statistics and Geography (INEGI), and school enrollment (per 1,000 population) and number of schools (per 1,000 population) at the junior high school, high school, and university levels using 1990 data from the Secretary of Education.

First, we calculate the Pearson and Spearman (rank) correlations between each variable and our measure of social mobility. The results are shown in Figure 6. Correlations marked with an asterisk are statistically significant at the 1 percent level (full results are provided in the Supplementary Materials). In general, socioeconomic measures are more correlated with absolute upward mobility than with the intergenerational persistence estimate. The only variable significantly correlated with intergenerational persistence is overcrowding inequality. However, ten variables have statistically significant correlations with absolute upward mobility: overcrowding, inequality in years of schooling, extreme poverty, the ratio of individuals with university to those with less than primary school, the percentage of individuals with less than primary school, teenage pregnancy, the percentage of married individuals, the number of physicians per 100,000 population, university enrollment, and the proportion of individuals with a university degree.

We are interested in the subset of variables that can best explain the variation in the rates of mobility. For this purpose, we estimate Lasso regressions using as dependent variables the mobility measures and as independent variables the set of socioeconomic characteristics from Figure 6. We manipulate the penalization parameter in the regressions to obtain only three variables. For intergenerational persistence, these were overcrowding, inequality in overcrowding, and teenage employment; for absolute upward mobility, they were overcrowding, annual average growth in per capita GDP, and teenage employment. Once again, the fit is better for the case of absolute upward mobility.

Figure 6. Correlations of socioeconomic measures with intergenerational persistence and absolute upward mobility



*Notes: Authors' calculations, sorted by the Rank-Spearman correlation coefficient for absolute upward mobility. The Pearson correlation is weighted with population in 1990. * Denotes statistical significance at the 1 percent level in both the Pearson and Spearman correlation estimates. Variables obtained at the state level from 1990 population census micro-data are: overcrowding (number of rooms / household size) and its Gini inequality, Gini inequality in years of schooling for individuals at least 25 years old), percentage of population with less than primary education, percentage of population with university education, ratio of the latter two variables (for individuals at least 25 years old), female teenage pregnancy (ages 15-19), teenage employment (ages 15-19), manufacturing employment (ages 20-65), and percent married (at least 25 years old). The variables obtained from Coneval (2019) are: Gini income inequality and extreme poverty in 1990. The number of physicians per 100,000 people in 1990 is obtained from Frenk (1995). We calculate per capita GDP, average annual growth in per capita GDP from 1990 to 2016 using data from the National Institute of Statistics and Geography (INEGI), and school enrollment (per 1,000 population) and number of schools (per 1,000 population) at the junior high school, high school, and university levels using 1990 data from the Secretary of Education.*

The relationship between the mobility measures and a combination of each set of three variables (obtained from the prediction of the first component in a principal component analysis) is shown in Figure 7. In both cases, the correlation obtained is the expected one. A higher value of overcrowding and its inequality and a lower value in teenage employment are related to a higher value in the prediction of the first component and a higher intergenerational persistence. On the other hand, lower overcrowding, lower teenage employment, and higher annual growth in per capita GDP correlate with absolute upward mobility.[11]

In both of the social mobility models, the key variable among the three selected is overcrowding: it captures most of the increase in the adjusted R2. This could be related to what parents can invest in children, in terms of time and money (Heckman and Mosso 2014). For both persistence and absolute upward mobility there is a similar possibility: overcrowding suggests a lack of time and money in a household. These factors are related to limited options for investing in children through education, soft skills, and health, all of which are crucial for upward social mobility. In the case of persistence, overcrowding inequality increases the effort required to close the existing social mobility gap. Teenage employment also has an effect on mobility: without investment in children, there is a higher probability of teenage employment, reflecting a lack of opportunities for socioeconomic achievement that affects both persistence and absolute upward mobility. Finally, it has to be noted that without economic growth no absolute upward mobility is possible. Our results show the difficulty for southern states, those with lower economic growth rates, in catching up with the rest in social mobility. Given the dynamics of regional economic growth in Mexico since the mid-1980s, we should take into account the effect of globalization through trade. If the trade model in Mexico is the

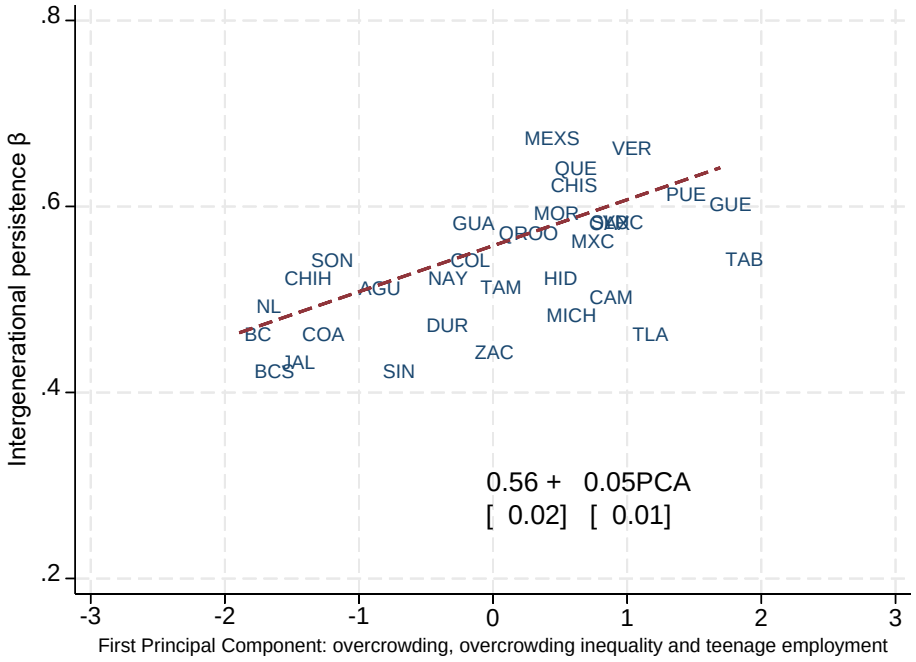
11 In the supplementary materials we show that the "Great Gatsby Curve," as described in Corak (2013) and Chetty et al. (2014a), is also found in Mexico. There is a clear negative correlation between relative and absolute upward mobility with poverty and income inequality in 1990. The correlation is stronger for absolute upward social mobility than for relative mobility. In this case, the degree of upward social mobility of children who grew up in poor households was lower in poorer states.

key factor that left the southern states behind, the policy implications for social mobility involve much more than human capital investment.[12]

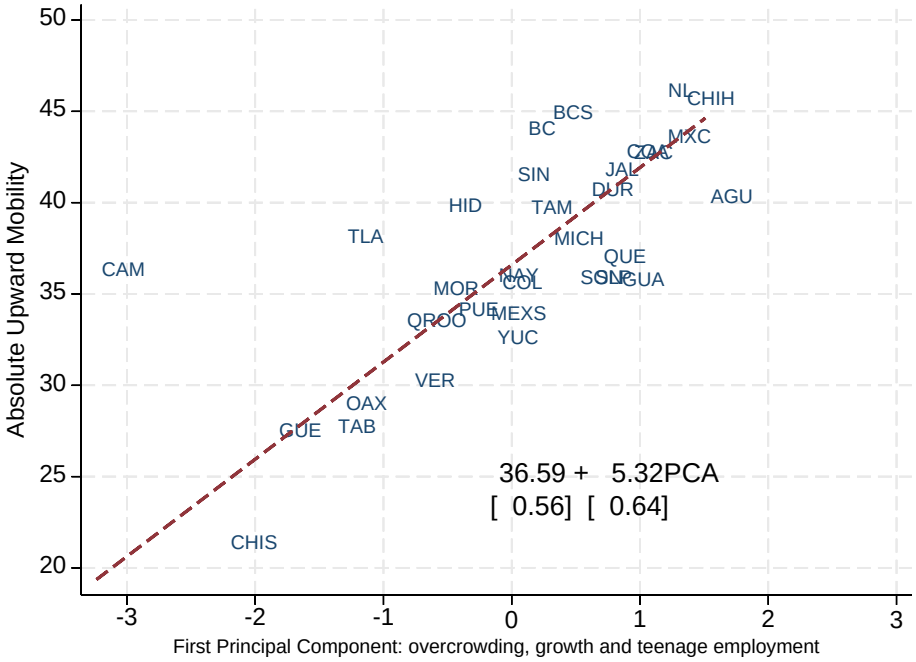
12 Autor et al. (2013) discuss the effects of a trade globalization model as a reason why some regions were left behind. See Atkin (2016) for the impact of trade on schooling in Mexico and Dell et al. (2019) for the impact on violence in Mexico of trade competition with China.

Figure 7. Key variables related to mobility.

A. Intergenerational persistence (β_c)



B. Absolute upward mobility ($\overline{R_{25,c}} = \alpha_c + \beta_c \times 25$)



Notes: Authors' calculations. First, we calculate a Lasso model and modify the penalization parameter until only three variables are included in the model. Variables related to intergenerational persistence: overcrowding, inequality of overcrowding, and teenage employment. Variables related to absolute upward mobility: overcrowding, average

annual growth 1990-2016, and teenage employment. A principal component analysis is used to predict the first component. All estimations are weighted by population in 1990. Adjusted R2 in the first model is 0.37; in the second model it is 0.73.

6. Policy Implications

As we have shown, Mexico is not a country with high rates of social mobility. These findings are consistent with cross-country studies, such as those of Narayan et al. (2018) and OECD (2010). As we have noted, our results show a significant regional heterogeneity among the 32 Mexican states. Notably, the southern region shows the highest levels of poverty, the lowest economic growth, and the lowest social mobility in Mexico. The correlation of our social mobility measures with a set of socioeconomic indicators suggests a number of policy implications and the need to adopt a life cycle approach.

An explicit target for inclusive growth within and among regions is thus required. The state needs to invest heavily in poorer regions, especially in the south, to compensate for differences in starting points. There is a need for various types of policies to achieve such development. In particular, the effect on social mobility of overcrowding and teenage employment suggests specific problems that must be tackled.

First, given the importance for social mobility of parental investment in children (Heckman and Mosso 2014), Mexico should invest in early childhood interventions, family planning policies, housing, and social infrastructure. As OECD (2010) has shown, early intervention is more effective than measures at any other stage of the life cycle. However, if opportunities are strongly related to conditions of socioeconomic origin, and therefore unequally distributed from an early age, there are no prospects for social mobility. As a result, early education policies that assure high quality, equally distributed education are necessary to increase mobility. But the effectiveness of such interventions also depends on earlier stages. Narayan et al. (2018) note that prenatal deprivation reduces the effectiveness of postnatal intervention, so it is necessary to begin intervention even before children are born.

Second, it is essential to close the regional gap in social infrastructure and quality of schooling. The correlation between social mobility and teenage employment points to the importance of schooling opportunities for this age group and improving the quality of and access to junior high and high school. Generating good quality jobs, especially for young people, is also key. Finally, Orozco et al. (2019) argue that policy to increase social mobility must tackle the structural problem that limits formal labor. In this respect, it is necessary to take the observed regional heterogeneity into account in formulating labor policy.

7. Conclusions

Economic gains at the national level may differ at the regional level: recent years have seen a spatial concentration of such gains within countries. This phenomenon has sparked a literature on social mobility patterns within countries and what can be done to obtain more inclusive development. In this paper, we analyze the case of Mexico and its 32 states. Mexico is an interesting case study for a number of reasons: it has low, heterogeneous economic growth, a high level of regionally concentrated poverty, the highest level of economic inequality among OECD countries, and a very high intergenerational persistence at the extremes of the socioeconomic distribution.

Based on two large national surveys with retrospective information (MMSI 2016 and ESRU-EMOVI 2017), we estimate relative and absolute intergenerational upward social mobility across Mexican states. We first contrast geographic variations in social mobility in Mexico to those in the U.S. and Canada. Second, we analyze the correlation of our social mobility measures with socioeconomic indicators to obtain insight into policy for low social mobility areas.

Our results show that social mobility is low and highly heterogeneous in Mexico. At the country level, the intergenerational persistence of inequality is 0.62, and absolute upward social mobility (the wealth percentile attained in adulthood by the average person born in the 25th percentile) is 35. Persistence at the bottom and top of the distribution is high and close to 50 percent. Only three persons out of 100 make it to the top quintile from the first. Moreover, social mobility patterns are bleaker in the south, the poorest region in Mexico. The case of Chiapas, the poorest state in the country, is notable: the rank of adults in the current national distribution of wealth is lower than their parents' rank in the distribution of the previous generation (the 25th percentile). In a comparison of these results with Canada and the U.S., two findings are remarkable. First, the opportunities to move up the social ladder are more compact in those countries than in Mexico. In Canada and the U.S., it does not matter where in the country you are born; you will have approximately the same opportunities. Second, the difference in social mobility is substantial: close to 60 percent of the population in Mexico live in areas with an absolute upward mobility rate below the lowest observed in the United States, and close to 80 percent below the lowest in Canada.

Our analysis of the correlation with socioeconomic measures finds that overcrowding and teenage employment affect both persistence and absolute upward mobility. A lower rate of economic growth is also accompanied by lower absolute upward mobility. The relationship with overcrowding and teenage employment suggest that policies promoting regional economic development and equality of opportunity will increase social mobility. The correlations suggest that lower social mobility is associated with traps of poverty, inequality,

and low rates of growth. In particular, we argue that taking into account regional heterogeneity, Mexico has to invest mainly in early childhood intervention, but also in family planning, housing, social infrastructure, and quality education.

Our study has its limitations: our data sources rely on household surveys. This data likely suffers from measurement error, and it is not possible to disaggregate it at the municipal level. Mexico still does not provide access to the level of administrative data, available in developed countries, that allows for the efficient linking of parents and children. Such data would help to understand economic development and design improved public policies at the local level. Further work is needed to better identify the mechanisms behind the geographic heterogeneity of social mobility.

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Appendix

Table S1. Summary Statistics
Items in the Wealth Index for the ESRU-EMOVI and the MMSI
(Proportion of households)

	PARENTS		CHILDREN	
	ESRU-EMOVI 2017	MMSI 2016	ESRU-EMOVI 2017	MMSI 2016
Indoor plumbing	0.67 (0.0036)	0.58 (0.0031)	0.91 (0.0022)	0.94 (0.0015)
Stove	0.67 (0.0037)	0.69 (0.0029)	0.94 (0.0019)	0.92 (0.0017)
Electricity	0.85 (0.0027)	0.81 (0.0024)	0.99 (0.0006)	0.99 (0.0005)
Refrigerator	0.59 (0.0038)	0.55 (0.0031)	0.91 (0.0022)	0.89 (0.0020)
Washing machine	0.36 (0.0037)	0.36 (0.0030)	0.77 (0.0033)	0.75 (0.0027)
Landline telephone	0.25 (0.0034)	0.24 (0.0027)	0.38 (0.0038)	0.41 (0.0031)
Personal computer	0.08 (0.0021)	0.05 (0.0014)	0.32 (0.0037)	0.38 (0.0031)
DVD, VCR	0.24 (0.0033)	0.14 (0.0022)	0.44 (0.0039)	0.47 (0.0031)
Microwave oven	0.13 (0.0026)	0.08 (0.0017)	0.50 (0.0039)	0.51 (0.0032)
Television	0.67 (0.0037)	0.67 (0.0030)	-	-
Cable/dish television	0.11 (0.0024)	0.05 (0.0014)	0.50 (0.0039)	0.55 (0.0031)
Owner of another house or apartment	0.05 (0.0016)	0.06 (0.0015)	0.04 (0.0016)	0.12 (0.0020)
Premises	0.06 (0.0018)	0.04 (0.0013)	0.04 (0.0016)	0.03 (0.0011)
Parcel of land to work	0.17 (0.0029)	0.25 (0.0027)	0.04 (0.0016)	0.09 (0.0018)
Owns other land	0.07 (0.0020)	0.07 (0.0016)	0.02 (0.0012)	0.06 (0.0015)

Automobile	0.24 (0.0033)	0.23 (0.0026)	0.45 (0.0039)	0.28 (0.0028)
Agricultural machinery	0.03 (0.0013)	0.02 (0.0008)	0.01 (0.0007)	0.02 (0.0009)
Working animal	0.13 (0.0026)	0.19 (0.0025)	0.03 (0.0013)	0.04 (0.0012)
Livestock	0.14 (0.0027)	0.19 (0.0025)	0.04 (0.0015)	0.06 (0.0015)
Bank account	0.07 (0.0020)	0.12 (0.0021)	0.22 (0.0033)	0.36 (0.0030)
Credit card	0.08 (0.0021)	0.07 (0.0016)	0.16 (0.0028)	0.18 (0.0024)
Housekeeper	-	-	0.11 (0.0024)	0.06 (0.0015)
Internet	-	-	0.42 (0.0038)	0.46 (0.0031)
Dirt floor	-	-	0.03 (0.0012)	0.02 (0.0009)
Storage water heater	-	-	0.57 (0.0039)	0.47 (0.0031)
Overcrowding	3.47 (0.0188)	3.81 (0.0161)	-	-
Years of schooling	-	-	9.99 (0.0372)	9.72 (0.0303)
Father's years of schooling	4.95 (0.0421)	4.44 (0.0291)	-	-
Mother's years of schooling	4.63 (0.0393)	4.58 (0.0324)	-	-

Notes: Mean and standard errors in parentheses; calculations using the analytical weights of the surveys.

Table S2. Summary Statistics. Items in the Wealth Index for the Combined ESRU-EMOVI & MMSI and for the Intercensal survey 2015 (Proportion of Households)

Service	Coahuila (North)		Sinaloa (Northwest)		Jalisco (North-Central)		Mexico City (Central)		Veracruz (South)	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Electricity	1.00	1.00	1.00	0.99	1.00	1.00	0.99	1.00	0.99	0.98
	(0.002)	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)	(0.003)	(0.000)
Indoor plumbing	0.98	0.98	0.94	0.97	0.98	0.98	0.97	0.99	0.79	0.87
	(0.004)	(0.000)	(0.006)	(0.000)	(0.003)	(0.000)	(0.003)	(0.000)	(0.012)	(0.000)
Storage water heater	0.64	0.67	0.26	0.35	0.66	0.70	0.85	0.88	0.19	0.29
	(0.014)	(0.001)	(0.012)	(0.001)	(0.013)	(0.001)	(0.006)	(0.001)	(0.012)	(0.001)
Refrigerator	0.97	0.98	0.96	0.96	0.97	0.96	0.96	0.97	0.83	0.82
	(0.005)	(0.001)	(0.005)	(0.001)	(0.004)	(0.000)	(0.003)	(0.000)	(0.011)	(0.000)
Washing machine	0.90	0.88	0.80	0.78	0.89	0.86	0.87	0.85	0.60	0.63
	(0.009)	(0.001)	(0.011)	(0.001)	(0.008)	(0.000)	(0.006)	(0.000)	(0.015)	(0.000)
Landline telephone	0.42	0.38	0.27	0.29	0.43	0.43	0.70	0.67	0.25	0.25
	(0.014)	(0.001)	(0.012)	(0.001)	(0.013)	(0.000)	(0.008)	(0.000)	(0.013)	(0.000)
Internet	0.52	0.43	0.44	0.40	0.49	0.45	0.71	0.65	0.29	0.29
	(0.014)	(0.001)	(0.014)	(0.001)	(0.013)	(0.001)	(0.008)	(0.001)	(0.014)	(0.001)

Note: Mean (standard error) from (1) CEEY-EMOVI & MMSI 2017, and (2) 2015 intercensal data restricted to heads of household aged 25-64.

Table S3. Social Mobility in Mexico (Subsample without Migrants)

	State #	OBS	Persistence	Std Error	Upward Mobility	Std Error	Q1Q1	Q5Q5	Q1Q5
Chiapas	7	1,283	0.64	0.032	20	0.574	79.6	29.4	0.8
Guerrero	12	1,052	0.59	0.033	24	0.681	70.5	43.2	1.0
Oaxaca	20	1,012	0.63	0.036	25	0.752	70.6	47.5	1.3
Tabasco	27	1,211	0.56	0.026	27	0.704	55.7	35.1	0.9
Veracruz	30	971	0.68	0.028	27	0.790	73.0	40.1	0.9
Puebla	21	895	0.68	0.026	31	1.018	57.3	57.3	0.5
Yucatan	31	1,151	0.61	0.025	31	0.760	56.4	46.0	0.5
Mexico	0	34,031	0.65	0.006	33	0.230	54.6	52.7	1.8
Estado de Mexico (State of Mexico)	15	868	0.68	0.031	33	1.236	54.1	59.9	2.3
San Luis Potosi	24	1,130	0.64	0.024	34	0.963	54.3	58.4	3.2
Tlaxcala	29	817	0.55	0.039	34	1.312	40.8	45.8	1.8
Guanajuato	11	1,148	0.59	0.028	34	1.101	44.0	47.6	0.4
Nayarit	18	992	0.52	0.026	34	0.975	44.9	41.2	3.0
Quintana Roo	23	581	0.57	0.035	35	1.276	46.9	39.3	3.7
Sonora	26	1,075	0.55	0.027	35	1.276	36.9	45.0	4.0
Morelos	17	844	0.60	0.032	35	1.312	44.2	53.1	0.6
Campeche	4	1,057	0.50	0.026	35	0.881	45.3	41.9	1.3
Michoacan	16	1,179	0.51	0.025	35	0.832	32.7	39.5	2.4
Hidalgo	13	853	0.62	0.031	35	1.002	42.0	46.8	2.3
Colima	6	1,008	0.52	0.029	36	1.109	36.2	43.8	1.3
Queretaro	22	779	0.62	0.029	37	1.129	46.1	51.1	1.5
Tamaulipas	28	864	0.52	0.030	38	1.296	31.7	49.2	3.9
Durango	10	1,060	0.49	0.026	39	1.039	23.4	49.8	3.9

Zacatecas	32	1,132	0.49	0.026	40	0.890	23.2	50.7	3.8
Aguascalientes	1	1,115	0.52	0.027	40	1.328	14.8	54.4	7.1
Sinaloa	25	1,204	0.42	0.027	40	0.984	25.7	39.6	2.8
Jalisco	14	1,233	0.44	0.025	41	1.083	20.6	45.4	2.5
Coahuila	5	1,084	0.46	0.029	42	1.361	31.6	45.6	0.9
Baja California Sur	3	749	0.43	0.037	44	1.652	43.1	43.4	4.9
Baja California	2	657	0.47	0.039	44	1.957	16.4	54.3	10.2
Mexico City	9	2,960	0.56	0.021	45	1.134	14.0	66.4	5.5
Nuevo Leon	19	1,017	0.50	0.030	45	1.542	31.2	56.1	6.1
Chihuahua	8	1,050	0.51	0.023	46	1.163	26.3	59.8	4.9

Notes: Authors' Calculations.

Table S4. Correlation Estimates of Different Variables with Social Mobility

	Relative Mobility		Absolute Upward Mobility	
Variable	Pearson	Spearman	Pearson	Spearman
GDP/cap	-0.183 [0.316]	-0.279 [0.121]	0.220 [0.227]	0.344 [0.054]
Growth 1990-2016	-0.171 [0.350]	-0.063 [0.730]	0.592 [0.000]	0.426 [0.015]
Extreme Poverty	0.341 [0.056]	0.429 [0.014]	-0.818 [0.000]	-0.669 [0.000]
Inequality Income	0.236 [0.194]	0.595 [0.000]	-0.291 [0.106]	-0.506 [0.003]
Inequality Yrs Schooling	0.225 [0.217]	0.511 [0.003]	-0.739 [0.000]	-0.705 [0.000]
Overcrowding	0.427 [0.015]	0.497 [0.004]	-0.884 [0.000]	-0.827 [0.000]
Inequality Overcrowding	0.479 [0.006]	0.578 [0.001]	-0.359 [0.044]	-0.579 [0.001]
% less than Primary	0.117 [0.522]	0.335 [0.061]	-0.696 [0.000]	-0.603 [0.000]
% University	-0.180 [0.323]	-0.328 [0.067]	0.670 [0.000]	0.584 [0.000]
Ratio Univ/Primary	0.190 [0.297]	0.340 [0.057]	-0.720 [0.000]	-0.621 [0.000]
Enrollment Jr. High	-0.114 [0.534]	-0.241 [0.185]	0.569 [0.001]	0.341 [0.056]
Enrollment High School	-0.339 [0.057]	-0.453 [0.009]	0.584 [0.000]	0.441 [0.012]
Enrollment University	-0.293 [0.103]	-0.355 [0.046]	0.649 [0.000]	0.577 [0.001]
Prop. Schools Jr. High	0.022 [0.904]	0.189 [0.299]	-0.172 [0.347]	-0.290 [0.107]
Prop. Schools High School	-0.137 [0.455]	-0.248 [0.171]	0.092 [0.618]	0.121 [0.510]
Prop. Schools University	-0.343 [0.054]	-0.313 [0.081]	0.453 [0.009]	0.420 [0.017]
% Married	0.102 [0.578]	0.143 [0.434]	-0.523 [0.002]	-0.451 [0.010]
Teenage Pregnancy	0.361 [0.042]	0.253 [0.162]	-0.747 [0.000]	-0.470 [0.007]

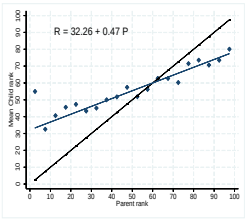
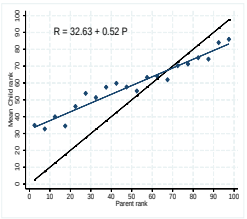
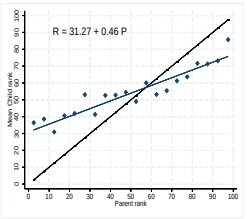
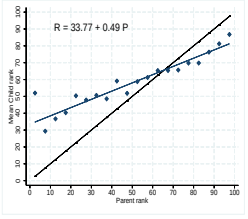
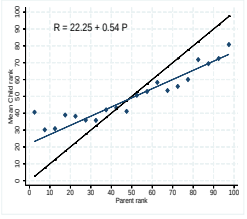
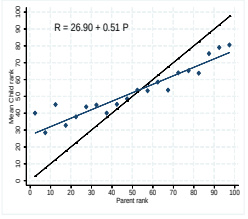
Teenage Employment	-0.504 [0.003]	-0.240 [0.185]	0.244 [0.178]	0.317 [0.078]
Manufacturing Employment	0.053 [0.775]	0.006 [0.976]	0.526 [0.002]	0.419 [0.017]
Prop. Physicians	-0.155 [0.398]	-0.265 [0.143]	0.596 [0.000]	0.471 [0.007]

Notes: Authors' Calculations. The Pearson correlation is weighted with population in 1990. P-values in brackets. Variables obtained at the state level from 1990 population census micro-data are: overcrowding (number of rooms / household size) and its Gini inequality, Gini inequality in years of schooling for individuals at least 25 years old), percentage of population with less than primary education, percentage of population with university education, ratio of the latter two variables (for individuals at least 25 years old), female teenage pregnancy (ages 15-19), teenage employment (ages 15-19), manufacturing employment (ages 20-65), and percent married (at least 25 years old). The variables obtained from Coneval (2019) are: Gini income inequality and extreme poverty in 1990. The number of physicians per 100,000 people in 1990 is obtained from Frenk (1995). We calculate per capita GDP, average annual growth in per capita GDP from 1990 to 2016 using data from the National Institute of Statistics and Geography (INEGI), and school enrollment (per 1,000 population) and number of schools (per 1,000 population) at the junior high school, high school, and university levels using 1990 data from the Secretary of Education.

Figure S1. Map of Mexico and its regions, with percentage of people in poverty in each state

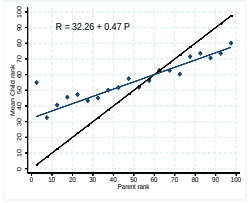
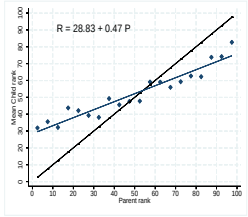
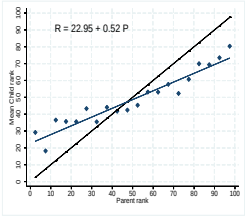
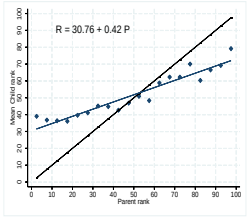
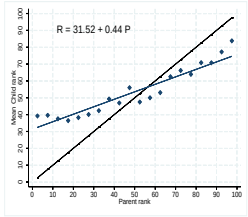
Notes: Aguascalientes (AGS); Baja California (BC); Baja California Sur (BCS); Campeche (CAMP); Coahuila (COAH); Colima (COL); Chiapas (CHIS); Chihuahua (CHIH); Mexico City (CDMX); Durango (DGO); Guanajuato (GTO); Guerrero (GRO); Hidalgo (HGO); Jalisco (JAL); Estado de México (MEX); Michoacán (MICH); Morelos (MOR); Nayarit (NAY); Nuevo León (NL); Oaxaca (OAX); Puebla (PUE); Querétaro (QRO); Quintana Roo (QR); San Luis Potosí (SLP); Sinaloa (SIN); Sonora (SON); Tabasco (TAB); Tamaulipas (TAMS); Tlaxcala (TLAX); Veracruz (VER); Yucatán (YUC); Zacatecas (ZAC). Poverty is obtained from Coneval (2019), and refers to the definition in Mexico related to "Food Poverty" or "Extreme Poverty."

Figure S2. Average wealth rank of adult children and their parental wealth rank. Northern region

Baja California	Chihuahua	Coahuila
		
Nuevo León	**Sonora**	**Tamaulipas**
		

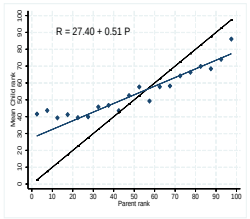
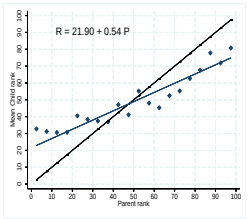
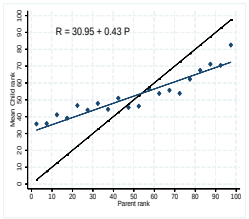
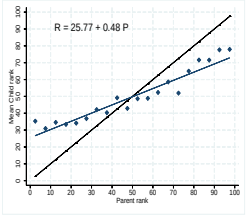
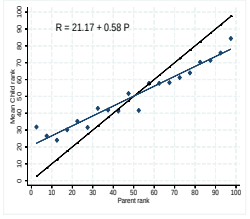
Notes: Authors' calculations. Rank-rank regressions.

Figure S3. Average wealth rank of adult children and their parental wealth rank. Northwestern region

Baja California Sur	Durango	Nayarit
		
Sinaloa	**Zacatecas**	
		

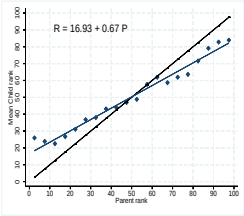
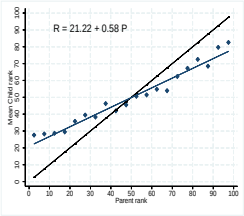
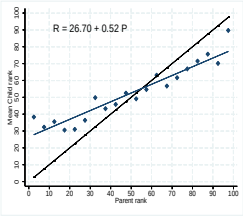
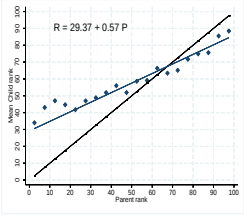
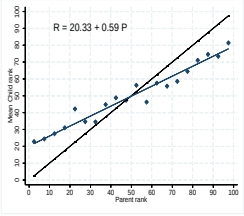
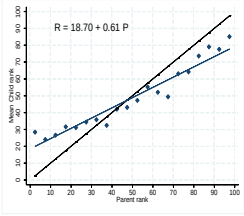
Notes: Authors' calculations. Rank-rank regressions.

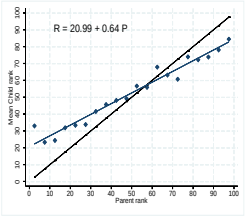
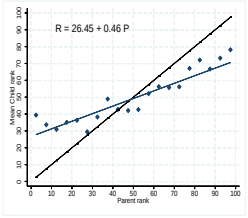
Figure S4. Average wealth rank of adult children and their parental wealth rank. North central region

Aguascalientes	Colima	Jalisco
		
Michoacán	**San Luis Potosí**	
		

Notes: Authors' calculations. Rank-rank regressions.

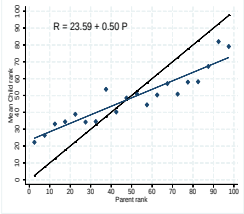
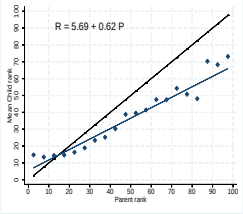
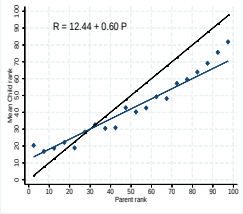
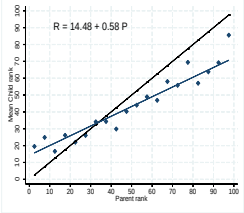
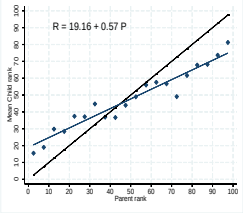
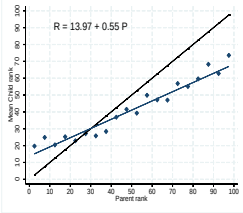
Figure S5. Average wealth rank of adult children and their parental wealth rank. Central region

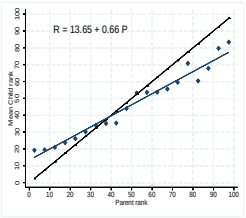
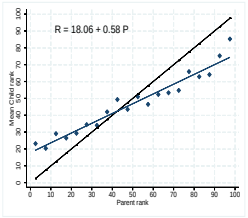
Estado de México	Guanajuato	Hidalgo
		
Mexico City	**Morelos**	**Puebla**
		

Querétaro	Tlaxcala	
		

Notes: Authors' calculations. Rank-rank regressions.

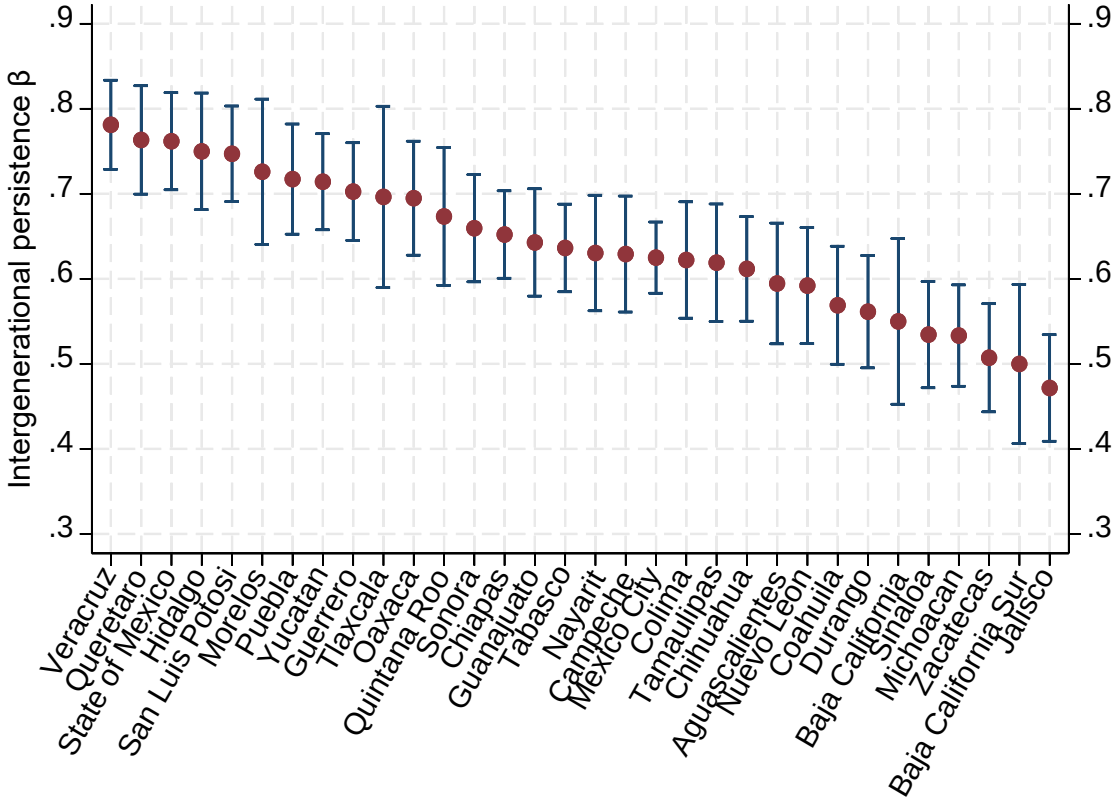
Figure S6. Average wealth rank of adult children and their parental wealth rank. Southern region

Campeche	Chiapas	Guerrero
		
Oaxaca	**Quintana Roo**	**Tabasco**
		
Veracruz	**Yucatán**	

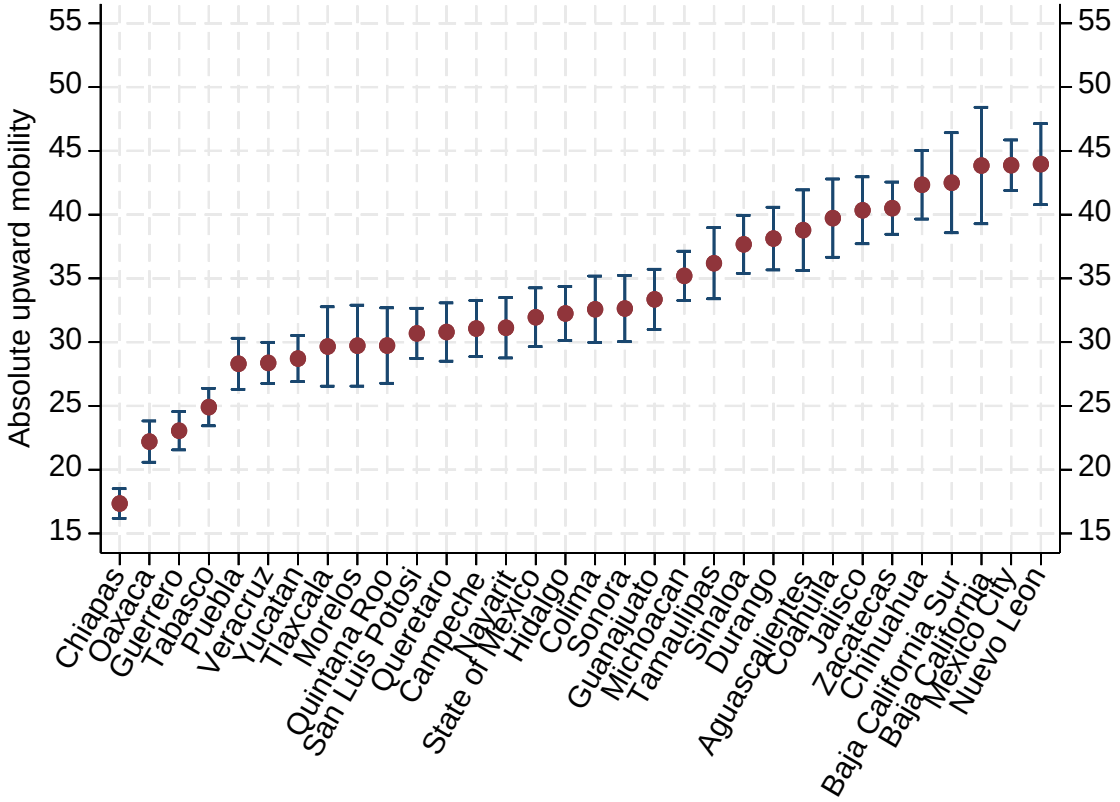
Notes: Authors' calculations. Rank-rank regressions.

Figure S7. Robustness check: Relative mobility across Mexican states (β_c). Median regression



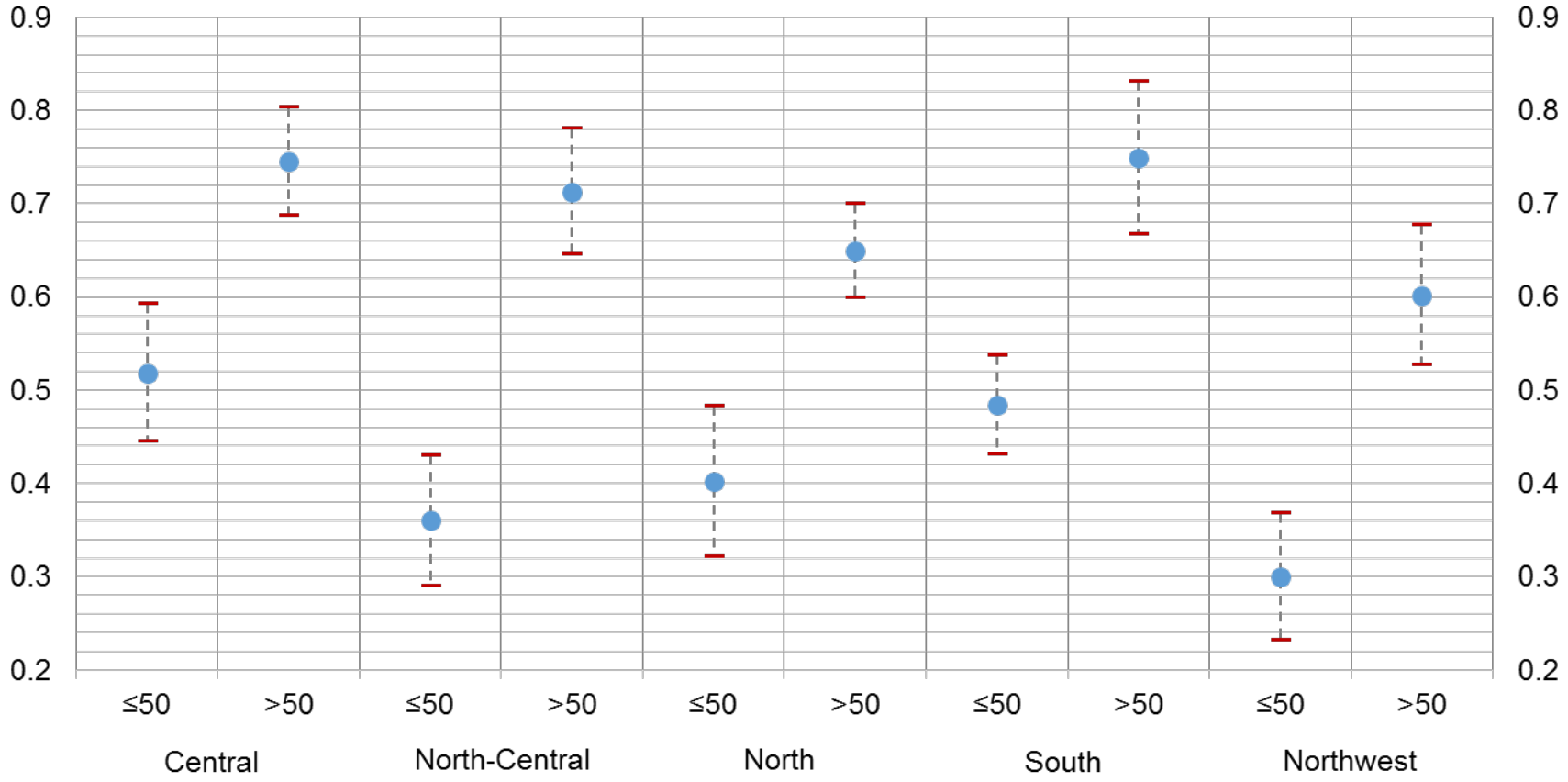
Notes: Authors' calculations using the MMSI 2017 and EMOVI 2016 (41,303 observations). The x-axis is arranged in descending order and the y-axis is the estimated coefficient. 95 percent confidence intervals are shown.

Figure S8. Robustness check: Absolute upward mobility across Mexican states ($\overline{R_{25,c}} = \alpha_c + \beta_c \times 25$). Median regression



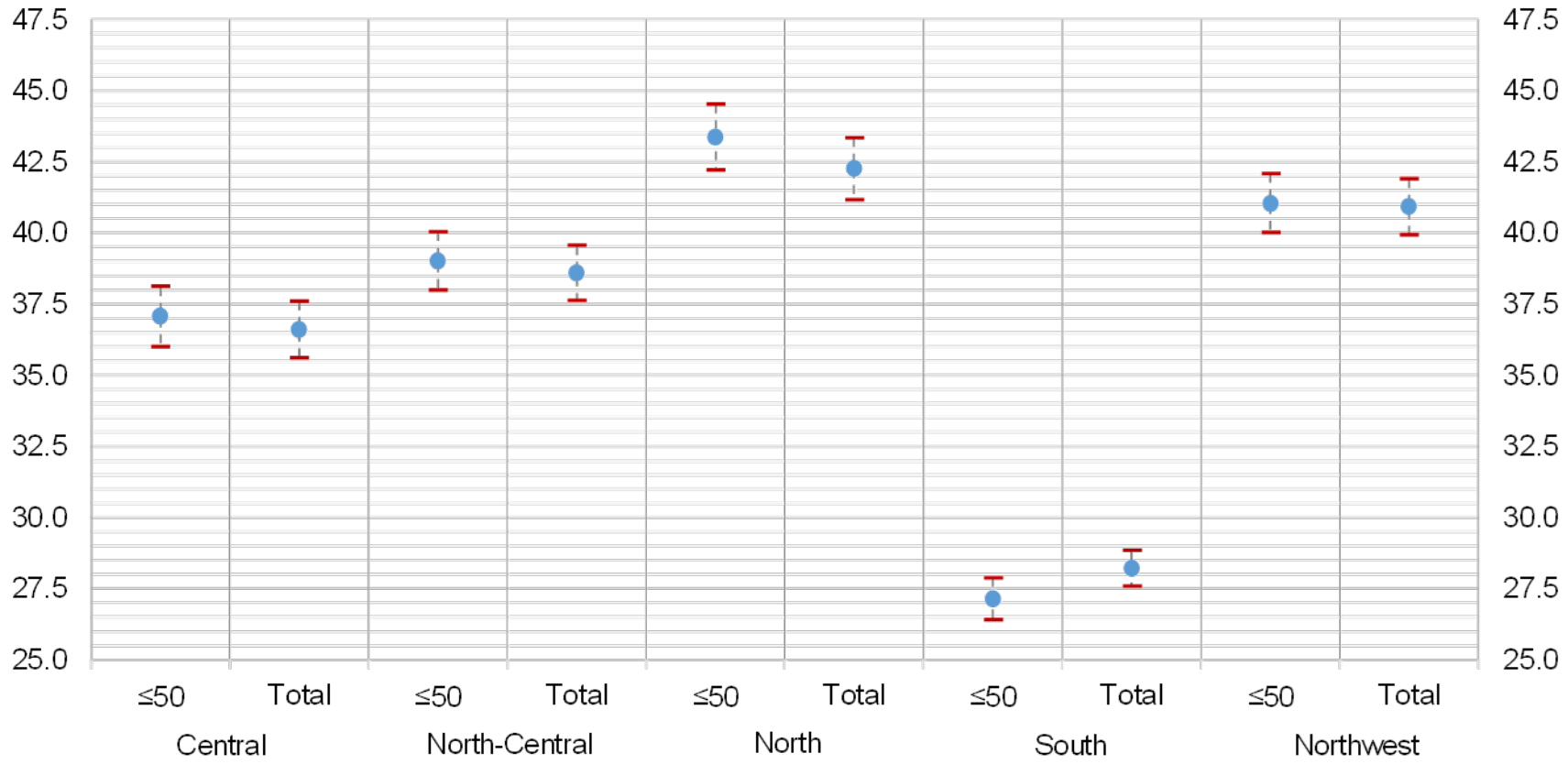
Notes: Authors' calculations using the MMSI 2017 and EMOVI 2016 (41,303 observations). The x-axis is arranged in ascending order and the y-axis is the estimated coefficient. 95 percent confidence intervals are shown.

Figure S9. Relative mobility partitioning the sample above and below the 50th percentile of parental wealth



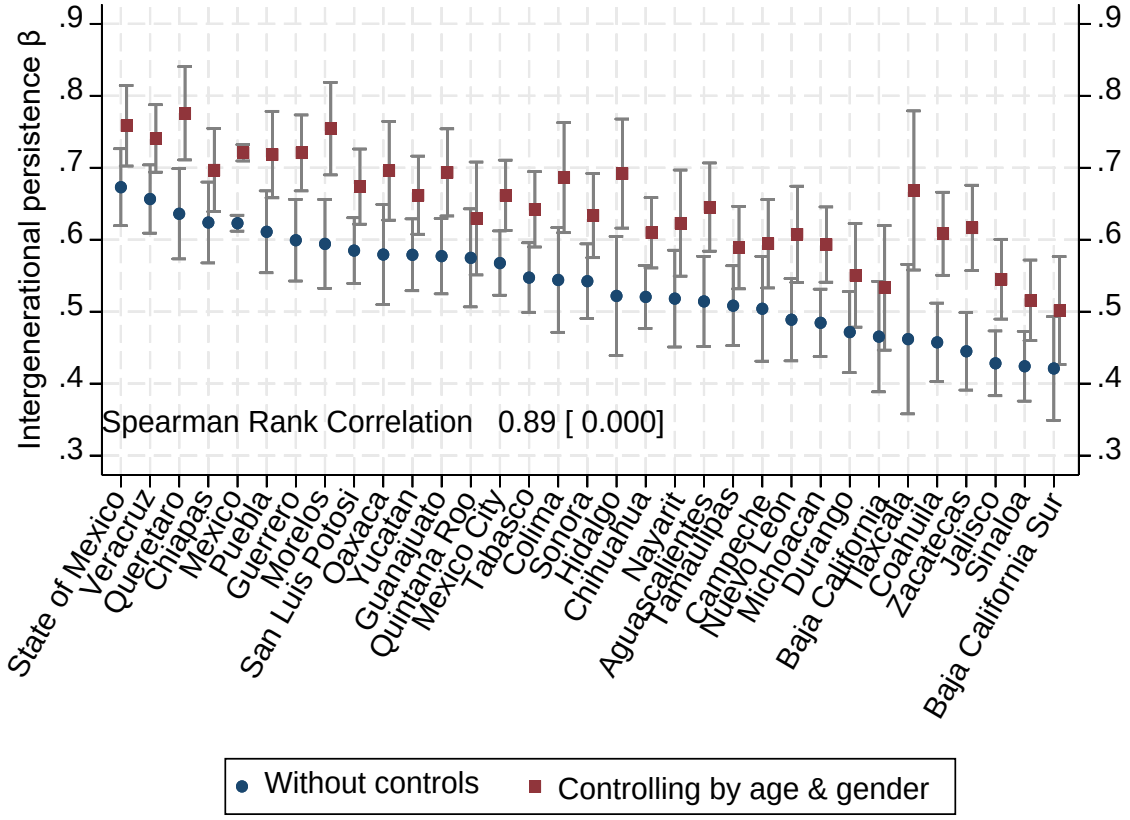
Notes: Authors' calculations using the MMSI 2017 and EMOVI 2016 (41,303 observations). The x-axis shows results for each region when the sample is partitioned below and above the 50th percentile in the parental wealth distribution. 95 percent confidence intervals are shown.

Figure S10. Absolute upward mobility partitioning the sample above and below the 50th percentile of parental wealth



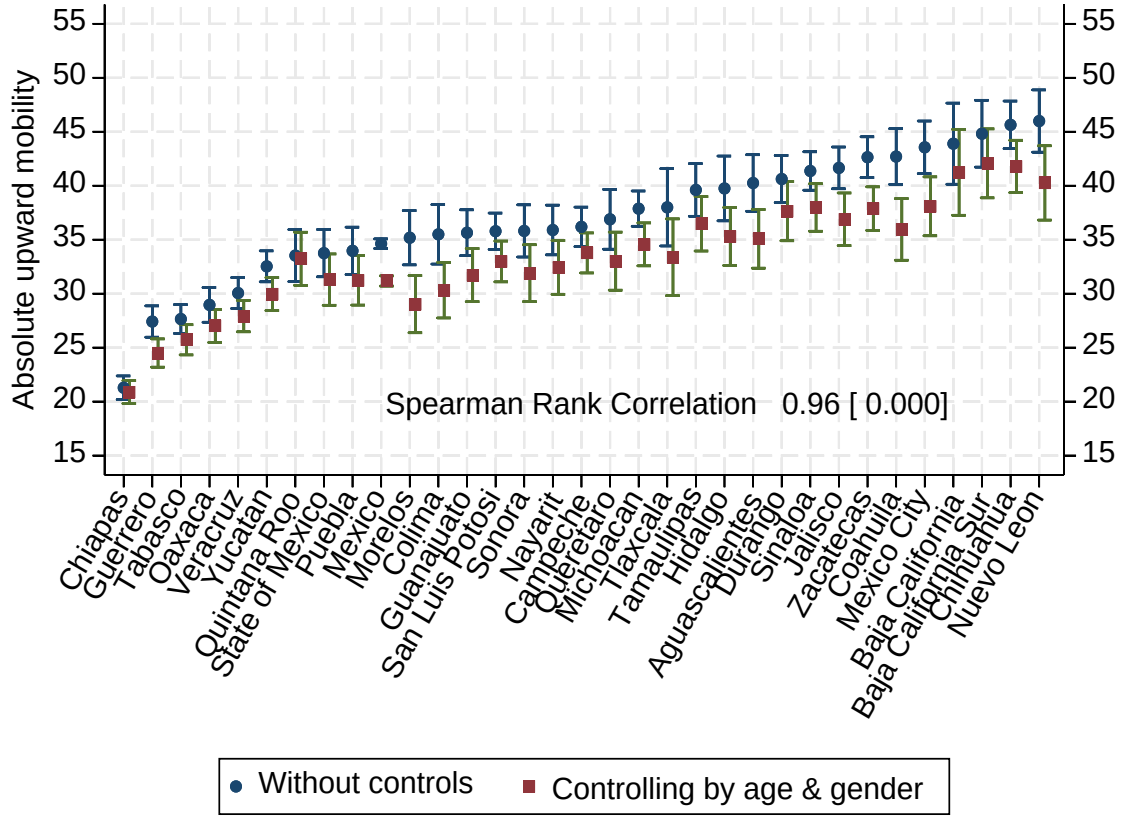
Notes: Authors' calculations using the MMSI 2017 and EMOVI 2016 (41,303 observations). The x-axis shows results for each region when the sample is partitioned below and above the 50th percentile in the parental wealth distribution. 95 percent confidence intervals are shown.

Figure S11. Robustness check: Relative mobility across Mexican states (β_c). Controls for age and sex



Notes: Authors' calculations using the MMSI 2016 and ESRU-EMOVI 2017 (41,303 observations). The x-axis is arranged in descending order and the y-axis is the estimated coefficient. 95 percent confidence intervals are shown.

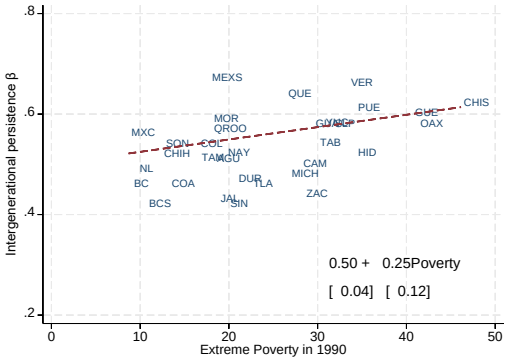
Figure S12. Robustness check: Absolute upward mobility across Mexican states ($\overline{R_{25,c}} = \alpha_c + \beta_c \times 25$). Controls for age and sex



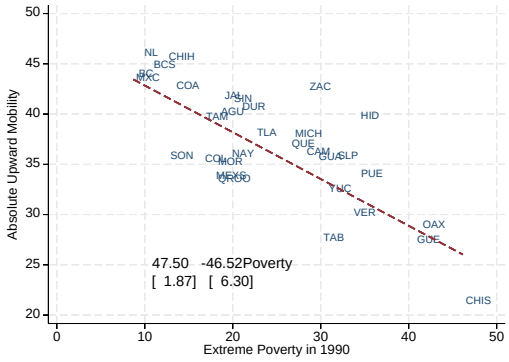
Notes: Authors' calculations using the MMSI 2017 and ESRU-EMOVI 2017 (41,303 observations). The x-axis is arranged in ascending order and the y-axis is the estimated coefficient. 95 percent confidence intervals are shown. Absolute upward mobility controlling for age and gender is obtained for the mean gender and age 40.

Figure S13. Relation of intergenerational persistence and absolute upward mobility with poverty, inequality, and income levels in 1990

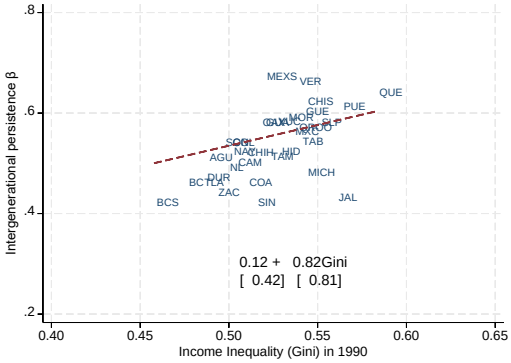
A. Intergenerational persistence (β_c): Poverty



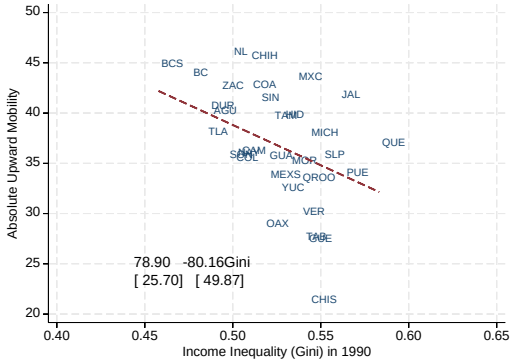
B. Absolute upward mobility: Poverty



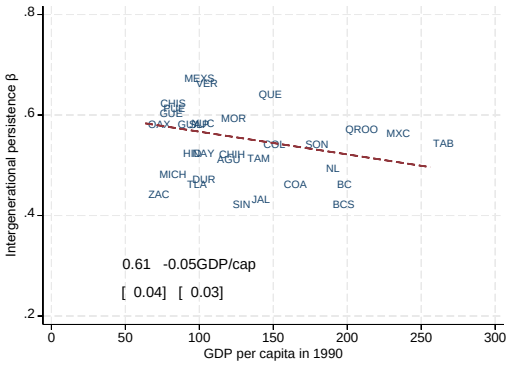
C. Intergenerational persistence (β_c): Inequality



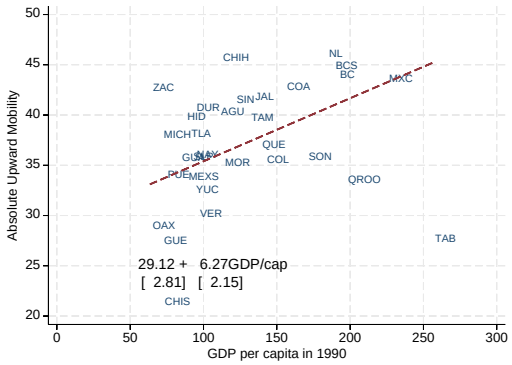
D. Absolute upward mobility: Inequality



E. Intergenerational persistence (β_c): GDP/capita

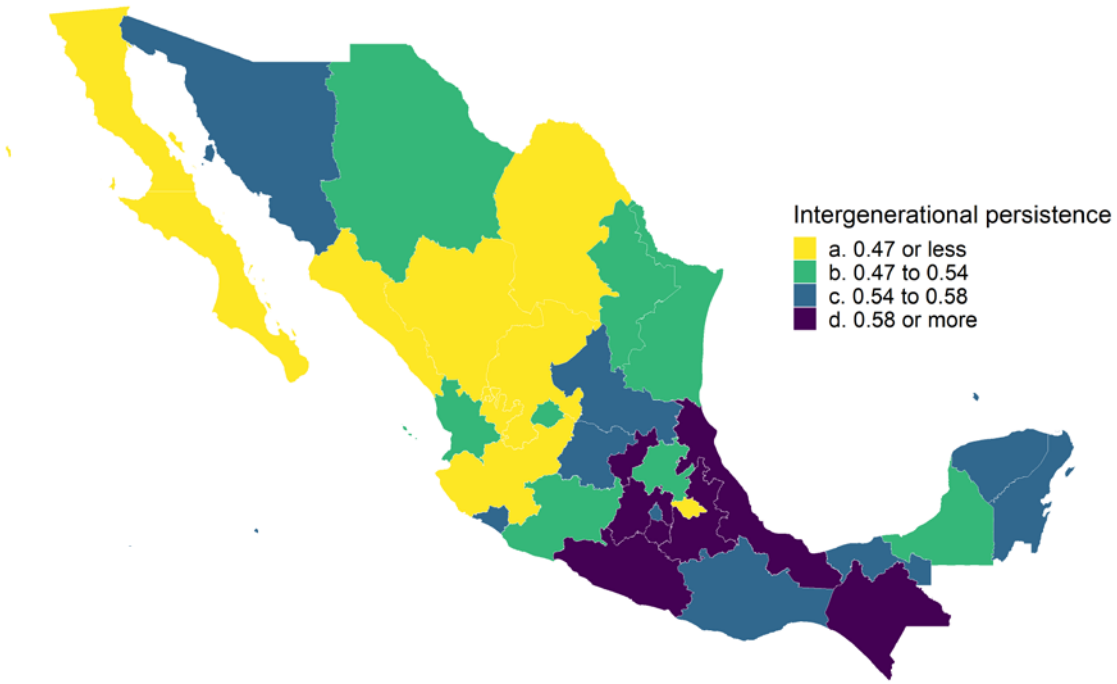


F. Absolute upward mobility: GDP/capita



Notes: Authors' calculations. All regressions are weighted by population in 1990. The coefficients for Poverty and GDP/cap have been scaled to 100 for ease of interpretation. The figures with GDP/capita exclude the state of Campeche. Regression line included with standard errors in brackets.

Figure S14. Social mobility: Intergenerational persistence in Mexico

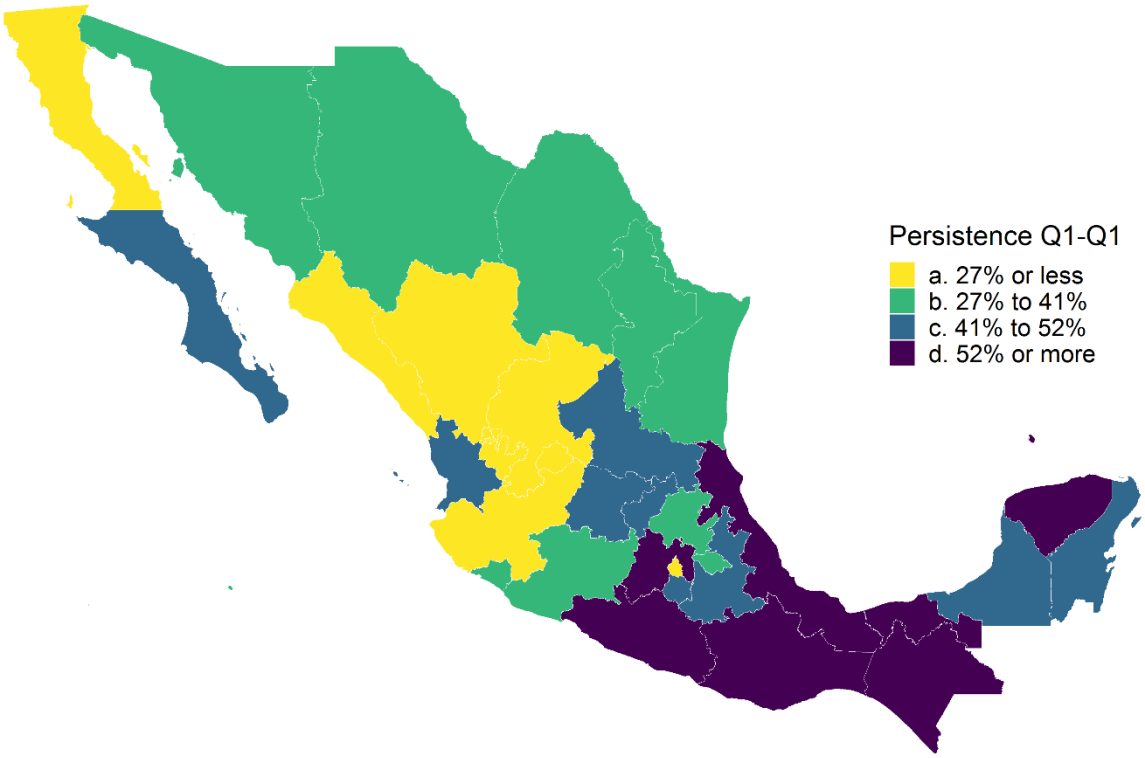


Notes: Authors' calculations.

Figure S15. Social mobility: Absolute upward mobility in Mexico

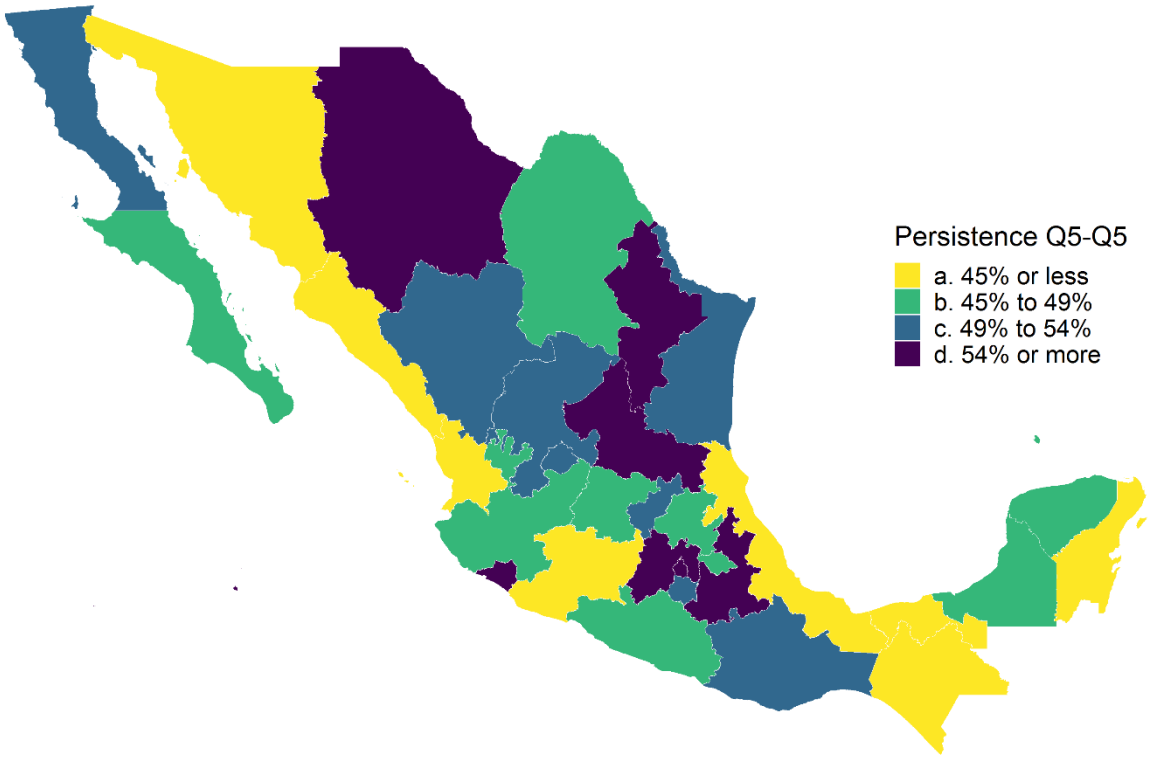
Notes: Authors' calculations.

Figure S16. Social mobility: Persistence in Quintile 1 in Mexico



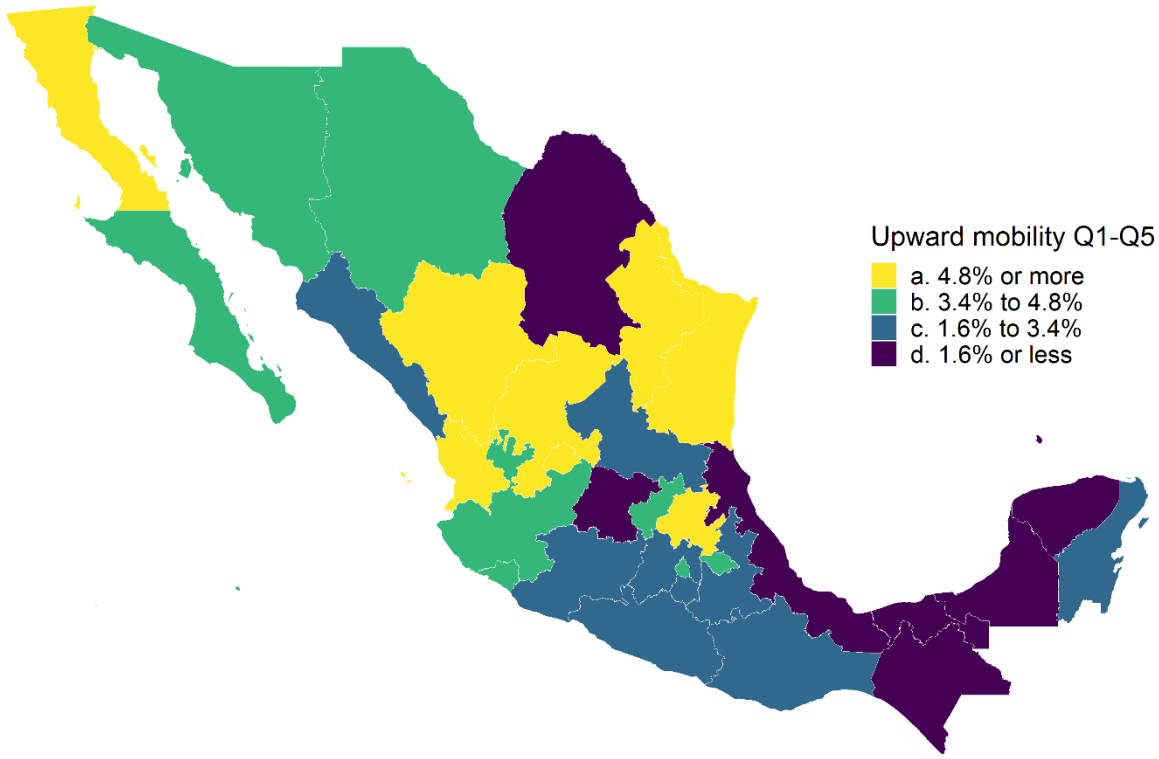
Notes: Authors' calculations.

Figure S17. Social mobility: Persistence in Quintile 5 in Mexico



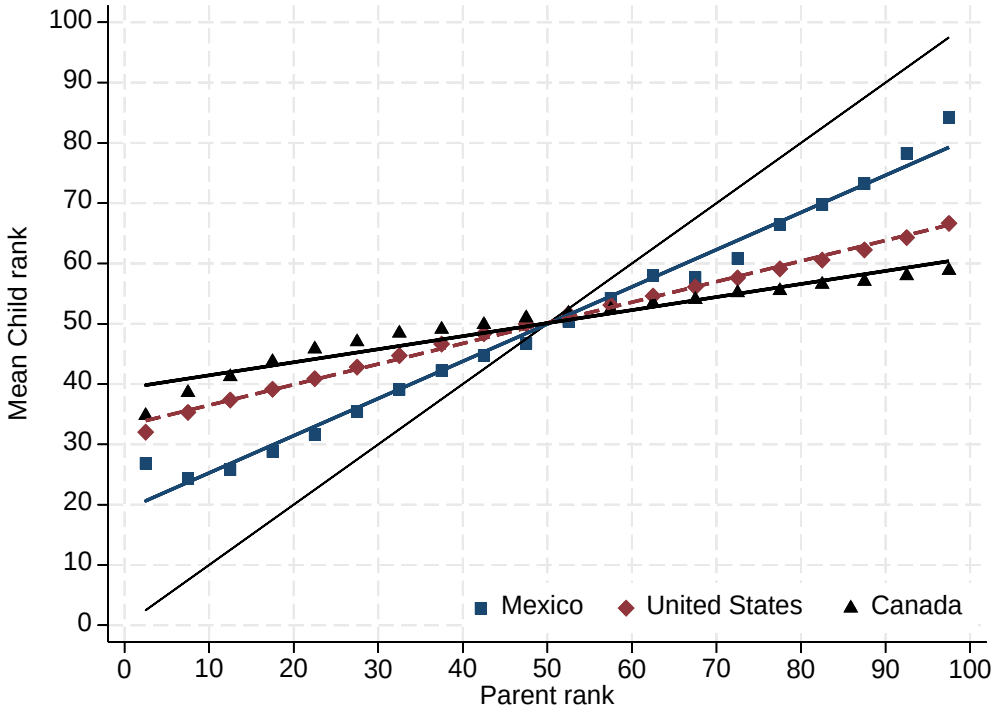
Notes: Authors' calculations.

Figure S18. Social mobility: Absolute upward mobility from Quintile 1 to Quintile 5 in Mexico



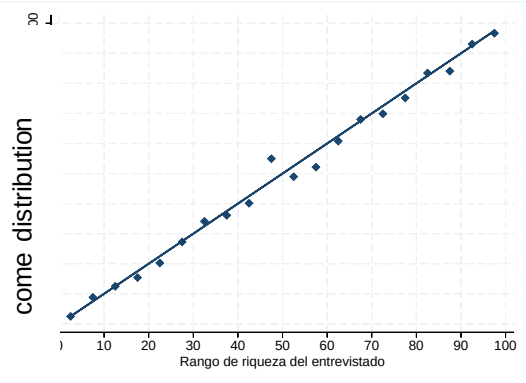
Notes: Authors' calculations.

Figure S19. Comparison of parent-child percentile ranks of Mexico, the United States, and Canada



Notes: Authors' calculations. Canadian data obtained from Connolly et al. (2019); U.S. data from Chetty et al. (2014b).

Figure S20. Average rank in the income distribution by rank in the wealth distribution (households of the current generation in the ESRU-EMOVI survey)



Notes: Authors' calculations.

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It's our way of honoring the commitment France and the French people have made to fulfill the Sustainable Development Goals.
Towards a world in common.

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