Place of origin and the earnings of internal migrants in Mexico

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INDEX

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ABSTRACT

This paper examines the relationship between adult earnings of internal migrants in Mexico and the level of development of the place where they grew up, to understand whether being born and growing up in a disadvantaged place has any influence on the earnings of adult emigrants. Controlling for self-selection into migration and labour market participation, results suggest that growing up in a disadvantaged place is associated with significantly lower earnings among adults, and that emigrating does not weaken this relationship: migrants who grew up in a poorer place earn significantly less than migrants with similar characteristics but who grew up in a richer place. Results also suggest that growing up in a richer place is associated with higher adult earnings primarily because it increases the human capital of the migrant and of her network, and because it leads to more positive attitudes and beliefs about the future.

1. INTRODUCTION

Spatial inequality, that is, disparities among places in economic activities, incomes, and social indicators, is an important component of overall inequality (Berdegué et al., 2015; Elbers et al., 2004). Mexico displays high levels of spatial inequality among states and regions in both income and human development (Modrego and Beredgué, 2015). For instance, the GDP per capita of the ten richest municipalities is more than fifty times that of the ten poorest ones (US$ 32 thousand versus US$ 603) (Rimisp, 2012). Disparities appear to have widened over the last three decades, after a period of regional convergence between 1940 and 1985 (Rodríguez-Oreggia, 2007; Esquivel and Messmacher, 2002; Esquivel, 1999). The most notable gap is between the North, with very high growth rates, and the South, which consistently lags behind. Five states in the South-South Eastern regions concentrate most of the municipalities where the incidence of poverty has remained significantly higher than the national average for more than twenty years: Veracruz, Chiapas, Guerrero, Puebla, and Oaxaca (Pereira and Soloaga, 2014). There also appears to be a clear duality between urban and rural areas, with welfare improving over time in urban areas, but declining or stagnating in rural areas (Modrego and Beredgué, 2015). Spatial inequality has very tangible effects on people's welfare and opportunities, including through availability and quality of employment, education, and healthcare (Berdegué et al., 2015; Escobal et al., 2015; Paes de Barros et al., 2009), which, in turn, affect the capability of a person to live the life she values and to realize her dreams and ambitions.

Is spatial inequality something that policy makers should be concerned about? This is a controversial question. In addition to ethical concerns, proponents of territorial development policies argue that spatial inequality also means losing the growth potential of poorer regions (Berdegué et al., 2015; Olfert et al., 2014; Barca et al., 2012). On the other hand, neoclassical growth arguments predict that, over time, the relatively unimpeded movement of people and capital will lead to convergence in living standards across regions, with no need for territorial development policies (World Bank, 2009; Barro et al., 1991). A third argument reformulates the "inequality is good for growth" argument at the spatial level, suggesting that spatial inequality and therefore spatial concentration of economic activity generates agglomeration economies that are beneficial for aggregate growth. From this perspective, any attempt to redirect resources to poorer territories would be inefficient and come at the expense of national growth (Martin and Ottaviano, 1999). A preferred policy should instead be to remove barriers to emigration, so that dwellers of poorer territories can look for a better future elsewhere (World Bank 2009).

A key argument against territorial development policies thus relies on migration as an instrument for individuals to improve their fortunes, and as an adjustment mechanism to achieve the economic integration of lagging regions and shared prosperity from spatially uneven economic growth. Migration is, in fact, often motivated by such disparities in standards of living and opportunities, and can help individuals to escape the adverse consequences of living in a poor place. While it is not clear, both theoretically and empirically, if migration flows lead to convergence in living standards among regions (Bénassy and Brezis, 2013; Kanbur and Rapoport, 2005; Barro et al., 1991), evidence on individual returns to migration suggests that emigration allows both low- and high-skilled migrants to substantially increase their incomes and wellbeing (Gibson and McKenzie, 2012; Clemens, 2010; McKenzie et al., 2010; Stillman et al., 2009; Clemens et al., 2008), and to do so at nearly zero loss for native workers at destination (Ottaviano and Peri, 2011).

This paper recognizes the importance of migration for development and is motivated by a different concern: if spatial inequality leads to inequality of opportunities, migration alone might not succeed to completely reverse the detrimental impacts of growing up in a disadvantaged place. The paper examines the relationship between adult earnings of internal migrants in Mexico and the level of development of the place where they grew up, to understand whether being born and growing up in a disadvantaged place has any influence on the earnings of adult emigrants. It uses non-experimental nationally representative household survey data and proceeds as follows.

It estimates a least square earnings equation where the log of hourly earnings of internal migrants and natives is regressed on the standard covariates of a Mincer equation, as well as on a dummy indicating migration status; a variable proxying the level of development of the place where the individual grew up, measured at age twelve; and an interaction term between migration status and development at origin, which tests whether the relationship between development at origin and adult earnings is significantly different between migrants and natives. I find that growing up in a disadvantaged place is associated with

significantly lower earnings in adulthood, and that emigrating does neither change nor weaken this relationship.

It then uses a structural simultaneous model, similar to Whaba (2015), to investigate whether self-selection into migration and into labor market participation is driving the least squares result. If unobserved variables are simultaneously influencing the decision to migrate, the decision to work, and earnings, then the least square estimate will be a biased and inconsistent estimate of the relationship between development at origin and earnings. Even after controlling for both sources of potential selection bias, the baseline result is confirmed: growing up in a disadvantaged place is associated with lower earnings, even among those who have moved to a different place.

The paper then discusses some of the mechanisms through which the level of development of the place where an internal migrant grew up may affect her earnings as an adult living in a different place. First, it uses sequential *g*-estimation to examine whether development at origin affects adult earnings primarily through its influence on the human capital of parents, or whether growing up in a poorer place lowers adult earnings independently of the human capital of parents. Results suggest that there is an effect of development at origin that does not operate exclusively through parental human capital. Second, emigrants from poorer places may choose destinations with a production structure that matches their skills, and which might be equally poor, as found by Nord (1998). This, however, does not appear to be the case in this study, where I find that emigrants from poorer places are not systematically moving to poorer destinations.

Third, the level of development of the place where a child grows up may influence directly her own human capital formation, by determining access to and quality of health and education services, and this in turn will affect her earnings. Fourth, it may influence her access to social capital and its quality, which can facilitate job search and access to better jobs. Fifth, the local level of development and the observed living standards of role models and surrounding peers may affect individual beliefs, aspirations, and attitudes toward the future, which in turn can influence both decisions and outcomes (Ray, 2006). Proxying for each of these mechanisms in turn, *g*-estimation results suggest that neither one is the sole channel through which development at origin affects adult earnings of emigrants. Instead, it appears that growing up in a poor place affects adult earnings through the *combination* of the three mechanisms: human capital of the migrant, human capital of her network, and her beliefs about the future.

This is, to the best of my knowledge, the first study of the relationship between the development of the place of origin during childhood and adult labor market outcomes for the case of internal migration, and to investigate possible mechanisms through which growing up in a poor place may affect the earnings of adults living in a different place. The remainder of this paper proceeds as follows. Section 2 reviews the literature. Section 3 describes the data used and the definitions of internal migration and of the level of development of the place where someone grew up. Section 4 presents some *prima facie* differences between migrants coming from richer and poorer places. Section 5 presents the results of the least squares and structural estimations of the relationship between development at origin and adult earnings. Section 6 discusses mechanisms that may explain this relationship, and Section 7 concludes.

2. PREVIOUS LITERATURE

The literature on international migration finds that there are large differences in the labor market performance of immigrants by source country, even controlling for observables such as schooling. The general finding is that the poorer the source country, the poorer the performance (Coulombe et al., 2014; Li and Sweetman, 2014; Mattoo et al., 2008; Bratsberg and Teller, 2002; Friedberg, 2000. See Hatton, 2014 for a survey of the literature). The main drivers of such differences are found to be the quality of home country education, proficiency in the language of the host country, and compatibility with labor market requirements at destination.

The relationship between the level of development of the place of origin and labor market outcomes has not be examined for the case of internal migration. The focus of the literature has instead been on the role of neighborhoods on residents' socio-economic outcomes, mainly in the US and in Europe, following two broad strands: the relationship between the characteristics of the neighborhood where someone lives on

various individual socio-economic outcomes; and the impact of programs that promote relocation to a "better" neighborhood within the same city.

Neighborhood characteristics have significant impacts on socio-economic outcomes. Several studies found that individuals who live in deprived areas fare worse than those who live in wealthier neighborhoods on a wide range of economic, health, and educational outcomes (Diez-Roux and Mair, 2010; Durlauf, 2004; Sampson et al., 2002; Leventhal and Brooks-Gunn, 2000; Cutler and Glaeser, 1997; Jencks and Mayer, 1990).

With respect to the impact of moving to a better neighborhood, Chetty et al. (2016), evaluating the Moving to Opportunity program in the US, found that children younger than 13 who moved to a lower-poverty neighborhood experienced significant improvements in their long-term outcomes. The gains from moving, however, decrease with the age when children move, and adults experienced no gains from moving, suggesting that exposure to an unfavorable context has long term impacts that are irreversible for adults. This is consistent with recent evidence suggesting that the amount of time individuals spend in a poor neighborhood during their childhood is a key determinant of their long-term outcomes (Chetty and Hendren 2015; Crowder and South, 2011; Wodtke et al., 2011).

3. THE DATA

3.1. The Mexican Family Life Survey

This paper uses the third round of the Mexican Family Life Survey (MxFLS), which started in 2009 and ended in 2012 and is representative at national, rural, urban, and state level.[1] It also uses the first wave of the survey, conducted in 2002, to recover information on individual migration history. MxFLS is a multi-purpose living standards survey collecting data on a vast range of demographic and socio-economic characteristics, including employment, health, schooling, and cognitive abilities[2]; as well as detailed information on migration collected for all household members age fifteen and above.

The sample used for the analysis includes working age men and women (that is, between 15 and 65 years old) who are not currently in school, and who have lived in the municipality where they were born at least until age twelve. The cutoff at twelve derives from the structure of the survey, which asks some key retrospective questions on living conditions and migration status at that age. It is, however, also meaningful in terms of the stages of development of the child (Piaget, 1972) and consistent with recent evidence on the critical age at which the consequences of childhood exposure to neighborhood conditions become irreversible (Chetty et al., 2016). The outcome of interest is the log of hourly earnings in the year 2009-2010, which includes the wages of wage workers, and the earnings of self-employed workers.

The construction of both the migration variable and the proxy for development at origin rely on retrospective self-reported information, which might be subject to recall bias leading to measurement error. Cross-country evidence, however, suggests that adult and elderly respondents accurately remember their living conditions during childhood (Havari and Mazzonna, 2015; Brown, 2013; Krieger et al., 1998; Berney and Blane, 1997).

3.2. Measuring internal migration and development at origin

The place of origin of the individual, her internal migration status, and the level of development of the place of origin, are reconstructed using the information available in the migration module of the MxFLS, and are defined as follows.

Place of origin is defined as the municipality where the individual was born and lived until she was twelve years old. An individual is defined as an internal migrant if, at the time of the survey, she has been living for at least one year in a different municipality from where she was born and lived until the age of twelve. The

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[1] The survey was developed and managed by researchers from the Iberoamerican University and the Center for Economic Research and Teaching, both in Mexico, in collaboration with researchers from Duke University in the United States. For details about the data collection and methodology, see Rubalcava and Teruel, 2006.

[2] A cognitive abilities test consisting of twelve questions from Raven's Progressive Matrices test (Raven, 2000) was administered during the survey to all individuals older than fourteen.

survey does not qualify as changes of municipality any movements within metropolitan areas (such as Mexico City). For migrants, the survey only provides the name of the state where they were born and grew up, but not the municipality. It does, however, provide some retrospective information on the living conditions of the individual at age twelve, namely, the source of drinking water and sanitation; and the kind of place where she was living, whether it was a city, small town, or village.

I construct the proxy for the level of development of the place of origin by aggregating individual retrospective information on the source of drinking water used in the household when the respondent was twelve years old, namely whether the household had access to an indoor or outdoor drinking water source. Indoor sources, such as decanter or tap water inside the house, are safer and therefore better quality than outdoor ones, such as surface water or carrying water from wells (see for instance, Bain et al., 2014; Bhalotra and Venkataramani, 2013; Venkataramani et al., 2013; Walker et al., 2007; Miguel and Kremer, 2004). I construct the proxy by averaging individual access to drinking water (a) by state; (b) by type of place of birth within the state (city, small town, or village); and (c) by cohort, defined as five-year intervals in the age of respondents within each state-place unit, to control for progress in safe water provision over time. The variable thus obtained ranges from 0 to 1, and represents, for each state-place-cohort combination, the share of people who had access to drinking water inside their dwelling when they were twelve years old. A larger share of people with indoors access to drinking water proxies a higher level of local development.

The local level of access to safe drinking water is a good proxy for the level of development of the place of origin because it is highly correlated with local levels of human and socio-economic development, and the geography of water availability mirrors the spatial distribution of access to many other opportunities (Paes de Barro, 2009; Minot et al., 2006; UNDP, 2006; Soares et al., 2002). Moreover, the spatial distribution of safe water is typically the result of political decisions more than of water availability *per se*, and as such it reflects the local institutional setup and power relations, which are a fundamental determinant of human and socio-economic development (Ioris, 2012; Hunter et al, 2010; Namara et al, 2010; UNDP, 2006). In Latin America, access to safe water has been historically higher in high income city areas, much lower in smaller cities and rural areas, and often non-existing in peri-urban slums. Overall, access to safe water is systematically lower in areas where deprived populations live (WHO and UNICEF, 2014; Ioris, 2012; Domínguez Aguilar, 2009; Olivares and Sandoval; 2008; UN-Habitat, 2006; UNDP, 2006; Jouravlev, 2004; Soares et al, 2002).

For Mexico, Table 1 reports binary correlation coefficients for the relationship between the share of households with access to indoor water sources in the municipality and municipal standards of living, measured with monthly income per capita and poverty indices, using Census data for 1990, 2000 and 2010 and Small Area Estimates of municipal poverty and income per capita.[3] The correlation is always highly significant (p<0.0001), and the magnitude is large, although decreasing over time. For instance, in 1990, the share of households with access to indoor water sources had a positive correlation of 0.6 with municipal income per capita, and a negative correlation of 0.65 with the poverty headcount based on capabilities.

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[3] Small Area Estimates (SAE) are a technique which combines survey data with population censuses and other sources, to improve the accuracy of survey estimates of municipal characteristics (Elbers et al. 2002; Elbers et al. 2003).

Table 1: Correlation coefficients between the share of households with access to indoor water in the municipality, and municipal standards of living

	1990	2000	2010
Monthly income per capita	0.5980	0.4760	0.3834
Food poverty			
Headcount Index	-0.6457	-0.5283	-0.4587
Poverty Gap Index	-0.5936	-0.4967	-0.4658
Squared Poverty Gap Index	-0.5475	-0.4639	-0.4575
Assets poverty			
Headcount Index	-0.6362	-0.5053	-0.3839
Poverty Gap Index	-0.6331	-0.5211	-0.4450
Squared Poverty Gap Index	-0.6102	-0.5081	-0.4565
Capabilities poverty			
Headcount Index	-0.6504	-0.5278	-0.4437
Poverty Gap Index	-0.6108	-0.5082	-0.4636
Squared Poverty Gap Index	-0.5710	-0.4808	-0.4610

Source: Population Census Data, 1990, 2000 and 2010. Note: food-based poverty, capabilities-based poverty and assets-based poverty were the three official poverty measures of Mexico until 2010 and are equivalent to extreme poverty, poverty, and moderate poverty.

4. DESCRIPTIVE ANALYSIS

The sample used for the analysis includes 6970 working-age men and women, of which 759 (11 percent) are migrants. I refer to individuals currently living in the place where they were born and grew up as natives. This section discusses, first, differences in the socio-economic profile of immigrants and natives; and second, differences among immigrants by level of development of the place where they grew up.

4.1. Differences between immigrants and natives

Table 2 presents mean characteristics of immigrants and natives. Immigrants are, on average, about three years older than natives and have one more year of work experience. They are significantly more likely to be women, and less likely to belong to an indigenous group. The two groups do not show any significant differences in terms of average human capital, labor market status and outcomes. There is also no significant difference in the mean level of development of the place where immigrants and natives were born and grew up (0.58 for natives and 0.59 for migrants; t-statistic: -1.224). Thus, we cannot conclude that migrants as a group are systematically drawn from either richer or poorer places. Figure 1 shows the occupational distribution of migrants and natives. There are no significant differences between the two groups in the probability of being a wage worker, an employer, or self-employed. In contrast, natives are more likely than immigrants to be farmers or farm workers, while immigrants are more likely than natives to work in the unskilled service sector.

Table 2: Mean characteristics of immigrants and natives

	Migrant	St. Dev.	Native	St. Dev.	t-stat
Age	41.265	10.114	39.948	11.172	-3.346
Female (%)	0.621	0.486	0.543	0.498	-4.130
Indigenous (%)	0.088	0.284	0.164	0.370	6.678
Years of education	8.328	2.857	8.117	2.739	-1.928
Cognitive abilities score	6.076	3.012	5.933	2.999	-0.972
Years of experience	26.831	10.511	25.756	11.915	-2.620
In labor force (%)	0.427	0.495	0.422	0.494	-0.238
Wage worker (%)	0.805	0.397	0.816	0.387	0.450
Annual earnings (MEX$)	44'613	30'671	43'487	34'649	-0.554
Hours worked per week	43.207	17.931	43.444	16.810	0.203
Earnings per hour	23.827	27.217	22.909	26.913	-0.515
Development at origin at age 12	0.595	0.282	0.582	0.271	-1.224

Source: Author's calculations based on the Mexican Family Life Survey 2002 and 2009. The cognitive abilities score is the result of a twelve-questions test from Raven's Progressive Matrices test, administered during the survey (Raven, 2000). Earnings include wages for wage workers, and the earnings of self-employed workers. The reported t-statistic is the result of an equality of means test allowing for unequal variance between the two groups.

Figure 1: Occupational distribution by migration status

(a)   (b)
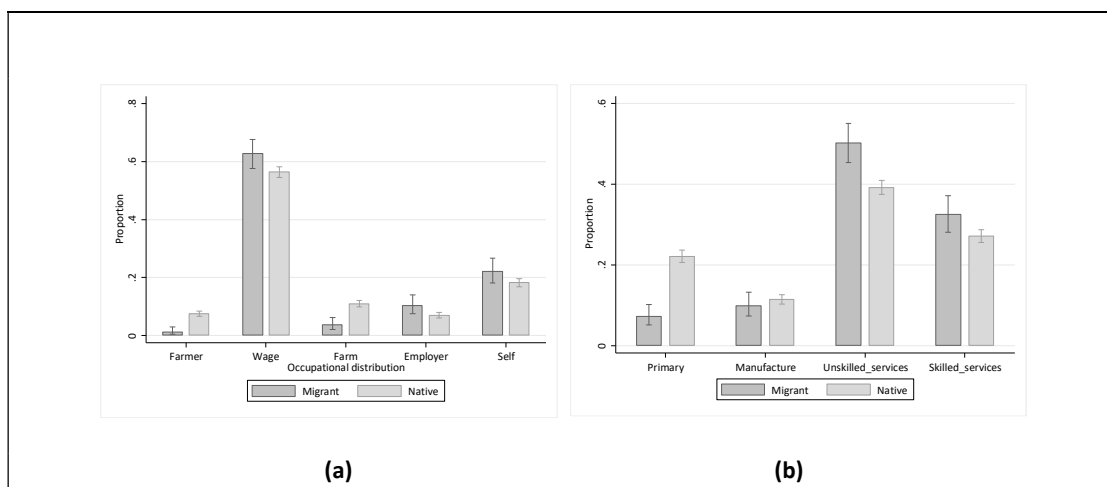
Source: Author's calculation based on the Mexican Family Life Survey 2002 and 2009.

4.2. Immigrants by level of development of the place of origin

Figure 2 shows that there are no significant differences in the main reason for migration for immigrants who grew up in richer and poorer places, defined, respectively, as places with a level of development above and below the sample median. The most common reason for migration in both groups is work-related, followed by reasons related to the life-cycle (including marriage, pregnancy, and death of a spouse). Table 3 shows mean characteristics of immigrants by quintiles of level of development of the place where they

grew up. Immigrants from the least developed places (column Q1 in Table 3) are more likely to belong to an indigenous group, are on average older and have more years of experience than any other group (eleven more compared to immigrants from the richest territories). They have two fewer years of schooling than immigrants from the richest territories (column Q5 in Table 3), and their score in the cognitive abilities test is 1.6 points lower. They have also been living at destination about five years longer. Once at destination, they are less likely to participate in the labor force than immigrants from richer territories.

Figure 2: Mean reason for migration for immigrants who grew up in poorer and richer places
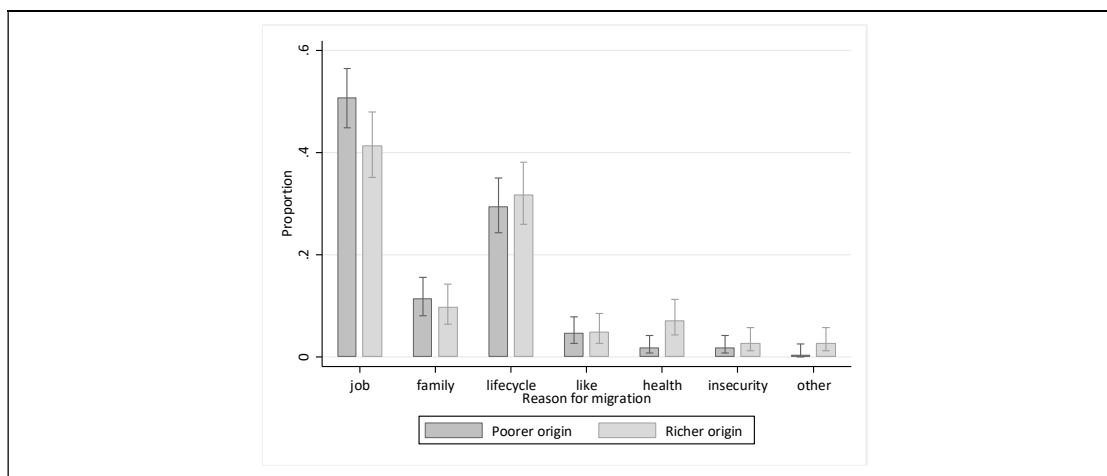
Source: Author's calculations based on the Mexican Family Life Survey 2002 and 2009.

Table 3: Immigrant characteristics by level of development of the place of origin

	Q1	Q2	Q3	Q4	Q5	Kruskal-Wallis chi^2
Age	46.334	41.967	39.297	41.390	35.471	71.002
Female (%)	66	60	67	59	60	1.991
Indigenous (%)	13	18	10	0.7	2.7	7.536
Years of education	6.963	7.763	8.220	9.676	9.233	66.166
Cognitive abilities score	5.211	5.306	6.286	7.219	6.826	28.530
Years of experience	33.084	28.741	25.681	25.456	22.205	62.501
In labor force (%)	34	45	40	48	52	4.896
Annual earnings (MEX$)	31,873	38,737	36,631	52,476	49,285	11.036
Hours worked per week	46.065	43.423	41.808	43.054	43.625	1.522
Earnings per hour	14.349	19.492	23.451	31.350	24.576	10.925
Years since migration	19.645	19.309	16.824	15.596	14.918	24.141

Source: Author's calculations based on the Mexican Family Life Survey 2002 and 2009. Note: Columns Q1 to Q5 represent quintiles of the level of development of the place of origin, with Q1 the least developed and Q5 the most developed places. Development of the place of origin is defined as individual access to drinking water at the age of 12, averaged by state, by type of place of birth, and by five-years intervals. Earnings include wages for wage workers, and the earnings of self-employed workers. The cognitive abilities score is the result of a twelve-questions test from Raven's Progressive Matrices test, administered during the survey (Raven, 2000). The reported chi^2 is the results of a Kruskal–Wallis equality-of-populations rank test.

These differences in observed characteristics could arise if growing up in a disadvantaged place directly influences individual characteristics, for instance by providing fewer resources for education. They could also arise if the pattern of self-selection into migration is systematically different between richer and poorer places: if, for instance, migrants from poorer places were systematically drawn from the group with lower human capital, while migrants from richer places are systematically drawn from the group with higher human capital. This hypothesis is only partially supported by the data: Table 4 shows that the pattern of self-selection into migration is the same in both richer and poorer places in terms of human capital, but women are more likely to migrate than men in the poorest territories, but not in the richest ones.

Table 4: Mean characteristics of migrants and natives by level of development of the place of origin

	Migrant	St. Dev.	Native	St. Dev.	t-stat
From richer places					
Female (%)	59.3	49.2	54.3	49.8	-1.535
Indigenous (%)	1.6	12.7	6.7	24.9	5.362
Years of education	9.451	2.725	9.263	2.547	-1.045
Cognitive abilities score	6.960	2.983	6.713	3.064	-1.031
From poorer places					
Female (%)	64.3	4	54.3	49.8	-3.454
Indigenous (%)	15.7	36.4	24	42.7	3.767
-Years of education	7.457	2.699	7.217	2.541	-1.485
Cognitive abilities score	5.479	2.748	5.307	2.793	-0.822

Source: Author's calculations based on the Mexican Family Life Survey 2002 and 2009. The cognitive abilities score is the result of a twelve-questions test from Raven's Progressive Matrices test, administered during the survey (Raven, 2000). The reported t-statistic is the result of an equality of means test allowing for unequal variance between the two groups.

Among migrants who do work, there are no significant differences in the number of hours worked, nor in employment status, as shown in Panel (a) of Figure 3. Meanwhile, panel (b) of Figure 3 shows that immigrants from poorer origins are more likely to work in the unskilled service sector, and less likely to work in the skilled service sector, compared to immigrants from richer origins.
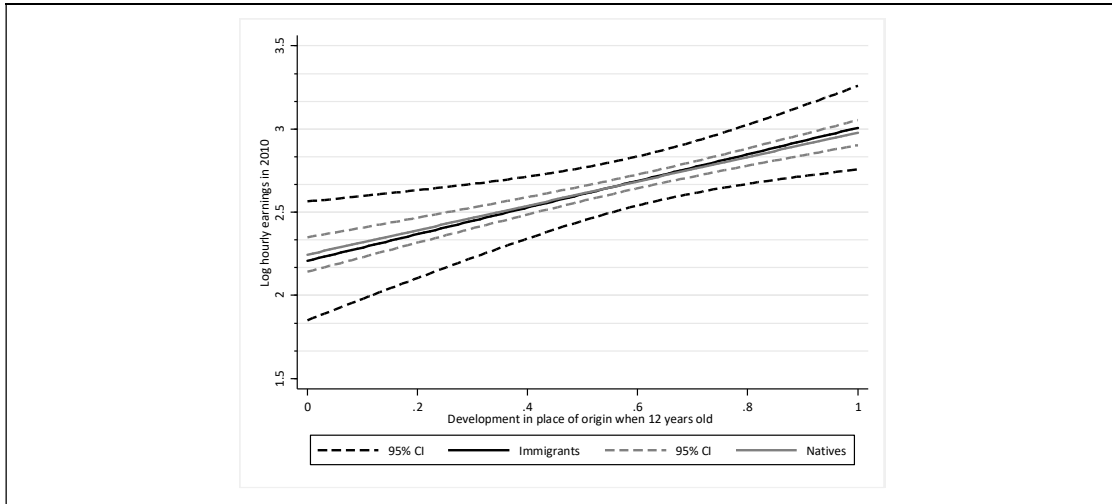
Figure 3: Occupational distribution of immigrants by development at origin: Employment status and sector

(a)   (b)
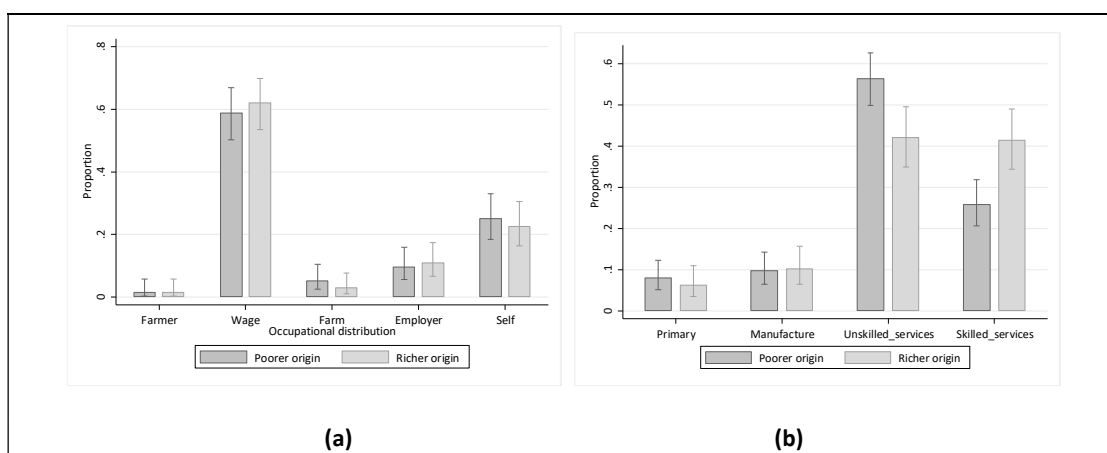
Source: Author's calculations based on the Mexican Family Life Survey 2002 and 2009.

Prima facie, differences in earnings by level of development of the place of origin are substantial. On average, immigrants from the richest territories earn 55 percent more per year, and 71 percent more per hour, than immigrants from the poorest territories. Figure 4 shows the relationship between current hourly earnings of working immigrants and natives, and the level of development of their place of origin when they were twelve years old. The relationship is positive and significant for both immigrants and natives. For the case of natives, this is not surprising: the place of birth of natives is their current place of residence, and some degree of path dependence in local development patterns is expected. But the relationship is positive and significant also for immigrants, and in fact it does not appear to be significantly different from that of natives. That is, immigrants who grew up in poorer places are earning *today* significantly lower incomes than immigrants who grew up in richer places, despite having lived at destination for more years than immigrants from richer places.

Figure 4: Current hourly earnings as a function of place development when the individual was 12

Source: Author's calculations based on the Mexican Family Life Survey 2002 and 2009. Note: Development in the place of origin is defined as individual access to drinking water at the age of 12, averaged by state, by type of place of birth, and by five-years intervals.

5. THE RELATIONSHIP BETWEEN DEVELOPMENT AT ORIGIN AND ADULT EARNINGS

5.1. Baseline estimation

The baseline relationship between growing up in a disadvantaged place and the adult earnings of natives and immigrants is estimated with a least square earnings equation (Chiswick, 1978):

$$\ln(hw)_i = \alpha_0 + \alpha_1 S_i + \alpha_2 CAS_i + \alpha_3 EXP_i + \alpha_4 EXP_i^2 + \\ \alpha_5 M_i + \alpha_6 DEV_i + \alpha_7 M * DEV_i + \varepsilon_i \tag{1}$$

Where $\ln(hw)_i$ is the log of hourly earnings, which includes wages for wage workers, and earnings for self-employed workers; S is the number of completed years of schooling; CAS is the score obtained in the cognitive test administered during the survey, which proxies for the quality of human capital; EXP is years of labor market experience, calculated as respondent's age minus years of education completed, minus six (the age of enrolment in schooling); M is a dummy equal to one if the person is an immigrant, zero otherwise; DEV is the level of development of the place where the person was born and grew up, measured when she was twelve; $M * DEV$ is an interaction term between the migration status of the individual and the level of development of her place of origin; and ε_i is an error term measuring unobserved earnings

10

potential. Controls for gender, ethnicity, and sector of occupation (primary, secondary, unskilled and skilled services) are also included. Individual earnings are expected to increase with schooling and cognitive abilities, and to increase at a decreasing rate with labor market experience. The coefficients of interest are α_5, α_6 and α_7, which measure, respectively, the native-immigrant wage gap; the relationship between adult earnings and the level of development of the place where someone was born and grew up; and whether migrating weakens the relationship between origins and adult earnings.

Table 9 in the Appendix reports the summary statistics for the variables used in the regression analysis. Table 5 presents the results. Standard errors are robust and clustered at the level of the state where the individual grew up. Model 1 includes migration status and level of development at origin in additive form, Model 2 includes them in interactive form, and Model 3 is the full specification of Equation (1).

The coefficient on the migration status dummy is never statistically significant, suggesting no evidence of an earnings gap between migrants and natives. This result is not surprising: a migrant-native wage gap is usually found in the literature on international migration, and is largely explained by differences in language and mismatch between migrants' skills and the production structure and technology at destination. All these differences are expected to be much smaller in the context of internal migration. On the other hand, this result does not mean that migration fails to improve migrants' living standards compared to what they would have obtained at home: they might still be earning more at destination than they would have at the origin.

The coefficient on the variable measuring the level of development of the place where the individual was born and grew up is always positive and highly significant. The interaction term tests for statistical differences between migrants and natives in the relationship between development at origin and earnings. The coefficient is never significant, indicating that the relationship of development at origin with adult earnings is the same for both natives and migrants. The magnitude of the coefficient on development at origin decreases substantially when controlling for individual characteristics (Model 3), suggesting a positive correlation between development at origin and individual characteristics, such as human capital. Model 3 indicates that, *ceteris paribus*, an improvement in the characteristics of the place where someone is born and grows up is associated with a 53% increase in adult hourly earnings on average. Figure 5, based on Model 3 in Table 5, shows this relationship for immigrants: controlling for other characteristics, the predicted log hourly earnings of immigrants are significantly higher among those who grew up in richer places.

With respect to the role of the other individual characteristics, Model 3 indicates that hourly earnings are 20% lower for women than for men, and 27% lower for workers belonging to an indigenous group. One additional year of schooling is associated with an increase in hourly earnings by 5.3%, while scoring one additional point in the cognitive abilities test is associated with an increase in hourly earnings by 1%. Each additional year of experience is associated with a 3% earnings premium. With respect to the returns to working in different sectors, compared to working in the primary sector (the base category), manufacture workers earn 33% more per hour, unskilled service workers earn 28% more per hour, and skilled service workers earn 60% more per hour.

Overall, these results suggest that there is no wage gap between internal migrants and natives; that people who were born and grew up in richer places receive higher earnings today; and that internal migration does not weaken the relationship between the context where the person grew up, and her adult earnings. The next section investigates whether this result is driven by self-selection into migration and labor force participation.

Table 5: Current hourly earnings and development at origin with no control for selectivity

Dependent variable: Log hourly earnings	(1)	(2)	(3)
Development at origin	0.751***	0.740***	0.518***
	(0.087)	(0.086)	(0.104)
Migrant	-0.029	-0.104	-0.101
	(0.062)	(0.205)	(0.216)
Migrant*Dev		0.123	0.174
		(0.295)	(0.349)
Female			-0.202***
			(0.054)
Ethnic minority			-0.269***
			(0.089)
Years of education			0.053***
			(0.008)
Cognitive abilities test score			0.009
			(0.010)
Years of experience			0.029***
			(0.009)
Experience squared			-0.000**
			(0.000)
Sector: Manufacture			0.333***
			(0.088)
Sector: Unskilled services			0.283***
			(0.083)
Sector: Skilled services			0.600***
			(0.079)
Constant	2.241***	2.247***	1.228***
	(0.051)	(0.050)	(0.192)
Observations	2370	2370	1661
R^2	0.039	0.039	0.161

Robust standard errors in parentheses; standard errors are clustered at the state of birth. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Figure 5: Predicted log hourly earnings of immigrants, by level of development of the place of origin.
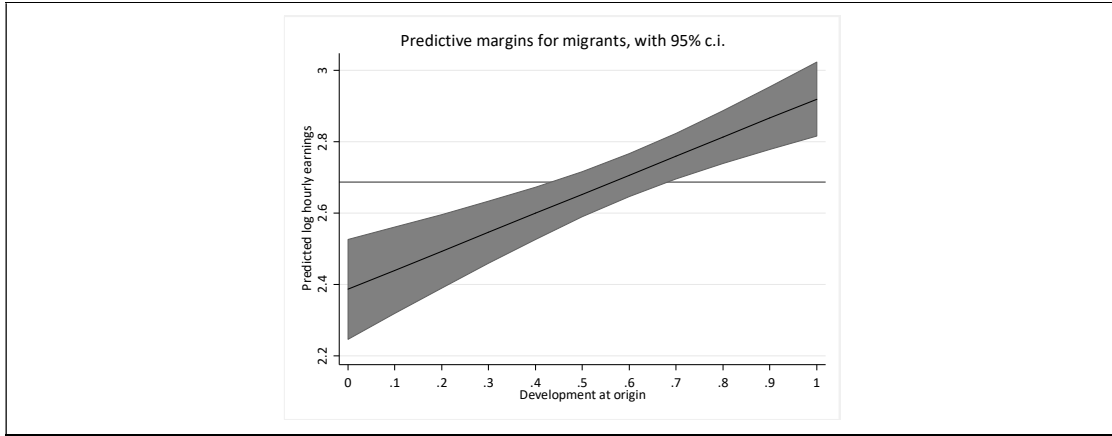
Note: Predictive margins estimated using results from Model 3 in Table 8. The horizontal line at 2.68 is the sample mean log hourly earnings, equivalent to MEX$ 15.

5.2. Self-selection into migration and into labor force participation

If immigrants and labor market participants differ from the rest of the population in unobserved ways, then the OLS estimator will be a biased and inconsistent estimate of the relationship between of development at origin and adult earnings. To address this problem, I employ a conditional mixed process estimator (CMP) to estimate a multi-equation mixed system, similar to Whaba (2015). Earnings are observed only for labor market participants, that is, if and only if $P_i > 0$. In turn, labor market participation, P_i, only occurs when the unobservable latent variable measuring the gains from participation in the labor market is positive, i.e. $P_i^* > 0$:

$$P_i = \boldsymbol{L_i}\lambda + \eta_i, \qquad where\ P_i = 1\ if\ P_i^* > 0;\ 0\ otherwise \qquad (2)$$

Migration only occurs when the unobservable latent variable measuring the gains from migration is positive, that is, $M_i^* > 0$:

$$M_i = \boldsymbol{K_i}\psi + \varphi_i, \qquad where\ M_i = 1\ if\ M_i^* > 0;\ 0\ otherwise \qquad (3)$$

Vectors **L** and **K** include controls and exclusion restrictions.

Equations 1, 2 and 3 are estimated simultaneously by fitting a Seemingly Unrelated Regression (SUR) simultaneous equation model, where endogenous variables can be included on the right side of other equations, their errors can be correlated through sharing a multidimensional distribution, different equations can be estimated for the relevant sub-sample, and not all the regressors need to appear in all equations (Roodman, 2011). CMP models self-selection into migration and into the labor force (Equations 3 and 2, respectively) simultaneously for the full sample; and the outcome variable (Equation 1) for the subset of working individuals.

Identification of the structural model requires valid exclusion restrictions for the migration and labor market participation choices, that is, variables that affect each decision but do not directly affect the outcome of interest. For the migration decision, I use population growth between 1970 and 1980 in the municipality where the individual is living at the time of the survey, as a proxy for growth in labor demand and in the attractiveness of the destination (Krugman, 1991; Glaeser et al., 2001; Glaeser and Gottlieb, 2009). For natives, this variable measures population growth between 1970 and 1980 in the municipality where they grew up and are currently living. The identifying assumption is that labor demand growth at destination attracts immigrants and retains natives, but does not directly influence wages paid thirty years later, since migration is an option and internal migration flows are large (UN-DESA and OECD, 2013; Viramontes et al.,

13

2013). To avoid reverse causality, only migrants who arrived at their current destination after 1980 are included in the analysis. They represent more than 70 percent of total migrants in the sample (see Figure 8 in the Appendix). A potential threat to validity is that past municipal growth and current labor force participation of immigrants might be correlated: a buoyant local labor market may make labor market participation easier and more attractive for immigrants. A simple, binary correlation, however, suggests no significant relationship between past population growth at destination and current labor market participation of immigrants (rho=0.077, p-value=0.124).

To control for selection into labor market participation, I follow Whaba (2015) and rely on the heterogeneity of household composition, by exploiting the total number of household members younger than six, and between six and fifteen years of age, at the time of the survey. The identifying assumption is that the number of dependent children in the household affects the participation decision, but does not have a direct effect on earnings, once other characteristics are controlled for. A potential threat to validity is that presence and age of children might affect migration decisions. The correlation between migration status and presence of children between six and fifteen is not significant (rho=0.010, p-value=0.401). The correlation between migration status and presence of children younger than six, on the other hand, is significant, albeit small (rho=-0.034, p-value=0.005) However, this correlation might simply reflect the older age at which migration occurs in the sample, and which makes it less likely to have younger children. In fact, when controlling for age, the correlation between migration status and having children younger than six disappears (chi^2=2.20, p-value=0.138).

Table 6: Structural models

	(1)	(2)
	Selection into labor force	Full structural model
Eq. 1. Dependent variable: Log hourly earnings		
Migrant	-0.101	0.073
	(0.216)	(0.238)
Development at origin	0.521***	0.519***
	(0.100)	(0.099)
Migrant*dev	0.174	0.174
	(0.348)	(0.354)
Female	-0.221***	-0.224***
	(0.051)	(0.050)
Ethnic minority	-0.269***	-0.263***
	(0.089)	(0.088)
Years of education	0.053***	0.053***
	(0.008)	(0.009)
Cognitive abilities score	0.010	0.010
	(0.011)	(0.011)
Years of experience	0.029***	0.029***
	(0.009)	(0.009)
Experience squared	-0.000**	-0.000**
	(0.000)	(0.000)

Sector: Manufacture	0.332***	0.333***
	(0.088)	(0.087)
Sector: Unskilled services	0.282***	0.281***
	(0.083)	(0.083)
Sector: Skilled services	0.600***	0.599***
	(0.079)	(0.079)

Eq. 2. Dependent variable: In labor force

Development at origin	0.166*	0.166*
	(0.095)	(0.095)
Age	0.063***	0.062***
	(0.013)	(0.013)
Age squared	-0.001***	-0.001***
	(0.000)	(0.000)
Female	-1.067***	-1.067***
	(0.060)	(0.060)
Ethnic minority	0.024	0.025
	(0.062)	(0.062)
Years of education	0.019**	0.019**
	(0.009)	(0.009)
Cognitive abilities score	0.060***	0.060***
	(0.010)	(0.009)
N of children < 5	0.008	0.009
	(0.021)	(0.021)
N of children 6-15	-0.040*	-0.040*
	(0.022)	(0.022)

Eq. 3. Dependent variable: Migrant

Development at origin		-0.114
		(0.395)
Age		0.010
		(0.007)
Female		0.203***
		(0.046)
Ethnic minority		-0.229
		(0.158)
Years of education		-0.000
		(0.013)
Cognitive abilities score		0.032**

		(0.013)
Population growth 1970-80		0.687[*]
		(0.360)
Sigma_1	-0.084[***]	-0.083[***]
	(0.024)	(0.024)
atanhrho_12	0.030	0.028
	(0.059)	(0.059)
atanhrho_13		-0.105[**]
		(0.053)
atanhrho_23		0.034
		(0.044)
Observations	4084	6498

Robust standard errors in parentheses; standard errors are clustered at the state of birth. [*] $p < 0.10$, [**] $p < 0.05$, [***] $p < 0.01$.

Table 6 reports the results of the structural simultaneous models of log hourly earnings. Standard errors are robust and cluster at the state of birth level. Model 1 is a Heckman selection model for labor market participation and Model 2 is the full structural model explicitly modelling both labor market participation decision and selection into migration. Development at origin is allowed to influence separately each decision as well as current earnings. The exclusion restriction for the migration equations is significant and with the expected sign. The number of children between six and fifteen years old is a negative and significant predictor of labor market participation, while the number of younger children is not. There is no significant correlation among the error terms of the equations, except for a negative and significant (at 5% level) correlation between the error terms of the earnings and of the migration equation, suggesting that unobserved factors that make emigration more likely tend to be associated with lower earnings.

Even controlling for these sources of selectivity, results still show no evidence of a migrant-native wage gap, nor of a difference between migrants and natives in the role of the level of development of the place where they grew up. Overall, Model 2 indicates that the relationship between development at origin and adult earnings is not driven by self-selection: the coefficient on development at origin increases slightly, by 0.19%, compared to Model 3 in Table 5, and does not lose significance. Results reported in Model 2 indicate that development at origin also has a positive and significant relationship with labor market participation, while it does not appear to influence the migration decision, on average and *ceteris paribus*.

6. CHANNELS OF INFLUENCE OF DEVELOPMENT AT ORIGIN

Results so far suggest that growing up in a less developed place leaves a lasting mark that is not erased by emigration. This section analyzes possible explanations for the significant relationship between adult earnings of migrants and the level of development of the place where they grew up. It explores, first, whether place is simply picking up the effect of parents; second, whether the level of development of the place of origin influences the choice of destination; third, whether development at origin affects adult earnings mainly through its influence on human capital and beliefs about the future.

6.1. Is it place or is it parents?

Using cross-country evidence, Manuelli and Seshadri (2014) and Erosa et al. (2010) have shown that country environment is an important input to human capital formation which contributes to generating large cross-country differences in human capital, productivity and growth. Evidence from Rutter et al. (2012) and Schoellman (2015), on the other hand, suggests that parental inputs, rather than local environment, are critical to human capital formation, especially in early childhood. Parents (or primary caregivers) are a fundamental mediator between the environment and children's human capital formation and outcomes. Parents themselves, however, are likely to be influenced by the local environment, and that, in turn, may feed back into the upbringing of their children. In this section I use a sequential *g*-estimator (Acharya et al., 2016) to explore whether growing up in a disadvantaged place lowers adult earnings primarily because of its influence on parental inputs, or whether it affects adult earnings independently of parents.

Parental inputs are wide-ranging and difficult to observe in their complexity. Due to data limitations, I restrict the analysis to one dimension, namely human capital of parents: a dummy equal to one if the mother has completed at least secondary education; the same variable for the father; and a dummy equal to one if the mother had paid employment. Table 7 shows that the parents of individuals who grew up in richer places are significantly more likely to have completed at least secondary schooling compared to parents of respondents who grew up in poorer places. No significant differences are observed with respect to mother's paid employment.

Table 7: Human capital of parents

	Richer	St. Dev.	Poorer	St. Dev.	t-stat
Mother completed secondary schooling or more	0.126	0.332	0.032	0.176	-5.134
Father completed secondary schooling or more	0.201	0.401	0.033	0.178	-7.883
Mother had paid employment	0.129	0.336	0.105	0.306	-1.153

Source: Author's calculations based on the Mexican Family Life Survey 2002 and 2009.

The sequential *g*-estimator is a two-stage regression method for estimating controlled direct effects in the presence of mediators. The controlled direct effect is the effect of changing a treatment while fixing the value of the mediator at some level. In this case, it is the effect of changing the level of development of the place of origin, while fixing the human capital of parents at some level. In practice, sequential *g*-estimation first estimates a linear regression of the outcome on the mediator, treatment and covariates. Second, it subtracts from the observed outcome the coefficient for the mediator, estimated in the first stage. This provides the "demediated" outcome, that is, removes the variation in the outcome due to the causal effect of the mediator. Third, it regresses the demediated outcome on the treatment and pre-treatment covariates only. Assuming sequential unconfoundedness and absence of intermediate interactions, *g*-estimation recovers the average controlled direct effect of the treatment. Sequential unconfoundedness requires that, conditional on the included covariates, there are no omitted variables in the estimation of the effect of treatment on the outcome, nor in the estimation of the effect of the mediator on the outcome. The second assumption requires that intermediate confounders do not interact with the mediator.[4]

As applied in this section, the method entails (1) re-estimating Equation (1) including parental human capital; (2) subtracting the estimated coefficients for parental human capital from observed log hourly earnings; and (3) regressing the demediated outcome on the treatment (development at origin) and pre-treatment covariates only, that is, variables that are not affected by the treatment. Gender and ethnicity are used as pre-treatment covariates. The marginal effect of development at origin in the second stage is the estimate of the average controlled direct effect of growing up in a richer place. The standard errors from the second stage will be biased because they ignore the first stage estimation, and I use nonparametric

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[4] For more details on this method and its assumptions, see Acharya et al., 2016; Vansteeland and Joffe, 2014; and Joffe and Green, 2009.

bootstrap with 500 replications to correct for this.[5] The estimated marginal effect of development at origin obtained with this method is 0.694 for the full sample, significant at the 0.1% level. For the sub-sample of migrants, it is 0.640, significant at the 5% level. These results suggest that growing up in a richer place increases adult earnings *independently* of the influence of parental human capital.

6.2. Choice of destination

Emigrants from poorer places might choose destinations with a production structure that matches their skills, and which may be as poor as their place of origin. If migrants who grew up in poorer places are systematically migrating to poorer places, then their lower earnings might simply reflect local market conditions. Findings by Nord (1998) support this hypothesis for the case of the US. This, however, does not seem to be the prevailing pattern in the sample. The mean monthly income per capita of the destinations chosen by immigrants who grew up in the richest places was MEX$387 in 1990, compared to MEX$383 in the destinations chosen by those who grew up in the poorest places. The difference is not statistically significant (t=-0.325). In 2010, it was MEX$ 2411 and 2416, respectively, again not significant (t=0.149). Figure 6 shows the correlation between the level of development of the place where the immigrant grew up and the mean income per capita of destination municipalities in 1990 (panel (a)) and in 2010 (panel (b)). In both years, immigrants who grew up in poorer places are not systematically migrating to poorer places, nor are immigrants who grew up in richer places systematically migrating to richer destinations.

Figure 6: Correlation between level of development at origin and mean income per capita of the destination
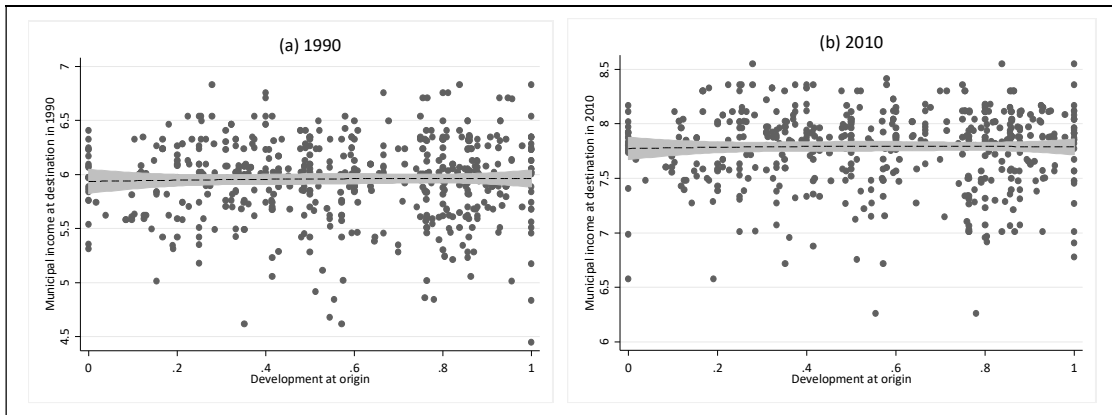
Source: Author's calculations based on the Mexican Family Life Survey 2002 and 2009; and Small Area Estimates of municipal income per capita, based on the Census 1990 and 2010.

6.3. Human capital and beliefs about the future

The analysis in Section 4 shows that migrants from richer places have both more and better human capital than migrants from poorer places, as signaled by the higher number of completed years of education and cognitive abilities score. Is place of origin affecting adult earnings primarily because it affects the human capital of migrants, for instance by providing more resources for education? Another possibility is that place of origin affects the human capital of the network to which the migrant has access at destination, which is important for accessing better jobs. The role of migrant networks has been studied in Mexico mainly in the context of international migration, as a mechanism that reduces migration costs and facilitates the emigration of poorer individuals (McKenzie and Rapoport, 2010; 2007; Orrenius and Zavodny, 2005;

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[5] A linear specification usually performs well in estimating marginal effects of limited dependent variables (Angrist and Pischke, 2008), and Acharya et al. (2016) argue that the bias in the estimation of the average controlled direct effect should be small, if any.

Munshi, 2003). Empirical evidence on the role of networks in internal migration is scarcer. Taylor (1996) finds that in two rural communities the presence of relatives in another state is only weakly associated with the probability of internal migration. Less is known about whether the migrant network affects job search and quality of employment of internal migrants.

A third mechanism through which development at origin may influence adult earnings at destination is by shaping a person's beliefs, aspirations, and attitudes toward the future, through social interactions with peers and role models, local norms and culture (Ray, 2006). For instance, observing lack of opportunities, underachievement, and hopelessness around them might reinforce people's negative beliefs, pessimism, and passive attitude, and such attitudes tend to become ingrained and continue to operate even after the person has left her place of origin, in a self-fulfilling vicious cycle (Cobb-Clark and Schurer, 2013; Duflo, 2012; Ray, 2006; Appadurai, 2004). In turn, there is increasing evidence that beliefs, attitudes, and aspirations are important determinants of people's behavior and resulting economic outcomes, including employment choices and poverty reduction (Bernard et al., 2014; Beaman et al., 2012; Macours and Vakis, 2009; Heckman et al., 2006).

I use *g*-estimation to analyze these mechanisms for the sub-sample of migrants. Human capital of migrants is measured as years of completed schooling and the score obtained in the test for cognitive abilities, as in the rest of the paper. Human capital of the network is proxied, for each migrant, with the average years of completed schooling and average cognitive abilities score of the other migrants coming from her state of origin and currently living at her destination. Beliefs about the future are proxied using a dummy equal to one if the migrant thinks her life will improve over the next three years, zero otherwise. Table 8 shows that both quantity and quality of human capital of the migrant network at destination is significantly higher for migrants who grew up in richer places compared to those who grew up in poorer places. Migrants from richer places are also more likely to believe that their life will improve in the future, but the difference is not statistically significant.

Table 8: Human capital of network and beliefs about the future

	Richer	St. Dev.	Poorer	St. Dev.	t-stat
Average years of completed schooling of network	7.148	2.358	5.844	2.087	-8.145
Average cognitive abilities score of network	3.830	1.812	3.324	1.519	-3.395
Beliefs about the future	0.382	0.486	0.334	0.472	-1.341

Source: Author's calculations based on the Mexican Family Life Survey 2002 and 2009.

Figure 7 shows the magnitude and confidence interval of the marginal effect of development at origin obtained when testing for different mechanisms. The baseline marginal effect is obtained from the estimation of Equation (1) for the sub-sample of migrants. Marginal effects (2) to (4) are obtained from testing whether, in turn, human capital of the migrant, human capital of the network, or the migrant's beliefs about the future are the main mechanism through which development at origin affects adult earnings at destination. Results suggest that none of the three mechanisms, by itself, is the sole channel of influence of development at origin: development at origin continues to influence adult earnings *independently* of each mechanism. Combining human capital of the migrant and that of her network still shows a non-zero marginal effect of development at origin, which however is only significant at the 10% level. Meanwhile, marginal effect (6) is not significantly different from zero, suggesting that development at origin affects adult earnings through the *combination* of the three mechanisms: through its influence on the human capital of the migrant, on the human capital of the network, and on migrant's beliefs about the future.

Figure 7: Marginal effect of development at origin

* p < 0.10, ** p <0,05, *** p < 0,01.
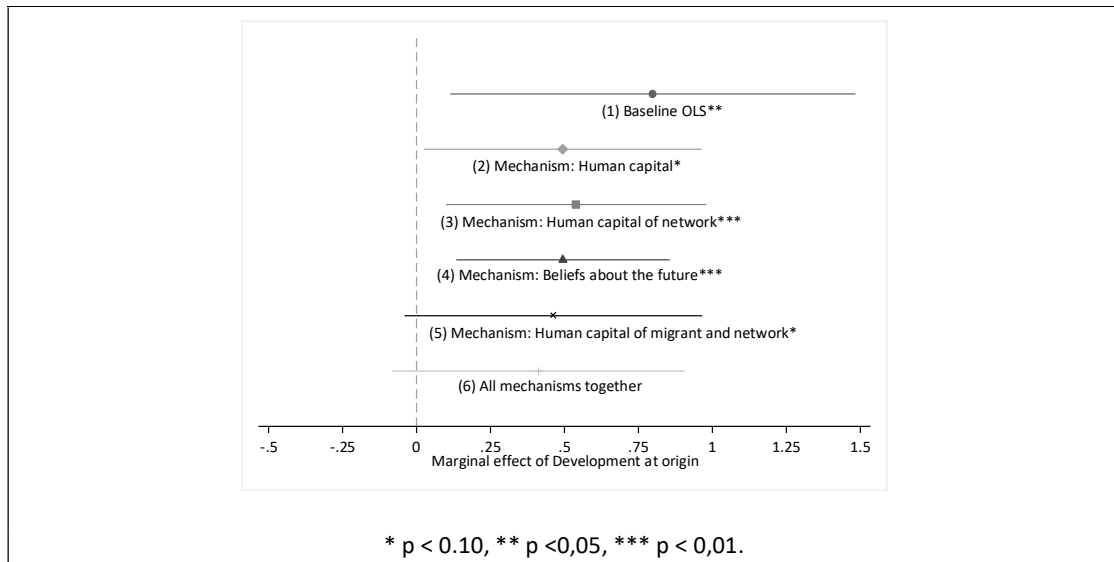
7. CONCLUSIONS

This paper investigated whether being born and growing up in a disadvantaged place has any long-term influence on the earnings of adult internal migrants in Mexico, controlling for self-selection into migration and labor market participation decisions. Growing up in a disadvantaged place is associated with significantly lower earnings among adults. The main finding of the paper is that migrating to a different place does not weaken this relationship: migrants who grew up in a poorer place earn significantly less than migrants with similar characteristics but who grew up in a richer place. The paper then analyzed possible mechanisms through which the level of development of the place where migrants were born and grew up may affect their adult earnings at destination. It finds that growing up in a richer place is associated with higher adult earnings primarily because it increases the human capital of the migrant and of her network, and because it leads to more positive attitudes and beliefs about the future.

Migrants from disadvantaged places, and their family, may still be better off than if they had stayed, and remittances will still help the development of the place of origin, but spatial inequalities lead to a persistent penalty that lasts even after two decades living in a different place: while the individual may leave the place, the place does not seem to leave the individual (The Economist, 2014). Internal migration might thus reproduce the existing pattern of spatial inequality, dampening the process of regional convergence instead of acting as an adjustment mechanism towards it. Migration and territorial development policies have often been portrayed as opposing alternatives, but they might be not just complementary, but mutually reinforcing. Territorial development policies, for instance by improving coverage and quality of public goods and services, such as water and education, and promoting employment creation through entrepreneurship and small business creation, could improve the welfare of people who stay, and also of those who still chose to migrate. Territorial development policies aimed at improving the prospects of lagging regions and reducing spatial inequality might in fact be necessary for reaping the full potential benefits of migration.

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Appendix

Figure 8: Cumulative frequency distribution of the number of years since the migrant has lived at the current destination
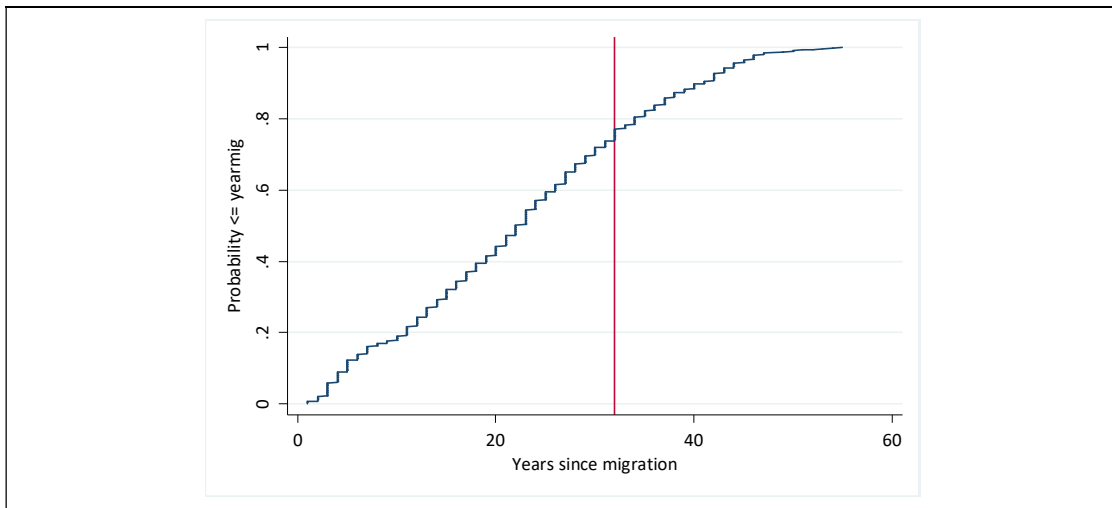
Table 9: Summary statistics: Working natives and immigrants

	Mean	St.dev	Min	Max
Log hourly wage	2.686	1.024	-2.013	5.911
Migrant	0.086	0.281	0	1
Development at origin	0.603	0.266	0	1
Female	0.354	0.478	0	1
Indigenous	0.154	0.361	0	1
Years of schooling	8.501	2.780	0	17
Cognitive abilities score	6.514	2.903	1	13
Experience	25.231	11.014	4	52
Experience^2	757.873	614.738	16	2704
Age	39.738	10.380	21	64
Age^2	1686.827	861.692	441	4096
N of children, 0-5	0.575	0.845	0	6
N of children, 6-14	0.920	1.064	0	7
Cognitive abilities score in 2002	7.075	2.900	1	13
% growth in population, 1970-80	38.0	27.9	-17.9	204.9
Mother: secondary schooling or above	0.065	0.247	0	1
Father: secondary schooling or above	0.076	0.266	0	1

Source: Author's calculations based on the Mexican Family Life Survey 2002 and 2009.