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INTERGENERATIONAL OCCUPATIONAL MOBILITY IN LATIN AMERICAN ECONOMIES: AN EMPIRICAL APPROACH

Ömer Tuğsal Doruk[∀], Francesco Pastore[§], Hasan Bilgehan Yavuz[¥],

Abstract

Identifying the determinants of intergenerational mobility is an important aim in the development literature. In this article, intergenerational transmission is examined for 6 neglected Latin American Economies (Brazil, Costa Rica, Ecuador, Mexico, Panama and Puerto Rico). We use a multinomial logit model of the determinants of choosing a white-collar job for a child of a father working in farming as compared to a child whose father had a blue- or a white-collar job. Our findings show that, in the studied countries, intergenerational occupation transmission is mainly linked to low skilled jobs. Our analysis confirms the low degree of social mobility typical of Latin America, contributing, in turn, to explain their low growth rate. Our findings help identifying specific target groups – talented young women coming from the agricultural sector – to develop in them soft skills while at primary or low secondary school and work-related skills while at the high secondary school or at the university.

JEL Classification: D60, I30, J24, J6, J62

Keywords: Intergenerational occupational mobility, Intergenerational mobility, Latin American countries.

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Introduction

Following the seminal contributions of Blau and Duncan (1967), Featherman and Hauser (1978), Erikson and Goldthorpe (1992), both economists and sociologists have been researching the determinants of intergenerational occupation mobility meant as a form of social mobility. In the Latin American context, social mobility is a much-debated social issue but still needs to be addressed in detail based on newly available empirical evidence. We contribute to this aim by resorting to a very rich database, the IPUMS[1], a cross-section with a very large sample of individuals for measuring the occupational mobility in a number of still much neglected Latin American countries: Brazil, Costa Rica, Ecuador, Mexico, Panama, and Puerto Rico.

The main aim of this article is to show how intergenerational occupational mobility can reflect the social (im-)mobility across generations in Latin American countries in which high inequality and stagnant growth rates are often the norm. In doing so, first, we use multinomial logit models of the probability of an individual choosing one of three main occupations – white-collar, blue-collar and agricultural jobs – as a function of the occupation of their parents, fathers and mothers. For instance, the current literature on Latin American countries consists of a still small number of contributions, mainly focusing on educational mobility (Boyd, 1973; Nunez, Mianda, 2007; Azevedo, and Boullion, 2010; Schiefelbein and Farrell, 1984; Fernandez, 2013; Perez, 2019; Beccaria and Maurizio, 2019). The present study shows new detailed and sound empirical evidence on intergenerational social mobility in terms of occupational mobility in the Latin American context.

Moreover, social mobility in terms of occupation is still an under-researched area, although there are some advantages in measuring social mobility by means of occupational variables,

[1] We use the 2010 survey, which are the most recent ones for these countries.

often because of the lack of the necessary variables. For example, it is not easy to gather retrospective data about the occupations of parents. However, when available the occupational ones are more reliable than other variables, such as income, wealth or education, since occupations are defined in a standard way which is universally recognized and, therefore, will not be much affected by the so-called problem of "choice bias"[2]. Moreover, for most individuals, the occupation is unlikely to change throughout their professional life, especially when reaching a certain age (Blanden, 2009).The present study provides manifold additions to the existing literature. First, we use a dataset which provides information on occupations of parents of all children, which, is not the case of previous papers in the current literature. Second, we use multinomial logit models and transition matrices for the transmission of occupation from father to the child. In addition, we estimate the probability of occupational mobility for children of all type of occupational background. In this case, we consolidated each job under white-collar, blue-collar, and agricultural works. Last, but not least, we use 6 Latin American countries which are particularly understudied in the current literature.

The structure of this paper is as follows. Next section summarizes the literature and the place of the present study in the extant literature. Section two includes methodology and data used in our analysis. Section three contains our findings, while the last section includes conclusion, and policy implications.

1. Literature Review

In this section, we divide the existing literature in four parts, which is very useful for understanding the specific contribution of this study.

a. Social Mobility in General

Socioeconomic inequalities are transferred from generation to generation, affecting socioeconomic outcomes. The literature on economic development states that a person must invest in human capital

[2] Blau (1957, p.392) defines "occupational bias" as follows: "a person's evaluation of differentiated positions in the social structure tends to be affected by his own position".

in order to increase her level of welfare in the future (Corak, 2006). This investment must be made by parents until they are employed and earn an income. Therefore, while parents spend a portion of their current income for consumption, they invest the rest in the human capital formation of their children (Solon, 2004). This human capital investment leads individuals belonging to the next generation to stronger social, economic and political positions causing, at the same time, social mobility in a way to ensure the modernization of traditional societies (Boyd, 1973). Three basic mechanisms for social mobility are envisaged: biological transfers; heritage; and human capital investment (Juarez, 2011). The issue of social mobility is important in two aspects. First, it leads to poverty reduction and elimination of inequalities; second, by examining transfer mechanisms and by identifying their strengths and weaknesses, it is possible to improve the socioeconomic status of future generations (Solon, 2002).

The mechanisms of social mobility are related to how the advantages that parents have will affect their children's lives. The amount of wealth a parent possesses, income level, borrowing opportunities, education level, occupation, social position within the community and migration may directly affect their children. Therefore, all of these variables may be used to measure the socioeconomic mobility relationship between generations (Micklin, Leon, 1978; Tyree, Semyonov and Hodge, 1979). Some of these variables may be taken as policy levers to affect and favor social mobility.

The condition of children having similar income levels or similar occupations with their parents is referred to as *intergenerational transitivity*. The fact that a child raised in a relatively wealthy family is rich does not usually pose a problem, but that a child raised in a poor family is poor is perceived as a problem and raises the issue of inequality of opportunities (Blanden, 2009)[3].

[3] What makes social mobility necessary is the innovation brought by industrialization. Along with industrialization, significant developments have been achieved in the fields of education, communication, technology and urbanization. These developments have revealed new job opportunities, new occupations and therefore new income opportunities (Treiman, 1970). Often structural change is slower because the new generations have to change their occupation from their parents to find a job and their parents cannot provide adequate guidance to them, simply because parents were working in the old working environment. The quicker is structural change, the less parents working in agriculture or also in blue-collar jobs are able to guide their children to the new white-collar jobs in the emerging sectors

b. Occupational Mobility

Occupational mobility is one of the most important variables studied in the literature on social mobility. The occupational structure is typically divided into various categories. For example, Lipset and Bindex (1992) have made their job descriptions in the three categories of white-collar, blue-collar and farmers to reflect the effects of industrialization (Lipset, Bendix, 1992). Andrade et al. (2003) examined how debt constraints affect intergenerational mobility. In their study, occupations were divided in six categories (high type – engineers and large land owners; medium superior type - high school teachers and graduated bureaucrats; medium type - low graduated bureaucrats and topographers; medium-inferior type - automobile mechanic and specialized mine workers; low-superior type - self-employed in agriculture; low-inferior type - house cleaners and office boys by taking into account the skills to perform each task. They find that borrowing constraints are an important determinant of intergenerational transfers. So if a parent cannot easily access the loan, human capital investments in their children will also be limited. Thus, the parent's credit constraint will also reduce intergenerational skills transfer (Andrade et al., 2003). If parents' borrowing constraints are removed, their children's investment in human capital will increase. Thus, children's educational levels and abilities will be increased to higher levels.

Typically, children tend to set career goals in the same occupational group of their parents (Tyree et al., 1979). In addition, children tend to find their first job at the workplace where their parents work. This link between children' and parents' occupations is mostly observed in competitive industries and businesses where low educated workers and migrant workers are abundant (Kramarz, Skans, 2007).

Various factors of occupational mobility have been taken into consideration in the literature. For example, using the 1991-1999 British Household data, Ermisch and Francesconi (2002) study how the position of the spouses' parents of married couples affected socioeconomic mobility: men were affected by their parents with a 0.2 correlation, and with 0.25-0.17 correlation by their spouses' family. Women were affected by their parents in the range of 0.17-0.23, and by their spouses' parents in the

range of 0.16-0.18. In another study, Bean, Swicegood (1979) stated that the increase in unintended birth rates will decrease occupational mobility. Therefore, the existence of an ineffective family planning causes lower social mobility. Other studies support this conclusion (see Corak and Piraino, 2010). In their study, Hellerstein and Morrill (2008) reported that the girl whose father is a doctor who examines farmers had a higher tendency to become a farmer and the girl whose father is a doctor who examines college professors had a tendency to become a college professor. However, they stated that if both parents make sufficient investment in the human capital on their children, both girls will be more likely to become medical doctors (Hellerstein and Morrill, 2008).

In her study of intergenerational mobility in the UK, Carmichael (2000) showed that the success of a generation depends on the success of the previous generation. In another study examining intergenerational mobility in South Africa, Louw et al. (2009) find that due to the educational opportunities provided by wealthy parents, their children can easily find jobs with high wages (Louw et al., 2007; and 2009).

In another study examining the labor markets in Israel, Matras (2011) found that 43% of children worked in the same occupations with their fathers and 57% worked in different occupations. In the classification made considering occupations; It is stated that the children who are relatively young (between 18-35 years) have a higher rate of doing the same profession with their fathers in terms of skilled occupations such as office work (Matras, 2011). In their studies examining occupational mobility in India, Motiram and Sing (2012) stated that there is a significant lack of mobility especially among individuals working in low-skilled and low-paid occupations.

In many recent studies, parents' socioeconomic status is used to explain intergenerational occupational mobility. 40.5% of the children working in jobs requiring high skills or skilled labor have a father who is a university graduate and only 1.4% of them have never attended school. 11% of children whose fathers completed high school worked in jobs requiring high skills. More generally, the longer is the time spent in school by children and parents, the easier is the probability to enter occupations

with higher social status (Andrade, et al.2003). This strong intergenerational occupational transferability has been demonstrated in several studies (e.g. Black, Devereux, 2010). For example, Hellerstein and Morrill (2008) find that 30% of men and 20% of women followed their fathers. Their findings were supported by the studies of Ermish and Francesconi (2002), Carmichael (2000), Di Pietro and Urwin (2003) and Ferrie (2005).

c. The Literature on Latin America

Among the few studies looking at the case of Latin American countries, Boyd (1973) finds that intergenerational mobility is affected by the cultural environment in five Latin American cities. Nunez and Mianda (2007) find that in terms of occupations with high social status in Chile, sons follow their fathers, that is, they have high occupational stability, however; there is considerable occupational mobility in the rest of the range of occupations. (Nunez and Mianda, 2007).

Azevedo and Boullion (2010) stated that, in Latin American countries, the occupational mobility of young people is low due to the low individual abilities of young people and the inequality of opportunities in terms of access to education and, hence, of higher level occupations. Similarly, Schiefelbein and Farrell (1984) stated that the effect of education on the choice of occupation is weak in underdeveloped societies, especially for men. This effect is stronger in middle-level developed societies and further increases with development increasing. Chile fits this interpretation as a mid-level developed country.In addition, Perez (2019) examined occupational mobility in Argentina in an historical perspective and stated that occupational mobility is higher than in England and Norway due to the excess of unused land (Perez, 2019). Always with reference to Argentina, Beccaria and Maurizio (2019) found that there are imbalances in the labor market due to the intense participation of women in business life, and, as a result of this, occupational change is higher for women than men.

Fernandez (2013) also examined intergenerational occupational mobility by taking into account age, education level, residence, income level. He divided parents into two occupational groups: self-

employed and paid employees. The ratio to work as a paid employee of a children whose parents work as a paid employee is 61 % and also the ratio to work as a self-employed of a children whose parents work as a self-employed is 56 %

In his study, Behrman (2011) examined occupations in two different categories: white collars and blue collars in rural population for six countries: the US, Brazil, Mexico, Peru, and Colombia. The possibility to work in a occupation for a child whose father's occupation are the same is high and persistent.

The current literature on social mobility in the Latin American context is still very limited. Studies have generally focused on explaining the relevance of social mobility through intergenerational educational and income mobility (Dunn, 2007; Ferreira and Velosso, 2006; Nunez and Miranda, 2007;Contreras, Fuenzalida and Nunez, 2006; Ferreira and Gignoux, 2011; Grawe, 2001). Detailed, evidence based empirical analysis is still needed on occupational mobility. In the present study, occupational mobility is examined for six Latin American countries which are particularly understudied in the extant literature.

In addition, there are only few studies on Latin America, due to the lack of suitable statistical data to study how family history affects socioeconomic outcomes. In the present study, we divide the issue of transferring occupational status from parents to children into three categories. The first category includes professionals, technicians, business owners and senior and mid-level managers, also known as white-collar employees. Blue collar workers represent the second category and agricultural workers represent the third category. More specifically, we aim to address the issue of inter-generational occupational transmission by looking at the determinants of the probability that a child, whose parents work in agriculture or have a blue-collar job, will find a white-collar job during adulthood. Therefore, this study tries to fill an important gap in the current literature on intergenerational social mobility in the Latin American countries.

Dataset, Methodology and Hypotheses

Methodology

Transition Matrices Estimation

In the estimations of the present study, we calculate the transition matrices for the occupational mobility across generations. In the intergenerational mobility studies, the transition matrices are useful to examine the transition of father's occupation to child's occupation in terms of occupational mobility across generations. Let say x denotes the vector of social and economic status of an individual, and y denotes the vector of social and economic status of the next generation. The vector x describes the marginal distribution of status amongst the fathers and y describes the marginal distribution of status amongst the sons in the society (Checchi & Dardanoni, 2002: p.2). In a very general sense, a mobility index takes a form as follows:

$$M(x,y) = \frac{1}{n}\sum_{i=1}^{n} d(h(x_i;x), k(y_i;y)) \qquad (2)$$

Where d(h(xi;x) and k(yi;y) are distance functions of family i in the society. The function $d : \square^2 \Rightarrow \square$ describes the degree of mobility at the family level.

Multinomial Logit Model

The Multinomial logit model (MNL model) is used to accommodate the fact that the dependent variable has 3 possible outcomes, as in other previous studies of the kind relative to other countries (for Britain, see Breen and Karlsson, 2014; Sturgis and Sullivan, 2008; for the European countries, see Pavlopoulos, 2010). An advantage of using the MNL, rather than the multinomial probit (MNP) model is that the coefficients of the former can be easily transformed in RRR (relative risk ratios) which are easy to interpret as the increased probability associated to a given characteristics in entering a white-collar job compared to the baseline group. RRR can be easily computed by taking the exponential of the estimated coefficients: $RRR = \exp(\beta_j^{(i)})$, which represents $\Pr[Y = blue-collarw] / \Pr[Y = agricfo]$ and

$\Pr[Y = white-collarw] / \Pr[Y = agricfo]$ in our estimations. It is common to report RRR, rather than coefficients in the tables of results.

The MNL is defined algebraically as follows;

$$V_{nj}^{*} = x_{n}^{'}\beta_{j} + \varepsilon_{nj} \tag{2}$$

where x_n denotes our set of exogenous control variables, while β denotes the parameters of the estimation. In our model V* denotes Coccupation, and X'={occupp}.

$$P_{nj} = P(\mathrm{y}_{n} = j \,|\, x_{n}) = \frac{e^{x_{n}^{'}\beta_{j}}}{\sum_{i=1}^{J} e^{x'_{n}\beta_{i}}} \tag{3}$$

The probability of each individual is calculated as above; where

$$y_n = \begin{cases} 1 \;\; if \;\; V_{n1}^{*} \geq V_{ni}{}^{*} for \;\; all \;\; i \\ 2 \;\; if \;\; V_{n2}^{*} \geq V_{ni}{}^{*} for \;\; all \;\; i \\ 3 \;\; if \;\; V_{n3}^{*} \geq V_{ni}{}^{*} for \;\; all \;\; i \end{cases} \tag{4}$$

Where V1 is the blue-collar occupation, V2 is the blue-collar occupation, and V3 is the agricultural occupation which is also our base occupation class. In addition, yn is the

$$y_{n} \in \{1, 2, ...J\} \tag{5}$$

In our model RRR is defined as follows:

$$RRR = \frac{P(y = 1 \,|\, x+1) / P(y = agricfo) \,|\, x+1)}{P(y = 1 \,|\, x) / P(y = agricfo) \,|\, x)} \tag{6}$$

where y denotes the category which we use to compare to our base variable. Agricfo denotes our base variable which is a father whose occupation is agricultural worker.

The simplest specification of the econometric model which we use in this article is as follows:

$$Coccupation_{i} = \beta_{0} + \beta_{1} occufat_{i} + \varepsilon_{i} \tag{1}$$

$Coccupation_i$, the dependent variable, denotes the occupation of child i, $occufat_i$ denotes occupation of father j (and $\mathrm{occumom_i}$ in our mother-daughter estimations) . We use data of

individuals aged 23 or more, following the current literature. The dependent variable is *Coccucpation*, and occuppi consist of a 3 occupations classification, defined in a standard way by using the ISCO codes as follows (for Britain, see Breen and Karlsson, 2014; Sturgis asnd Sullivan, 2008; for the European countries, see Pavlopoulos, 2010):

1-Blue Collar [Service workers and shop and market sales, Crafts and related trades workers, Plant and machine operators and assemblers, Elementary occupations]

2- White Collar [Legislators, senior officials and managers, Professionals, Technicians and associate professionals, Clerks]

3- Agriculture worker [Skilled agricultural and fishery workers].

We use father's occupation in our first estimations and mother's occupation in our robustness checks.

Dataset

We use IPUMS International Dataset for constructing the variables in the econometric analysis. This is a rich, and well-designed survey, but gives the information necessary to study intergenerational occupational mobility only about 6 Latin American countries: Brazil, Costa Rica, Ecuador, Mexico, Panama and Puerto Rico. Our estimations are novel, first of all, because we estimate intergenerational occupational mobility across 6 Latin American countries by using father-son, and mother-daughter pairs. In such context, as we know that, the current literature emphasizes mothers can represent a role model for their daughters, especially in less developed countries (see Sieverding, 2015). Second, the cross-country comparison among the six countries included in our study gives important terms of reference to assess the relative degree of occupational mobility of each country.

Estimation Results

Transition Matrices Estimations

Besides our MNL estimates, we also estimate transition matrices for intergenerational occupational mobility in the Latin American countries. We use Prais-Shorrocks (Checchi et al. 1999) transition matrices. If the cell of a transition matrix is equal to 0 there is perfect immobility, if it is equal to 1 there is perfect mobility. Table 1 clearly shows that there is a strong occupational transmission from fathers to children in our sample. The transmission is the highest in Puerto Rico, and the lowest in Brazil for all the occupational classifications.

In our Shorrock-Prais Transition matrix estimations, we find that the occupational transmission from a father to a child is the highest in Puerto Rico, while such transmission is at least in Brazil. The transmission coefficient between a father whose occupation is white-collar and child who works at white-collar job is between 0.64 and 0.95. For the occupation transmission from father who works at blue-collar jobs to a child with blue-collar occupation is seen at the highest in Puerto Rico, and the lowest in Brazil and Mexico. For the transmission from a father who is an agricultural worker to a child who works at the agricultural sector is the highest in Puerto Rico, and the lowest in Brazil.

Table 2 shows the estimations for the occupational transmission from a father to a son across the countries. The results that we obtained in such estimation is the same as in Table 1. The transmission from a father to son is the lowest in Brazil, and the highest in Puerto Rico in terms of white-collar job transmission across generations. For agricultural, and blue-collar occupation transmission across fathers-son pairs, the transmission coefficient is the lowest in Mexico, and Ecuador and Brazil, respectively. The highest transmission coefficient is belonging with Puerto Rico, again. All in all, since we get very low intergenerational occupational mobility coefficient that we find in our Prais-Shorrock Transition Matrices estimations, the results show that the intergenerational occupational transmission is very high, and persistent across generations. The results are depicted in Table 1 and 2.

In addition, Table 3 gives the Prais-Shorrocks transition matrices for mother-daughter pairs. The obtained findings show that the highest values are found for white-collar worker

transmission from mothers to daughters. The transmission is highest in Puerto Rico, again, and lowest in Brazil. The Prais-Shorrocks transition matrices clearly show that there is an extremely high occupational transmission from a mother to a daughter. Such transmission is the highest in Puerto Rico for white-collar jobs, and blue-collar occupations. For agricultural occupations, the highest occupational transmission from a mother and a daughter is seen in Costa Rica.
We find that the transmission coefficient is the higher than the father-son pairs for the mother-daughter pairs in the Latin American countries that we cover in the present study.

Table 1. Transition Matrices for Father-Child Pairs

	(1) IGM estimate (s.e) [%95 CI] Brazil	(2) IGM estimate (s.e) [%95 CI] Costa Rica	(3) IGM estimate (s.e) [%95 CI] Ecuador	(4) IGM estimate (s.e) [%95 CI] Mexico	(5) IGM estimate (s.e) [%95 CI] Panama	(6) IGM estimate (s.e) [%95 CI] Puerto Rico
White C. Transition	0.64 (0.003) [%95 CI: 0.637-0.648]	0.725 (0.008) [%95 CI: 0.709-0.740]	0.704 (0.006) [%95 CI: 0.693-0.716]	0.702 (0.002) [%95 CI: 0.698-0.706]	0.746 (0.026) [%95 CI: 0.694-0.798]	0.950 (0.046) [%95 CI: 0.861-1.040]
Blue C.	0.55 (0.004) [%95 CI: 0.544-0.561]	0.640 (0.010) [%95 CI: 0.621-0.659]	0.554 (0.006) [%95 CI: 0.543-0.566]	0.563 (0.003) [%95 CI: 0.557-0.568]	0.673 (0.019) [%95 CI: 0.635-0.711]	0.925 (0.047) [%95 CI: 0.834-1.016]
Agricultural worker	0.467 (0.003) [%95 CI: 0.461-0.474]	0.774 (0.011) [%95 CI: 0.753-0.796]	0.615 (0.006) [%95 CI: 0.603-0.627]	0.572 (0.01) [%95 CI: 0.570-0.575]	0.71 (0.040) [%95 CI: 0.636-0.793]	0.948 (0.050) [%95 CI: 0.851-1.048]
N	85183	10804	30096	243925	2227	606

Table 2. Transition Matrices for Father-Son Pairs

	(1) IGM estimate (s.e) [%95 CI] Brazil	(2) IGM estimate (s.e) [%95 CI] Costa Rica	(3) IGM estimate (s.e) [%95 CI] Ecuador	(4) IGM estimate (s.e) [%95 CI] Mexico	(5) IGM estimate (s.e) [%95 CI] Panama	(6) IGM estimate (s.e) [%95 CI] Puerto Rico
White Collar	0.40 (0.004) [%95 CI: 0.400-0.415]	0.695 (0.013) [%95 CI: 0.670-0.721]	0.649 (0.007) [%95 CI: 0.636-0.663]	0.579 (0.002) [%95 CI: 0.575-0.583]	0.614 (0.051) [%95 CI: 0.514-0.714]	0.953 (0.055) [%95 CI: 0.845-1.062]
Blue Collar	0.527 (0.004) [%95 CI: 0.519-0.536]	0.602 (0.013) [%95 CI: 0.577-0.627]	0.521 (0.011) [%95 CI: 0.501-0.542]	0.560 (0.005) [%95 CI: 0.551-0.569]	0.663 (0.028) [%95 CI: 0.607-0.718]	0.916 (0.054) [%95 CI: 0.809-1.023]
Agricultural worker	0.572 (0.004) [%95 CI: 0.564-0.579]	0.706 (0.018) [%95 CI: 0.671-0.741]	0.573 (0.009) [%95 CI: 0.556-0.591]	0.454 (0.002) [%95 CI: 0.450-0.458]	0.702 (0.026) [%95 CI: 0.651-0.753]	0.929 (0.068) [%95 CI: 0.795-1.062]
N	52961	6669	18802	157017	1347	372

Table 3. Transition Matrices for Mother-Daughter Pairs

	(1) IGM estimate (s.e) [%95 CI] Brazil	(2) IGM estimate (s.e) [%95 CI] Costa Rica	(3) IGM estimate (s.e) [%95 CI] Ecuador	(4) IGM estimate (s.e) [%95 CI] Mexico	(5) IGM estimate (s.e) [%95 CI] Panama	(6) IGM estimate (s.e) [%95 CI] Puerto Rico
White Collar	0.678 (0.005) [%95 CI: 0.669-0.687]	0.642 (0.018) [%95 CI: 0.607-0.677]	0.685 (0.010) [%95 CI: 0.665-0.705]	0.609 (0.004) [%95 CI: 0.601-0.617]	0.621 (0.027) [%95 CI: 0.567-0.674]	0.846 (0.053) [%95 CI: 0.743-0.950]
Blue Collar	0.575 (0.005) [%95 CI: 0.565-0.585]	0.636 (0.016) [%95 CI: 0.604-0.668]	0.576 (0.009) [%95 CI: 0.558-0.594]	0.553 (0.006) [%95 CI: 0.542-0.565]	0.606 (0.030) [%95 CI: 0.547-0.666]	0.838 (0.061) [%95 CI: 0.719-0.957]
Agricultural worker	0.513 (0.005) [%95 CI: 0.504-0.523]	0.80 (0.076) [%95 CI: 0.660-0.958]	0.511 (0.013) [%95 CI: 0.485-0.537]	0.508 (0.010) [%95 CI: 0.489-0.528]	0.430 (0.154) [%95 CI: -0.128-0.732]	N/A
N	34078	2598	9088	49226	880	276

Table 4 reports the RRR for six Latin American countries as estimated by MNL models. By default, we set agricultural workers as the reference group. Therefore, we estimate the probability to be, say a blue collar or a white collar worker separately, rather than an agricultural worker as a function of some individual and family characteristics: we find that becoming a blue collar worker conditional to having a father who was an agriculture worker is higher than the becoming a white collar worker conditional on having a father who is an agriculture worker. We also estimate father-son pairs for the intergenerational occupational transfer. The estimated results validate the findings of the main model. The obtained findings for the father-son pairs are depicted in Table 5. The obtained findings show that there is a very high occupational transmission from a father to a son in our sample. In all the countries, relative to the agriculture occupation, it is much harder to get a white-collar job rather than getting a blue-collar job. This probability is the highest in Mexico, while it is the lowest in Panama for getting a white-collar job, and that in Brazil for getting a blue-collar job.

<Insert Table 4 here>

<Insert Table 5 here>

In addition, as Sieverding (2015) emphasizes that a mother can be a role model for a daughter, especially in developing countries, we estimate the probability of intergenerational occupational transfer from mothers to daughters in the countries considered. For the occupational transmission for the mother-daughter pairs, we find that the magnitude of getting a white or a blue-collar occupation is lower than that of our father-son pairs. The occupational transmission from a mother to a daughter is the highest in Mexico, while it is the lowest in Panama.

<Insert Table 6 here>

Table 4. Multinomial Logit Models with RRR: Father-Child Pairs

	(1) Coccupation$_i$: Costa Rica	(2) Coccupation$_i$: Brazil	(3) Coccupation$_i$: Panama	(4) Coccupation$_i$: Ecuador	(5): Coccupation$_i$: Mexico	(6): Coccupation$_i$: Puerto Rico
1=White Collar						
Occufat$_i$	0.0800***	0.101***	0.0803***	0.160***	0.208***	0.388
	(-25.19)	(-124.12)	(-11.82)	(-61.84)	(-194.58)	(-1.09)
2=Blue Collar						
Occufat$_i$	0.129***	0.137***	0.136***	0.200***	0.212***	0.427
	(-20.79)	(-108.28)	(-9.61)	(-53.83)	(-176.19)	(-0.98)
3=Agriculture: Base Variable						
N	10804	85183	2227	30096	243925	606
Pseudo R2	0.06	0.16	0.05	0.09	0.12	0.001
Prob.>Chi Square	0.00	0.00	0.00	0.00	0.00	0.50

Note:
Exponentiated coefficients; *t* statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Robust standard errors are used.

Table 5. Father-Son Pairs

	(1) Coccupation$_i$: Brazil	(2) Coccupation$_i$: Panama	(3) Coccupation$_i$: Costa Rica	(4): Coccupation$_i$: Ecuador	(5) Coccupation$_i$: Mexico	(6): Coccupation$_i$: Puerto Rico
1=White Collar	0.100***	0.0858***				
Occufat$_i$	(-106.07)	(-10.83)	0.0930*** (-23.23)	0.157*** (-53.10)	0.191*** (-187.15)	0.430 (-0.98)
2=Blue Collar	0.140***	0.173***				
Occufat$_i$	(-88.07)	(-7.98)	0.147*** (-18.96)	0.206*** (-43.31)	0.213*** (-145.13)	0.457 (-0.90)
3=Agriculture: Base Variable			1 (.)	1 (.)	1 (.)	1 (.)
N	52961	1347	6669	18802	157017	372
Pseudo R2	0.19	0.07	0.07	0.11	0.17	0.001
Prob.> Chi-Square	0.00	0.00	0.00	0.00	0.00	0.63

Note: Exponentiated coefficients; *t* statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6. Mother-Daughter Pairs

	(1) Coccupation$_i$: Brazil	(2) Coccupation$_i$: Panama	(3) Coccupation$_i$: Costa Rica	(4): Coccupation$_i$: Ecuador	(5) Coccupation$_i$: Mexico	(6): Coccupation$_i$: Puerto Rico
1=White Collar	0.0496***	0.000754***				
Occmom$_i$	(-68.79)	(-7.98)	0.0121*** (-6.31)	0.0401*** (-33.47)	0.0513*** (-70.22)	1672638.1 (0.01)
2=White Collar	0.0804***	0.00464***				
Occmom$_i$	(-60.08)	(-6.07)	0.0650*** (-3.95)	0.0646*** (-29.51)	0.137*** (-50.56)	3622274.0 (0.01)
3=Agriculture: Base Variable			1 (.)	1 (.)	1 (.)	1 (.)
N	34078	880	2598	9088	49226	276
Pseudo R2	0.15	0.16	0.10	0.14	0.09	0.02
Prob.>Chi-Square	0.00	0.00	0.00	0.00	0.00	0.00

Note: Exponentiated coefficients; *t* statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Robustness Checks

We estimate our main model also only for women. The obtained findings show that the transition of occupations in both white and blue collar relative to agriculture work is much harder for daughters than for sons in our sample for all the countries considered. In our robustness checks, we set our age threshold at 28 years since getting a job may be a time-consuming process for a woman and especially in less developed countries. In this robustness check, we expect to have more occupational mobility for older individuals because it takes more time especially to find a higher skill job than that owned by parents rather than the same skill level job as that of parents. Indeed, the findings confirm our expectations: in fact, the coefficient of occupational mobility for women is higher than the obtained from our main model, which is depicted in Table 7.

<Insert Table 7 here>

Table 7. Estimation Results for the Main model at which age threshold is taken as 28

	(1) Coccupation$_i$: Brazil	(2) Coccupation$_i$: Panama	(3) Coccupation$_i$: Costa Rica	(4): Coccupation$_i$: Ecuador	Coc M
1=White Collar					
Occufat$_i$	0.110*** (-80.81)	0.0593*** (-7.88)	0.100*** (-17.45)	0.170*** (-44.56)	0. (-1
2=Blue Collar					
Occufat$_i$	0.144*** (-70.00)	0.104*** (-6.46)	0.154*** (-14.46)	0.201*** (-39.47)	0. (-1
3=Agriculture: Base Variable					
N	32279	809	4331	15236	1
Pseudo R2	0.18	0.07	0.06	0.10	
Prob.>Chi-Square	0.00	0.00	0.00	0.00	

Exponentiated coefficients; *t* statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Discussion and policy implications

In the present study, we examine the intergenerational occupational mobility for 6 Latin American countries. In doing so, we employ transition matrices and multinomial logit models. For low social mobility, there is expected to be very high occupational transmission from a father to a child. In the present study, we concentrate on the intergenerational occupation transmission across 6 understudied Latin American countries (Brazil, Costa Rica, Ecuador, Mexico, Panama, and Puerto Rico).

We find that for all the countries considered, there is very high occupational transmission from a father to a child. We also classify the occupations in three classes, and, thereafter, estimate the determinants of such transmission between the three occupations across generations . We find that relative to agricultural occupations, getting a white-collar job is very hard for our MNL estimates. We take into account that a mother can exert a role model for a daughter in developing countries, and, therefore, we estimate the occupational transmission from mother-daughter pairs. We find that the intergenerational transmission for getting a white-collar occupation relatively to agricultural occupations is much lower than that we get in our father-son pairs. Our transition matrices estimations show that there is a very high intergenerational occupational transmission across generations not only for men,. But also for women in Latin American countries.

Social mobility fosters economic devepment and the necessary structural change. The analysis helps identifying special social groups to whom to address special policy interventions. Such groups are the talented children of fathers working in agriculture, especially women. Thus, there is a need for policies to reduce borrowing constraints. Lower level educational institutions should develop soft skills for children with a poor occupational background. In addition, higher secondary schools and universities should provide also work-related skills and work experience to their students. Such policies may overcome the social immobility problems in terms of occupational mobility across generations and mitigate the low development problems.

Summary remarks

Latin American economies are subject to a high degree of inequality, poverty, and stagnant growth rates, and therefore researching social mobility has an essential importance for those countries. In this study, we examine the intergenerational occupational mobility in 6 Latin American countries. In doing so, we use transition matrices and multinomial logit models. We also find that the intergenerational transmission of occupations is very high across generations in 6 Latin American countries, which is obtained from our Shorrock-Prais transition matrices estimations.

Multinomial logit models are appropriate methods for a dependent variable that has a two or more outcomes. The obtained findings from the multinomial logit model show that occupational mobility across generations is mostly with blue collar workers relatively to the agricultural occupations.

The contribution of the present study is threefold. First, the present study uses a data bank which is understudied in the literature despite the fact that it provides information on occupations of parents of all children unlike the previous literature. Second, we estimate the probability of occupational mobility for children by using multinomial logit models as well as Shorrock-Prais transition matrices of all type of occupational background.

Like all empirical studies, also this study suffers from some limitations. Since we use cross-sectional data, the results only give a cross-section level estimate on the intergenerational occupational mobility. Moreover, in the IPUMS database, the occupation data are limited to the only 6 Latin American countries considered in our study.

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