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Sanchez-Soto, Gabriela

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The effects of Mexico-U.S. migration on the intergenerational educational mobility of youth in Mexico

Los efectos de la migración Mexico-Estados Unidos en la movilidad educativa intergeneracional de los jóvenes mexicanos

Gabriela Sanchez-Soto Gabriela Sánchez Soto
Universidad de Texas , Estados Unidos
gabriela.sanchez-soto@utsa.edu

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ABSTRACT:

This paper studies the role of U.S. migration on the intergenerational educational mobility of non-migrant youth in Mexico by using data from the 10 per cent sample of the 2010 Mexican Census to compare the educational attainment of youth ages 13 to 20 to their parents' attainment. Classic models of status attainment suggest family background is a strong determinant of youth's educational outcomes. U.S. migration in the household is expected to positively influence education through its positive impact on socioeconomic status. However, previous research has not explored the role of the place of residence on the educational outcomes of youth relative to their parents. Living in a place with high U.S. migration prevalence has been associated with schooling discontinuation and an orientation towards U.S. labor markets. Results show migration at the household level has distinct effects from community level migration. While migrants in the household and receipt of remittances are related to higher odds of upward intergenerational mobility, higher migration prevalence in the community is associated with lower probabilities of upward intergenerational educational mobility. Also, results show the effects of migration in the household depend on the socioeconomic conditions of the community of residence. Household migration effects are stronger in less developed areas. These findings have important implications for our understanding of the long-term educational impacts of migration on non-migrant youth, and to influence the development of conceptual frameworks to understand the impacts of migration in the household and the community.

KEYWORDS: Migration, remittances, intergenerational mobility, education, adolescents.

RESUMEN:

Los efectos de la migración Mexico-Estados Unidos en la movilidad educativa intergeneracional de los jóvenes mexicanos Este trabajo estudia el papel de la migración a Estados Unidos en la movilidad educacional intergeneracional de jóvenes no migrantes en México utilizando información de la muestra del 10 per cent del Censo de Población y Vivienda del 2010 para comparar el nivel educativo de jóvenes de 13 a 20 años de edad con el nivel educativo de sus padres. Los modelos clásicos de la adquisición de estatus sugieren que los antecedentes familiares son un determinante significativo del nivel educativo. Se espera que la migración a Estados Unidos en el hogar tenga una influencia positiva en la educación por medio de sus efectos positivos en el estatus socioeconómico del hogar. Sin embargo, la investigación existente no ha explorado el papel del lugar de residencia en la educación de los jóvenes comparados con sus padres. Vivir en un lugar con alta prevalencia migratoria a Estados Unidos está relacionado con la interrupción educativa y con una orientación hacia los mercados laborales estadounidenses. Los resultados muestran que la migración en el hogar tiene efectos distintos a los de la migración en la comunidad. Mientras que tener migrantes en el hogar y recibir remesas están asociados con mayores probabilidades de movilidad intergeneracional ascendente, una mayor prevalencia de migración en la comunidad está relacionada con menores probabilidades de movilidad intergeneracional ascendente. Los resultados muestran que los efectos de la migración en el hogar dependen de las características socioeconómicas de la comunidad de residencia, y los efectos de la migración en el hogar son de mayor magnitud en lugares menos desarrollados. Estos resultados son importantes para entender

AUTHOR NOTES

Gabriela Maestra y Doctora en Sociología por la Universidad de Brown. Ha sido investigadora postdoctoral asociada de la Oficina de Estudios de Población Sánchez de la Universidad de Princeton (2011-2012). Actualmente es profesora asistente de Demografía en La Universidad de Texas en San Antonio. Entre Soto sus publicaciones recientes destacan, *The Occupational Mobility of Mexican Migrants in the United States* (en coautoría con Joachim Singelmann), *Los determinantes de la ocupación y la movilidad ocupacional de los migrantes latinoamericanos en Estados Unidos*, y *Migration in the Americas* (en coautoría con Adriana López Ramírez).
Dirección electrónica: gabriela.sanchez-soto@utsa.edu

los impactos a largo plazo de la migración en jóvenes no-migrantes, y para el desarrollo de marcos conceptuales para entender los impactos de la migración en el hogar y en la comunidad.

PALABRAS CLAVE: Migración, remesas, movilidad intergeneracional, educación, adolescentes.

INTRODUCTION

Studies on migration and education often focus on whether international migration and remittances result in higher educational attainment for the non-migrant children of U.S. migrants from Mexico compared to other children in the community. However, current research has not explored an important metric of educational success: whether the children of U.S. migrants achieve significantly higher levels of education relative to their own parents. Making comparisons across intergenerational lines provides with an additional point of comparison that takes into account not only the educational achievement of young people but also the parental background that preceded it. Bridging this gap in the scholarship will improve our understanding of the relationship between migration and socioeconomic mobility, as well as of the long-term impacts of migration through the achievements of the younger generation.

Despite significant improvements in the Mexican educational system in the last few decades, which increased access to educational opportunities, family background and household income continue to be strong determinants of educational attainment and social mobility, especially at higher levels of education (Bracho, 2002; Solís, 2011). Previous studies in Mexico have established the close relationship between family background and intergenerational social mobility —particularly with regard to occupation; while other studies have explored the relationship between rural to urban migration and occupational mobility across generations (Binder and Woodruff, 2002; Camarena, 2000; Solís, 2002). Studies on the impact of migration on the families of migrants have found a positive effect of migration and remittances on household's socioeconomic status and on the educational attainment of children (Durand *et al.*, 1996; Massey and Parrado, 1994). However, other research has found a negative effect of U.S. migration on the educational attainment of children, particularly in places with high migration prevalence (Kandel and Massey, 2002; Miranda, 2007). The contrasting findings in previous scholarship demonstrate the need for more work in this area of research, and in particular, research is still needed to ascertain whether Mexico-U.S. migration can affect intergenerational educational mobility among non-migrant youth in Mexico.

Given this gap in the literature, the main objective of this paper is to study whether U.S. migration in the family and in the community are associated to the intergenerational educational mobility of non-migrant youth in Mexico. Even though the effects of international migration on intergenerational educational mobility have not been studied previously, there is ample evidence from research exploring the impact of international migration and remittances on school enrollment and educational attainment.

The literature on the effects of international migration on education presents two main competing explanations for this relationship. On one side, based on human capital attainment perspectives, one explanation expects that international migration has a positive impact on educational attainment and school enrolment due to increased household income (Borraz, 2005; Hanson and Woodruff, 2003; Mansuri, 2006; McKenzie and Rapoport, 2011). Higher household income due to migration should result in more investments on the education of children and, as a result, we would expect higher rates of upward intergenerational educational mobility in households with migrants. On the other side, competing evidence has found that migration may discourage education and create an orientation towards U.S. labor markets in places where migration prevalence is high (Halpern-Manners, 2011; Kandel and Massey, 2002; Li, 2014; Miranda, 2007). If children in households or communities with high migration expect to migrate to the U.S. they may forgo investments in higher education and abandon school before completing their education. As a result, U.S. migration prevalence at the community level may cancel out any positive effect of household migration and remittances, and result in decreased risks of upward educational mobility.

In this paper I test the applicability of these perspectives to the relationship between U.S. migration and the intergenerational educational mobility of youth. I estimate the probability that youth in Mexico would achieve intergenerational educational mobility given the migration experience in their households and communities of origin. Furthermore, I explore whether these effects vary according to the context of economic opportunity in the community by using information on the level of socioeconomic development in the local municipality. To achieve these aims, I use microdata from the 2010 Mexican Census of Population and Housing as well as community level characteristics indicators constructed by the Mexican National Council of Population (CONAPO).

BACKGROUND

Recent work on social mobility in Mexico has focused on understanding occupational outcomes and inequality of access to higher social strata, and this research has focused on both intergenerational and intragenerational mobility (Cortés and Escobar Latapí, 2005; Parrado, 2005; Solís, 2011). Since the 1970s, studies of highly industrialized cities in Mexico have found that the process of occupational attainment was significantly affected by ascribed characteristics, in particular men's class of origin and father's occupation (Balán *et al.*, 1973; Solís, 2002; Solís and Billari, 2002). Other studies have also found urban areas have more opportunities for upward mobility than rural settings (Pacheco, 2005). Although this body of research has consistently shown social origins are strongly related to an individual's occupational status, less research has specifically considered the effects of parents' education on children's educational attainment and the probabilities that youth would achieve intergenerational educational mobility (Camarena, 2000; Cortés and Escobar Latapí, 2005). Studies exploring educational outcomes conclude that even though educational intergenerational mobility increased significantly during the years of the import substitution industrialization it decreased greatly during the economic recessions of the 1980s and 1990s (Behrman *et al.*, 2001; Binder and Woodruff, 2002).

In spite of the economic crises and the changes they brought, Mexico accomplished an important expansion of educational opportunities at the end of the Twentieth Century and beginning of the Twenty-first. By 2000, school enrollment of children 6 to 14 years old was close to universal, illiteracy was less than ten percent, and the educational attainment of the population increased significantly (Castro and Gandini, 2006; Giorguli Saucedo, 2002; INEGI 2000). This expansion was supported by a change in the law that increased mandatory schooling from 6th to 9th grade in the early 1990s and up to 12th grade in the early 2010s (Ariza, 2005; Bracho, 2002; Giorguli Saucedo *et al.*, 2010). According to summary figures from the Instituto Nacional de Estadística Geografía e Informática (INEGI), the average years of schooling for the population 15 years old and older was of 6.5 in 1990, 7.5, in 2000 and 8.6 in 2010 (INEGI, 2010).

However, even with the important accomplishments in primary education, school dropout after elementary school is still high in some areas of the country, and less than half of the children who finish secondary school will continue their education (Camarena, 2000). Furthermore, despite advances in education policy, studies agree that parental socioeconomic status is still the most important determinant of school enrolment and attainment in Mexico (Bracho, 2002; Giorguli Saucedo, 2009). For instance, Bracho (2002) compared youth's schooling by deciles in the income distribution and found large gaps in attainment: after age 12, the average years of education for children in the bottom ten percent of the distribution never surpassed 6, while children in the top ten percent of the distribution made educational transitions around the normative ages. Fewer children from poor families finished secondary education and wealthier children were much more likely to finish high school and attend college. Besides the role of family background, educational opportunities are still concentrated in urban and more socioeconomically developed places in the country and the role of residence should be accounted for when estimating the determinants of educational attainment (Giorguli Saucedo *et al.*, 2010; Mier y Terán and Rabell, 2003).

Economic restructuring after the economic crises resulted in a reconfiguration of the labor market. Changes in the labor market include a decrease in opportunities in skilled and manufacturing employment, an increase in unskilled and services jobs, and a significant growth of the informal economy (Parrado, 2005; Solís, 2002; Zenteno and Solís, 2006). In recent decades, these changes in the structure of the labor market have had important implications on educational and social mobility aspirations of Mexicans. Precarious employment opportunities and low wages in the local labor market made U.S. migration more attractive and the numbers of migrants to the U.S. peaked at the beginning of the Twenty-First Century. Even though international migration has significantly declined in recent years (Passel *et al.*, 2012), the effects of migration aspirations may still be visible in the educational choices of youth in Mexico for years to come. For over a century, U.S. migration has been a constant presence in many communities in the country and its impact on children's education is well documented. Furthermore, given that decisions on education have long-lasting consequences, even within a context of reduced migration after the Great Recession, I expect that recent data (i.e. 2010 Census) would still reflect some of the effects of household and community U.S. migration on youth's educational intergenerational mobility. Assessing intergenerational differences in educational attainment because of U.S. migration will contribute to our understanding of educational disparities in Mexico in the years to come.

THEORETICAL FRAMEWORK

Family Background and Status Attainment

The early life experiences and access to opportunities parents provide influence children's educational attainment, along with their occupational status, prestige and future earnings (Balán *et al.*, 1973; Blau and Duncan, 1967). Classic models of status attainment would predict parental education, occupation, and income to be strong determinants of children's achievement, in addition to other individual characteristics like children's own abilities (Blau and Duncan, 1967; Haveman and Wolfe, 1995; Sewell and Hauser, 1975; Solís, 2002).

In addition to parental economic resources, there are other key social and psychological mediators of educational success; for instance, family expectations and educational aspirations. The children of more educated parents are likely to have higher educational achievement because of higher parental expectations and increased support to continue studying (Johnson, 2002; Mortimer *et al.*, 2002; Sewell *et al.*, 1969; Sewell and Hauser, 1975). Children from families with higher socioeconomic status may receive more encouragement from parents and other adult relatives, and are also more likely to earn better grades, and have aspirations for higher education compared to their less privileged peers (Jencks *et al.*, 1983; Sewell *et al.*, 1970).

Additionally, numerous studies around the world have consistently found that household income is positively related to children's school enrollment and educational attainment (Binder, 1998; Buchmann and Hannum, 2001; Cerrutti and Binstock, 2004; Giorguli Saucedo, 2002; Hill and Duncan, 1987; Mier y Terán and Rabell, 2005; Nam and Huang, 2009; Teachman, 1987). Parents with higher education or higher income will provide financial, social, and cultural capital that will positively impact children's educational attainment and improve their chances to achieve as much or more education as their parents did (Binder, 1998; Teachman, 1987).

Previous research on the impact of international migration on schooling is consistent with these expectations and finds that family migration and remittances have a positive effect on the educational attainment of youth. Some find that children of migrants are less likely to drop out of school and more likely to achieve higher levels of schooling (Borraz, 2005; Hanson and Woodruff, 2003; Mansuri, 2006; McKenzie

and Rapoport, 2011). These positive effects of migration on schooling are particularly true for children living in small towns and rural areas (Borraz, 2005; Hanson and Woodruff, 2003). However, these effects are not consistent across the literature, others have found a negative effect of migration on the educational attainment of youth, (Kandel and Massey, 2002; Li, 2014; McKenzie and Rapoport, 2011; Miranda, 2007), suggesting that parental U.S. migration may influence the educational attainment of youth in ways other than through increased economic resources.

Returns to education and educational aspirations

Perceived returns to education are important determinants of youth's educational aspirations, and play a role on whether adolescents remain in school. In Mexico, more specifically, where higher education may not necessarily lead to higher incomes, the connection between education and social mobility is not as direct (Solís, 2011). This is complicated by the fact that labor migrants to the United States usually work in low-skilled occupations when in the U.S., but they earn more money than they would in Mexico for similar occupations, which results in higher odds of socioeconomic mobility upon return to Mexico even if they do not attain higher education (Bohon, 2005). This is supported by the fact that many U.S. migrants spend remittances and savings on household assets, property, land and businesses (Adams and Cuecuecha, 2010; Durand *et al.*, 1996; Yang, 2008). The lower returns on education in the U.S. labor market and the differences in the size of wages between the two countries may create the impression among the children of migrants that they do not need to continue studying to achieve economic mobility as a U.S. labor migrant. As a result, many of them desire to drop out of school and migrate to take advantage of improved labor market and economic conditions in the U.S. (Kandel and Kao, 2001; Kandel and Massey, 2002). In addition to lower educational aspirations, having relatives or family members with U.S. migration experience creates a real connection with the migrant labor market, making it easier to succeed as a migrant (McKenzie and Rapoport, 2011; Meza González and Pederzini Villarreal, 2009; Miranda, 2007).

Family shapes educational aspirations through role modeling and socialization. Children get socialized into accepted routes to success by observing their parents and other adults in the family. Adult role models help children define what sort of employment or vocational paths would be acceptable given the family's social status (Hill and Duncan, 1987; Sewell and Hauser, 1975). Youth living in a household with international migrants may consider migration as an accepted route to success. Research on migrant communities has long established that migration creates the social capital and networks necessary to make additional migration possible (Massey *et al.*, 1998; Palloni *et al.*, 2001). Children in families with migrants are likely to have both an expectation to become U.S. migrants, and social resources to make it happen (Miranda, 2007). As a result, I expect that these young people are discouraged to stay in school, and are less likely to achieve upward educational mobility relative to their parents.

Community level influences on migration and schooling

Migration may also influence the mobility outcomes of youth by influencing the educational and educational contexts at the community level. Economic and migration opportunities in the community where youth reside are important determinants of their educational attainment and of the odds that they will migrate. As children grow older, the influence of peers and other adults in the community becomes more relevant, and they find role models among adults outside their families.

Studies on the social consequences of Mexican migration to the U.S. have found that remittances and international migration in the community result in the development of a "culture of migration" (Durand, 1994; Massey *et al.*, 1987). In communities with a high prevalence of U.S. migration, migration becomes

deeply rooted in the social norms of the locality, young people expect to go to the U.S. for work at some point in their lives, and more importantly, they see migration as an acceptable vehicle for socioeconomic mobility even if they do not have first-hand experience with it in their families (Kandel and Kao, 2001; Kandel and Massey, 2002). The expectation is that children who live in municipalities where migration is high are more likely to desire to live and work in the United States, and as a result they are also more likely to drop out of school (Kandel and Massey, 2002). Since the development of educational aspirations and school discontinuation occur relatively early in life, this effect should exist even if these young people never actually manage to migrate themselves. Early schooling discontinuation due to the influence of higher migration prevalence will result in lower incidence of upward intergenerational educational mobility.

In addition to the culture of migration, the economy of the community helps define educational aspirations as it demonstrates how higher education may be related to well-paid employment. For instance, living in a place where opportunities for skilled jobs are low may discourage education and encourage early school dropout, whereas dynamic economies provide more opportunities for skilled or even professional employment, thus encouraging children to pursue the schooling necessary to obtain those jobs. Context level variation has not been fully addressed in previous studies on migration and education, particularly because many of them rely on samples of rural areas (McKenzie and Rapoport, 2005), or on samples from places with high migration (Kandel and Kao, 2001), while studies of intergenerational mobility have mainly studied urban areas (Solís, 2005). As a result, the effects of the characteristics of the place of residence have not been appropriately accounted for.¹ Further, in addition to the direct effect of the level of socioeconomic development in the community, it is also possible that the socioeconomic context has an impact on how migration at the household level affects the educational chances of children. This interactive effect would be associated with stronger effects of migration in poorer places, where the economic context provides fewer alternatives.

Research aims and expectations

The main objectives of this paper are: 1) to estimate if U.S. migration at the household level is associated with higher probabilities of achieving upward intergenerational educational mobility, 2) to estimate whether higher migration prevalence in the community is associated with lower probabilities of upward intergenerational mobility (net of socioeconomic development in the community), 3) to estimate if living in a community with a higher level of development is associated with higher likelihood of upward educational mobility, and 4) to estimate whether the impact of household migration on intergenerational educational mobility differs by the level of development of the community.

Migration at the household level is associated to conflicting expectations as explained in the theoretical framework, on one hand, we may expect that income from migration would increase the odds of upward intergenerational mobility; however, if migration at the household level is associated to the development of lower educational aspirations we would expect this effect to be the opposite. The models in this paper aim to test this relationship to shed light on these contradictory expectations. Though it is difficult to distinguish between economic and social impacts at the household level, the direction of the relationship should give us an indication of which side is at play.

Given what we know from the associated literature I have several hypotheses regarding the effects of migration on educational mobility. At the household level, as families improve their socioeconomic status through migration, we would see increased odds of upward intergenerational educational mobility (Hypothesis 1). However, if family migration contributes to lower educational aspirations, migration in the family would result in lower odds of upward mobility (Hypothesis 2). These two represent the main arguments in previous literature, and as they are competing hypotheses I would expect to see support for one

or the other net of the effects of other characteristics. With regard to community level effects, I expect higher migration prevalence at the community level to discourage education, so children living in communities with high migration would be more likely to experience downward intergenerational educational mobility (Hypothesis 3); while the level of development in the community will be related to increased odds of upward mobility (Hypothesis 4). Lastly, I expect the impact of migration on educational mobility to be stronger in places with lower levels of socioeconomic development given that more economically developed places provide with more role models for higher education and more skilled labor opportunities (Hypothesis 5).

DATA AND METHOD

The analysis uses the ten percent sample from the 2010 Mexican Census available through the Integrated Public Use Microdata Series-International (Minnesota Population Center, 2010). This sample of 2.9 million households contains information on education, work, and migration characteristics of each household member, as well as characteristics of the household. The analysis is limited to youth ages 13 to 20, who live with at least one of their parents, regardless of their relationship to the household head. The individual records are complemented with information on the education, work and migration characteristics of their mother and father, provided that they are members of the same household. In cases where parental and migration information were missing for both parents, the observation was excluded from the sample, which resulted in the loss of less than five per cent of the initial sample. The final sample size is 1 357 516 individuals, 52 per cent (708 750) male and 48 per cent (648 766) female.²

Besides the individual, family and household characteristics from the Census, this study uses municipality level characteristics created by the Mexican National Council of Population (Consejo Nacional de Población, CONAPO). The first one, an Index of Marginalization (Índice de Marginación) measures the degree of socioeconomic marginalization of a municipality in Mexico. The index is constructed using data from the 2010 Census and Principal Components analysis, and a battery of sociodemographic variables aggregated at the municipality level.³ The constructed index as an indicator that measures the impact of social exclusion at the municipality level and allows for geographic comparison. This index follows a standard normal distribution ranging from -2.34 to 4.36, where positive scores indicate a high degree of marginalization and negative scores indicate a lower degree of marginalization. For ease of interpretation, in the analyses presented in this paper I reversed the direction of this indicator in order to interpret negative scores as lower degree of socioeconomic development and positive scores as a higher degree of socioeconomic development (for more on the methodology see, CONAPO, 2011).

The second index is an Index of Migration Intensity (Índice de Intensidad Migratoria), which measures the prevalence of U.S. migration in each municipality in the country. The index is constructed using municipality level information from the 2010 Census on the proportions of 1) households receiving remittances from abroad, 2) households with migrants to the U.S. between 2005 and 2010 who remained in the U.S. at the time of the Census (emigrants), 3) households with emigrants in 2005-2010 who returned to Mexico during the same period (circular migrants), and 4) households with migrants residing in the U.S. in 2005 but who returned before 2010 (return migrants). This information is reduced into an index using the Principal Components technique. The resulting index is a standardized variable that ranges from -1.16 to 5.05 for 2 456 municipalities. This range represents the variation in the prevalence of the four source variables in each municipality so that lower values represent lower migration intensity and higher values represent higher migration intensity (for more on the methodology see, CONAPO, 2010). These two indices capture the specific effects of local U.S. migration prevalence and socioeconomic marginalization on intergenerational mobility. More importantly, they are useful to model the interactive effect of community and family characteristics on the outcomes of youth.

To compare education across generations, I use the highest educational attainment between the father and the mother when both are present in the household. Schooling for children and parents is classified in five categories: 1) no school to incomplete primary (0 to 5 years of education), 2) completed primary school (6 to 8 years), 3) completed secondary school (9 to 11 years), 4) completed high school (12 years), and 5) some college and above (13 or more years of schooling). Respondents are then classified into four possible outcomes according to their compared educational level and current school enrolment as a measure of completed or incomplete schooling. Given that the sample includes younger children, controlling for school enrollment distinguishes between young children likely to attain additional schooling and school dropouts who may stay at the current educational level. The four possible outcomes are: 1) No mobility: when individual is not enrolled in school and has attained the same level of schooling as their parents (reference category), 2) Downward mobility: when individual is not in school and has lower educational attainment than their parents, 3) Upward mobility: when individual is still in school and has attained the same schooling than their parents plus those who have attained higher schooling than their parents regardless of school enrollment, and the last category 4) Potential mobility, incomplete schooling: when individual is still in school and has lower educational attainment than their parents. The fourth category mostly includes younger people whose schooling has not ended and thus their full potential for mobility is still unknown.

To estimate the determinants of intergenerational mobility I use multinomial logistic regression. Models are stratified by sex and control for individual characteristics such as age and ethnicity (indigenous status is defined by whether the respondent speaks an indigenous language); household background characteristics such as parents' education, father's migration and household membership status, receipt of remittances in the year prior to the Census, and having international migrants. Father's status is defined according to three categories combining migration status in the five years prior to the Census and household membership: 1) the father is a member of the household and did not migrate to the U.S.; 2) the father is a member of the household and migrated to the U.S.; and 3) the father is not a member of the household, which captures those cases where the father does not live with the child and where there is no father (See Table 1 for a list of variables and codes).

TABLE 1:
Variable Definitions

<i>Dependent Variable</i>	
No mobility (ref.)	=1 if child attained the same schooling as parents and is no longer enrolled in school, 0 otherwise
Downward mobility	=1 if child attained lower schooling than parents and is no longer enrolled in school, 0 otherwise
Upward Mobility	=1 if child attained higher schooling (regardless of school enrollment), or same schooling than parents and is still enrolled in school, 0 otherwise
Mobility potential, incomplete schooling	=1 if child attained lower schooling than parents and is still enrolled in school, 0 otherwise
<i>Independent Variables</i>	
<i>Father's Characteristics</i>	
Father migrated to the U.S.	=1 if the child's father is a member of the household and migrated to the U.S. in the 5 years prior to the Census
Father is not a household member	=1 if the child's father is not a member of the household
<i>Household Migration Characteristics</i>	
Household has international migrants	=1 if there are any current or former household members who, in the past 5 years went to live in another country
Household received remittances	=1 if the household receives remittances
<i>Community Characteristics</i>	
Development level	Constructed index for the level of development in the municipality of residence
Migration intensity	Constructed index for the migration prevalence in the municipality of residence
<i>Control Variables</i>	
Parents' Education	Years of schooling, takes the highest value among mother's and father's
Age	Child's age in years
Indigenous	=1 if child speaks an indigenous language

Source: 2010 Mexican Census Subsample, IPUMS International.

Parental education is used as a measure of family's socioeconomic status; the variable takes the highest year of schooling attained between the mother and the father of the child. As mentioned in the data section, the study includes an index of socioeconomic development and an index of migration intensity.

To test the hypothesis that the effects of migration would vary by the level of development of the place of residence (Hypothesis 5), I estimate additional models with interaction terms between household migration characteristics and community development. In the section below I present descriptive statistics, which were calculated using the sampling weights provided by IPUMS-I. All multivariate models were estimated using the Huber-White correction of standard errors to account for clustering at the municipality level

DESCRIPTIVE ANALYSIS RESULTS

Table 2 presents the characteristics of the sample. About 6 percent speak an indigenous language and, on average, children and parents have less than 9 years of education, though youth's education is slightly lower than their parents,' which is consistent with the relative young age of the child sample. About one percent of males and females have a father who is a U.S. migrant, while 19 per cent of males and 20 per cent of females do not live in the same household as their fathers. Over 4.3 and 4.5 per cent of males and females, respectively, live in households with international migrants, while 3.6 per cent of males and 3.8 per cent of females live in households that received remittances. On average, youth in this sample live in places with a 0.95 score in the development level index and -0.4 in the migration intensity index. Meaning the average respondent lives in a community that has a development level higher than average and a migration intensity level that is lower than average.⁴

Table 3 compares the educational attainment of parents and children across levels of education. Modal categories for each row are in bold. As we can see, there is an important degree of educational mobility; particularly in the lower levels of schooling where children have attained higher education than their parents.

TABLE 2:
Sample Characteristics, Youth Ages 13 to 20, Mexico, 2010

	Males	Females
Indigenous	5.93%	5.65%
Education (years) ^b	8.45(2.52)	8.76(2.52)
Parents' education (years) ^b	8.68(4.55)	8.97(4.54)
Father is U.S. migrant ^a	0.96%	1.01%
Father not in household	19.24%	20.24%
Household has international migrants ^a	4.33%	4.51%
Household receives remittances	3.60%	3.84%
Development level in the community ^b	0.96(0.98)	0.94(0.99)
Migration intensity in the community ^b	-0.39(0.73)	-0.40(0.74)

^a In the five years prior to the Census.

^b Mean, standard deviation in parentheses.

Source: 2010 Mexican Census Subsample, IPUMS International. Weighted data.

TABLE 3:
Educational Attainment of Youth 13 to 20 Years Old and their Parents, Mexico 2010

Parents (%)	Child (%)					Total
	None and inc. primary	Primary	Secondary	High school	Some college and more	
None and inc. primary	16.75	44.91	31.96	5.12	1.26	100.00
Primary	6.97	44.86	38.29	7.31	2.57	100.00
Secondary	3.63	41.30	41.98	8.92	4.18	100.00
High school	2.14	37.13	40.96	12.46	7.31	100.00
Some college and more	1.51	33.38	39.03	13.08	13.00	100.00
Total	6.35	40.95	38.60	8.97	5.14	100.00

Source: 2010 Mexican Census Subsample, IPUMS International Weighted data.

Given that this sample includes many individuals younger than 18 years old, I did not expect higher proportions attaining the two highest levels of education. But if we restrict the sample to those 18 to 20 years old (not shown) we would see that an about a fourth finished high school and 15 per cent have some college education, although this proportion is concentrated among those whose parents have higher education too. Evidence of higher attainment among children is shown in Table 4, which shows the distribution of educational mobility categories by sex. Close to 11 per cent of the sample has attained the same schooling as their parents and no longer studies (no mobility). Another 5 per cent of males and 7 per cent of females has attained downward educational mobility relative to their parents. While about 52 per cent of males and 48 per cent of females have attained upward mobility in comparison to their parents. There is still about one third of the sample that is still in school and has lower schooling than their parents; I expect that this group could still attain more schooling as they are still quite young (mean age for this group is around 15 years-old).

TABLE 4:
Intergenerational Educational Mobility by Sex, Mexico, 2010(%)

Mobility categories	Male	Female	Total
No mobility	9.30	12.14	10.78
Downward mobility	4.65	7.02	5.89
Upward mobility	52.31	48.12	50.12
Mobility potential, incomplete schooling	33.74	32.73	33.21
Total	100.00	100.00	100.00

Source: 2010 Mexican Census Subsample, IPUMS International Weighted data.

The larger proportion of upwardly mobile youth is to be expected because of the degree of educational expansion and improvements in educational opportunities made in Mexico in the last few decades.⁵ Still, it is worth noting that a higher proportion of women experience no mobility than men, and fewer women experience upward mobility, possibly indicative of how prevailing gender-roles create gaps in educational achievement. To further understand how migration affects this distribution, Table 5 disaggregates educational mobility by migration characteristics. Comparing proportions across migration status shows that the largest differences across mobility categories correspond to who attains upward mobility. The figures show that individuals with migration characteristics consistently have lower proportions of upward mobility, differences are smaller for those with a U.S. migrant father (3 to 4 percent compared to those with a non-migrant father) and between 12 and 14 percent points for those with migrants and remittances in the household. In comparison, differences by migration characteristics in the other mobility categories are smaller, only about 1 percentage point difference in the downward mobility category by migration characteristics and 1 to 2 percent for those with no mobility.

TABLE 5:
Intergenerational educational mobility by sex and migration characteristics, Mexico, 2010 (%)

	No mobility	Downward mobility	Upward mobility	Mobility potential	Total
<i>Males</i>					
Non-migrant father	12.02	7.10	34.19	46.69	100.00
U.S migrant father	13.98	7.54	29.91	48.57	100.00
No-migrants in HH	12.08	7.05	33.27	47.60	100.00
Migrants in HH	13.36	6.42	20.74	59.49	100.00
No remittances	12.11	7.05	33.16	47.69	100.00
Remittances	12.93	6.38	21.21	59.48	100.00
<i>Females</i>					
Non-migrant father	9.21	4.74	35.29	50.77	100.00
U.S migrant father	10.73	5.73	32.11	51.43	100.00
No-migrants in HH	9.26	4.69	34.36	51.69	100.00
Migrants in HH	10.12	3.79	20.50	65.60	100.00
No remittances	9.29	4.70	34.23	51.79	100.00
Remittances	9.59	3.56	21.33	65.52	100.00

Source: 2010 Mexican Census Subsample, IPUMS International Weighted data.
Differences significant at the $p < 0.0001$ in Chi-square tests.

As the focus of this study is on understanding what determines upward and downward mobility, and how these relate to migration at the household and at the community level, the remainder of this paper will focus on results of the multivariate models for the upwardly and downwardly mobile categories relative to those in the no mobility category (multinomial logistic regressions are estimated for the four categories. Results for the 4th category, “potential mobility, incomplete schooling” are available from the author upon request).

MULTIVARIATE ANALYSIS RESULTS

Table 6 presents the relative risk ratios from the multinomial logistic regression models predicting intergenerational educational mobility for males and females respectively. The models control for individual, household and community level characteristics. The category of reference is having the same completed schooling as parents or “no mobility.”

Results for males

The first column in Table 6 presents the relative risk of being in the downward intergenerational mobility category. According to these results, having a father with U.S. migration experience has no significant effect on the relative risk of being downwardly mobile when compared to the children of non-migrants. In addition, having international migrants in the household is associated to 9 per cent increased odds and receipt of remittances to 14 per cent increased odds of downward mobility. This result goes against the expectation that increased financial resources for migration would result in increased education for children, in fact, it supports the expectation that role modeling and an expectation of future U.S. migration result in lower educational achievement for males in migrant families (Hypothesis 2).

Regarding community level characteristics, higher levels of development in the municipality are associated with males' lower odds of being downwardly mobile, which is consistent with expectations that in more economically dynamic places (Hypothesis 4), children will reach higher levels of schooling than their parents since they have more access to higher education and more opportunities to translate higher schooling into employment opportunity. In contrast, higher levels of migration prevalence are not significantly related to downward educational mobility for males, though the direction of this effect is consistent with a culture of migration effect.

The next outcome of interest is upward intergenerational mobility. Just as we observed with the males achieving lower schooling, the odds of being upwardly mobile are not statistically different for those whose father has U.S. migration experience than for those with non-migrant fathers. In contrast, having migrants in the household and receiving remittances are related to increased odds of belonging to this category. This effect is consistent with the idea that migration has a positive effect on schooling, through increased economic resources, and consequently on educational mobility (Hypothesis 1). The curvilinear effect we observe for these two variables and two outcomes could be a result of additional confounding factors that mediate the effects of migration on educational mobility. There is no significant effect of the development level in the community on the odds of upward mobility, which is not consistent with expectations. In contrast, migration prevalence is related to lower odds of upward mobility, which is consistent with expectations of the “culture of migration” argument which predicts a negative impact of community migration prevalence on the odds of upward educational mobility for male youth (Hypothesis 3). The models with interaction effects will further test the robustness of these relationships.

Results for females

The right side of Table 6 presents results for the multinomial logistic regression model for females. The columns present relative risk ratios for upward and downward mobility compared to having the same completed education as the parents. Like in the results for men, father's migration has no significant effect on mobility. Having migrants in the household is not associated to downward mobility, but it is significantly related to higher odds of upward mobility (Hypothesis 1). Lastly, just like for males, remittances are related to higher odds of both downward and upward intergenerational mobility (Hypotheses 1 and 2).

Regarding community level characteristics, the level of development in the community is associated with decreased odds of downward educational mobility for females. This result is consistent with expectations that places with lower economic opportunity will be less conducive to increased educational attainment (Hypothesis 4). Higher migration intensity is related to lower odds of downward intergenerational mobility, which is not consistent with expectations, we would have expected that women living in places with high migration would attain lower levels of schooling. As this effect is different for males, this finding could be evidence that women benefit from high migration in the community through access to educational opportunities but males do not because they are more likely to migrate. Future research should explore this effect further and analyze whether higher migration prevalence in the community is related to social changes associated with gender roles that increase higher education for women. This would make sense since men are more likely to migrate, the rewards of education for migrants are low, and their education is disrupted earlier by labor migration (Donato, 1999; Massey et al., 2006). Despite lower risks of downward mobility for women in more developed communities and in communities with high migration, upward mobility may be more limited for women. Inconsistent with expectations, community level characteristics are not significantly related to upward intergenerational mobility for women. It seems that, the risks of upward mobility are not related to the type of municipality women live in. More research is needed to further explore these relationships, models with interactions will shed more light on this relationship, though it is possible that higher female attainment may be less related to community characteristics than to other factors like pervasive gender-roles that define the educational expectations parents have for their daughters.

Community development interactive effects

To further explore how the effects of migration may vary according to the socioeconomic characteristics of the place of residence, I estimated three additional models adding interaction terms between household level migration characteristics and the level of development in the community. The hypothesis being that the impact of migration will be stronger in places with fewer economic opportunities where there are fewer role models for economic success and U.S migration may be perceived as the main avenue toward social mobility (Hypothesis 5). In contrast, more developed places would have a more varied labor market that includes skilled and professional employment through which youth can realistically aspire to upward mobility. Table 7 below presents the results from these interaction models.

Regarding the downward mobility outcome, the interactions with household migration characteristics are not statistically significant, except in one case. For males, the relative risk of downward mobility increases as the level of development in the municipality increases for children living in households that received remittances. This is evidence of a protective effect of remittances for youth living in the poorest places, which is consistent with the expectation of a positive impact of migration through increased socioeconomic resources and of the differential effects of household migration characteristics according to the level of development in the place of residence (Hypotheses 1 and 5). The lack of significance for the other effects is an important finding, having migrants in the household do not impact the odds of downward mobility; we

see a protective effect of remittances in poorer places. To illustrate this effect, Figure 1 shows the log odds of attained downward mobility by the level of development for those living in households receiving remittances and those who do not.

Another important finding is that, once we account for the interactive effects, the previously observed ambiguous effects of having migrants and remittances in the household disappear for males. The increased odds of being downwardly mobile are no longer significant, while their positive effect on upward mobility remains significant.

TABLE 7:
Interaction effects from multinomial logistic regression models
to predict intergenerational educational mobility, Mexico 2010

	Males		Females	
	Downward Mobility vs. No mobility RRR	Upward Mobility RRR	Downward Mobility vs. No mobility RRR	Upward Mobility RRR
<i>Main effects</i>				
Father migrated to the U.S.	0.957	0.978	1.055	0.939
Development level in municipality	0.963**	0.977	0.949**	1.027
<i>Interaction effect</i>				
Father migrated * Development level	1.043	0.845***	0.982	0.869***
Log pseudo-likelihood		-558 901		-438 872
N		836 168		749 407
<i>Main effects</i>				
Household has international migrants	1.052	1.097***	0.980	1.115***
Development level in municipality	0.965**	0.981	0.941***	1.028
<i>Interaction effect</i>				
HH has migrants * Development level	0.974	0.895***	1.000	0.938**
Log pseudo-likelihood		-558 881		-438 875
N		836 168		749 407
<i>Main effects</i>				
Household received remittances	1.067	1.213***	1.158***	1.182***
Development level in municipality	0.960***	0.978	0.939***	1.029
<i>Interaction effect</i>				
Remittances * Development level	1.130***	0.938**	1.046	0.894***
Log pseudo-likelihood		-558 896		-438 857
N		836 168		749 407

* p < 0.05 ** p < 0.01 *** p < 0.001

Standard Errors adjusted for clustering at the municipality level.

Models control for age, ethnicity, migration characteristics, father's status, parental education, and migration intensity in the municipality.

Source: 2010 Mexican Census Subsample, IPUMS International.

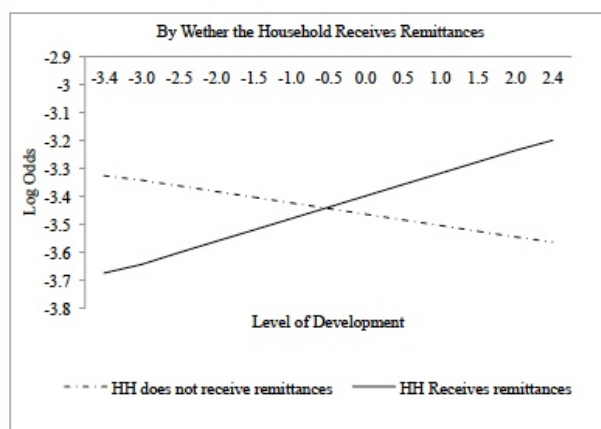


FIGURE 1:

Interaction terms and log odds of attaining downward intergenerational mobility for males, Mexico, 2010

Source: 2010 Mexican Census Subsample, IPUMS International

This finding continues to support the idea that migration at the household level is related to higher odds of upward intergenerational mobility, which supports Hypothesis 1. Whereas for females, the countervailing effects remain, receiving remittances is related both to upward and downward intergenerational mobility,

though the effect on downward mobility does not vary by level of community development. In the case of upward mobility, all interactions are significant and negative, meaning that the odds of upward mobility decrease as the level of development in the municipality increases, consistent with my expectation that the effects of migration at the household would be stronger in places with less economic resources (Hypothesis 5). For women, this brings further nuance to the effects of community level variables. In the previous models, community characteristics were not related to female upward mobility, while the models with interactions show that the effects of migration characteristics are significant for upward mobility, and these impacts are stronger in less developed communities. These interactive effects are illustrated in Figures 2 and 3 for males and females respectively. These figures present the log odds of upward mobility by the level of development of the community and the different household migration characteristics.

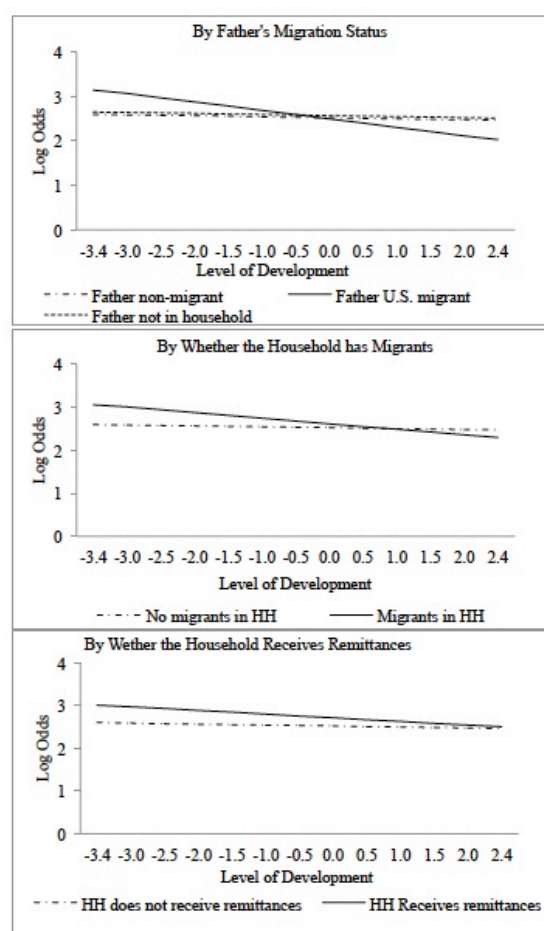


FIGURE 2:
Interaction Terms and Log Odds of Attaining Upward
Intergenerational Mobility for Males, Mexico, 2010
Source: 2010 Mexican Census Subsample, IPUMS International

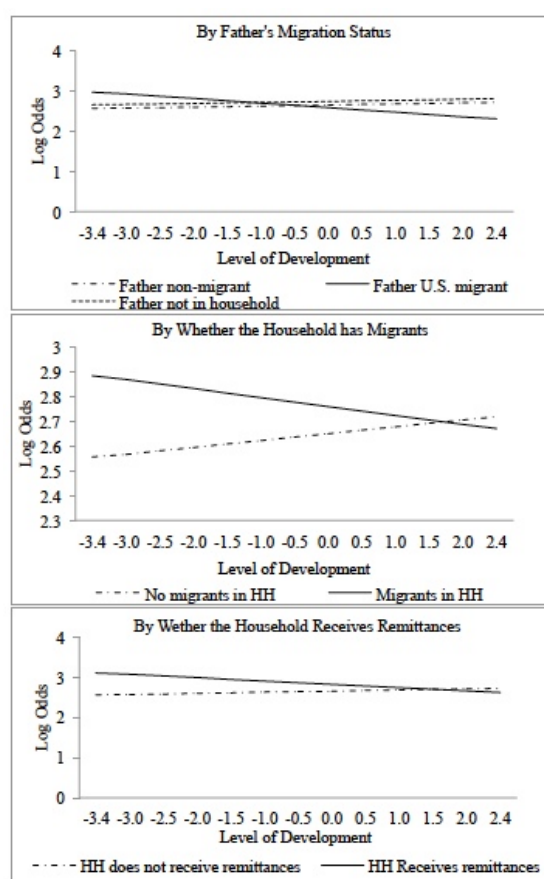


FIGURE 3:
Interaction Terms and Log Odds of Attaining Upward
Intergenerational Mobility for Females, Mexico, 2010
Source: 2010 Mexican Census Subsample, IPUMS International.

DISCUSSION

The main objective of this paper is to explore the relationship between Mexico-U.S. migration and the intergenerational educational attainment of youth in Mexico. Results from previous research support the existence of two processes linking educational outcomes and migration, a positive impact of migration on schooling due to an increase in family resources associated to migration, and a negative one related to the discouragement of schooling in places with migration is highly prevalent. The findings of this paper support and help expand on those findings.

In this paper I find that the impacts of migration on intergenerational educational mobility are strongly dependent on context and on level of measurement. First, the effects of migration at the household level are distinct from the effects of migration at the community level. And second, the impact of household-level migration characteristics is dependent on the local socioeconomic context. Specifically, this analysis shows that the odds of intergenerational educational mobility are no different for children with migrant fathers than for children of non-migrant fathers, with one important exception: there is a significant negative interaction effect between father's migration and community development for the probability of achieving upward intergenerational mobility. So, even though father's U.S. migration had no effect on its own, it did have an effect through the interaction.

Moreover, having other international migrants in the household and receiving remittances significantly increases the odds of achieving upward mobility relative to their parents. Both of these effects support the expectation of a positive effect of migration on higher schooling, possibly as a result of increased socioeconomic resources due to migrant income and remittances. It is also important to note that these positive effects diminish as community development increases.

There is no ambiguity regarding community-level effects, as expected, the level of socioeconomic development in the municipality is related to decreased odds of downward educational mobility. And, as evidenced in the interaction models, community development is an important mediator for the effects of migration characteristics at the household-level. Following expectations from the culture of migration, the intensity of migration in the community is related to decreased odds of males achieving higher education than their parents. This effect could be related to lower educational achievement among males who are more likely to migrate to the U.S. and for whom returns to education are lower in jobs in the U.S. This finding also has important implications for the long term educational composition in places of origin, if young men choose to abandon schooling for the possibility of U.S. employment, overtime, the aggregate educational attainment of males in the communities would diminish regardless of state-run improvements on educational opportunities. A contrasting effect is the decreased odds of attaining downward mobility for females. It appears that higher migration intensity in the community is beneficial to women's education. This effect should be explored further.

As mentioned above, in addition to the effects of community characteristics, there is an important interactive effect of migration and the level of development in the community. The findings of this paper show that in poorer communities there is a stronger effect of household migration characteristics in increasing the odds of upward mobility. Differences in the effects of household vs. community characteristics provide important evidence that the effects of international migration on children's education are not straightforward and that we should consider the existence of countervailing factors encouraging youth either to attend school or to migrate abroad.

The effects of community level migration characteristics reflect the impact of peer effects and migration opportunities, and are consistent with the culture of migration argument. This migration effect is still there even after controlling for household level migration, showing that community level migration is not necessarily a proxy for household migration but instead, it is evidence of a context of migration in the local environment. In contrast, migration characteristics of the household had an opposite effect, possibly because increased family resources from migration result in increased investments in the schooling of children, which should ultimately result of an improved level of schooling by children relative to their parents. There also appears to be a small negative effect of having a father who is a U.S. migrant, although this is not statistically significant. By distinguishing between household and community level migration characteristics this study has been able to tap into the specific processes associated with each and demonstrate the complex nature of migration's impact on youth's educational outcomes.

These findings have important implications for our understanding of the long-term educational impacts of migration on non-migrant youth. As educational decisions are made relatively early in life, and it is difficult to return to the educational system once abandoning it, educational decisions made in this sensitive period of life should have important implications for the life trajectories and social mobility prospects of these young individuals. In addition, it should have an impact on the educational composition of the country's labor force and of the flow of out migrants from Mexico to the U.S. Furthermore, I expect that the effects of household migration found in this paper may be an underestimation of the real effects. As the Census only provides a cross-sectional measure of U.S. migration in the five years preceding 2010, it is possible that households' experiences with migration span beyond the period under study and they may often span longer portions of the life of adolescents, thus exerting an even greater impact on children's life course decisions.

Additionally, the findings in this paper should also influence our conceptual and methodological approaches to the study of migration and education. On one hand, future studies should consider the effects of migration at the household and community levels as distinct and often contradictory. Despite the limitations of the migration data, using data from the Census sample made it possible to directly estimate how effects of migration vary across different geographic and socioeconomic contexts, and across migration prevalence regimes. As previous research estimating the impacts of migration on educational outcomes tended to rely on more limited geographic contexts, like rural areas or high migration communities, this paper makes an important contribution by considering the role of migration and economic context variation. Future data gathering efforts should improve our collection of nationally representative migration data including more detailed migration information and other life course characteristics. One limitation of this study is that we cannot properly distinguish between the economic and social impacts of migration at the household level, because the measure of remittances in the Census only spans the 12 months prior to the survey. This limits the precision through which we may account for economic effects of migration so our interpretation of these findings relies on the assumption that positive effects may be related to increased income vs. social effects being related to negative impacts. Having more specific measures would allow to better estimate the impact of migration through role modeling and parental expectations. In spite of these limitations, the current research addresses an important research gap, by focusing on intergenerational educational mobility and on two levels of migration effects.

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NOTES

- 1 Even though some previous research has estimated the effect of community level migration prevalence on the educational attainment of children, some of the previous evidence has used this variable as a proxy for migration at the household level and not as an independent effect. For instance, some of the existing research has used instrumental variables methodologies where rates of migration prevalence at the community are used to instrument for household or individual level migration, making it impossible to discern whether the impacts of migration at each level of analysis are distinct (McKenzie and Rapoport, 2011). However, this approach is limited because it conflates the effects of community and household level migration.
- 2 To test for the robustness of these findings, I estimated the same analysis using data from the 2000 Census, as I expected to find weaker migration effects in the period covered by the 2010 data due to greater rates of return migration to Mexico from the U.S. and lower rates of out-migration from Mexico to the U.S. as a result of the Great Recession and increased rates of deportation (Durand and Arias, 2014). Though some of the expected effects were stronger in the 2000 data, the direction and substantive effects remain almost the same. Results from this analysis are available from the author upon request.
- 3 Variables include: Percent of people 15 years old and older who are illiterate; percent of people 15 years old and older who did not complete elementary school; percent of people who live in dwellings without sewage or toilet service; percent of people residing in dwellings without electricity; percent of people living in dwellings without piped water; percent of people living in crowded quarters; percent of people living in households with dirt floors; percent of people in localities with less than 5,000 inhabitants; and percent of working people with income less or equal than two minimum wages (CONAPO, 2010)
- 4 The distribution of migration prevalence across levels of development shows mean scores of migration prevalence corresponding to the middle of the distribution of socioeconomic development. Places with high migration prevalence tend to be in the middle to middle-low levels of development. While places with high levels of development tend to have very low levels of migration prevalence.
- 5 A limitation of this study is that it is not possible to directly account for the expansion of education in the last few decades. However, as educational opportunity is highly correlated with the level of development of the municipality, accounting for this variable in the multivariate models is a way to approximate this effect. I expect that, after controlling for socioeconomic status, the effect of educational opportunity within each municipality is even across individuals. As such, the estimated migration effects on the probability of mobility should account for these disparities community development is considered. I expect this indirectly accounts for the effect of educational expansion.