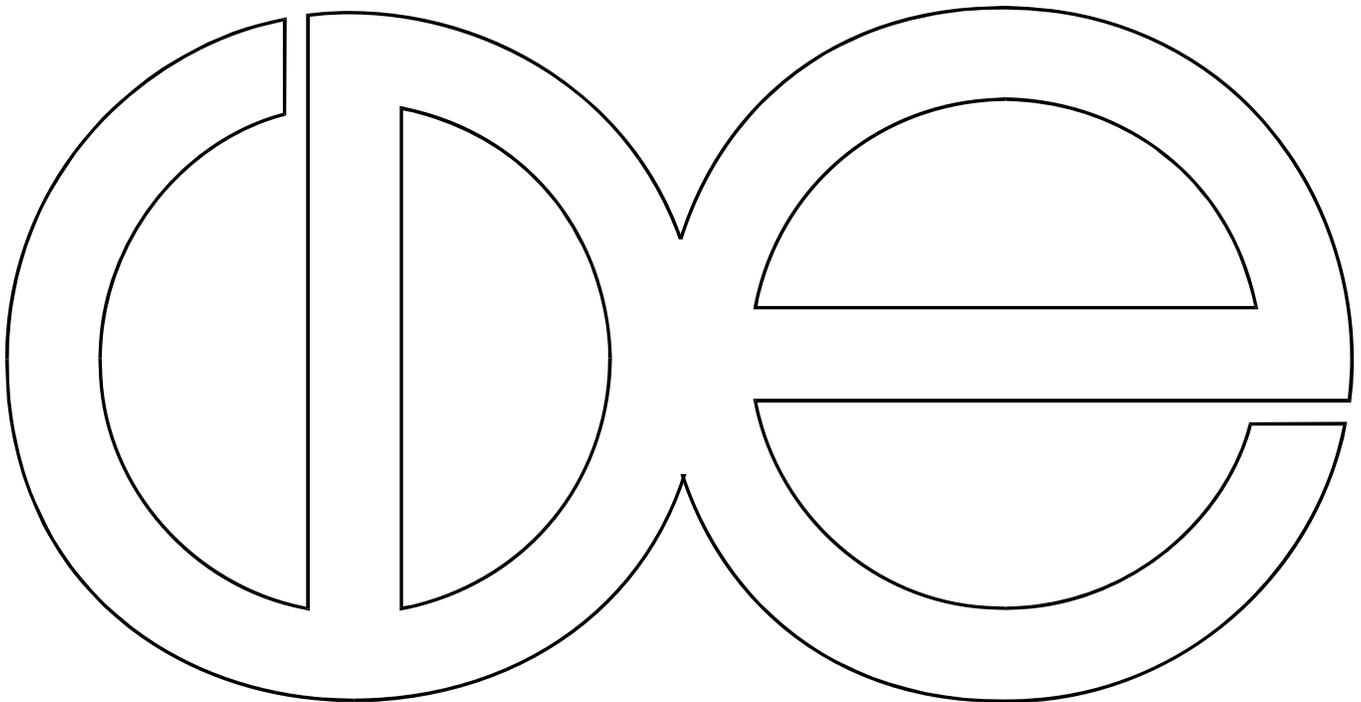


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Migration and the Pursuit of Education in Southern Mexico

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ABSTRACT

Rising educational expectations and shifting migration trends in Mexico have reshaped work, schooling, and mobility opportunities in rural communities. We study the effect of community-level contextual changes on adolescent school and migration behavior using survey and focus group data from a random sample of 845 households in Southern Mexico. We make four arguments. First, regional work opportunities factor into education decisions at an early age; youth are socialized toward migration opportunities and actively consider these options as they make plans for the future. Second, though education and migration are increasingly portrayed as substitutes, our data suggest that migration is now an important complement to education pursuits. Third, decisions about schooling and migration operate, in part, through resources and information provided by community and household-level migration networks. Fourth, the effects of these migration networks are gendered. Domestic migration networks are more relevant to female adolescent schooling and migration if composed of female migrants – and vice versa for males. The domestic migration network tends to increase internal migration and school attainment locally along same-gender lines. The gender of the network matters too for U.S. migration. U.S. female networks increase schooling outcomes, especially for boys, while male U.S. migration networks depress schooling and increase migration for male youths. We conclude that the relationship between migration, schooling, and economic development are changing quickly in parts of rural Mexico and must be understood in the context of gendered opportunities at the local level.

Key words: Mexico, Migration, Education, Gender, Networks, Mixed-Methods

INTRODUCTION

Education and migration opportunities for rural Mexican youth have undergone rapid change over the last three decades. Expansion and investment in schooling infrastructure, combined with smaller families and changing incentives for keeping children in school, have produced large increases in educational attainment – particularly for girls (Creighton & Park, 2010; Levy, 2006). At the same time, migration to the United States, which has a long precedent elsewhere in the country, has expanded to include significant movement from southern Mexico (Cohen, 2010; Marcelli & Cornelius, 2001). Domestic migration also has nearly doubled in the last twenty years (Arenas, Conroy, & Nobles, 2008; Boucher, Stark, & Taylor, 2009), again with major movements of southern rural Mexicans to larger towns and to northern Mexican states.

These concurrent changes are suggestive of multifaceted relationships between migration flows and adolescents' schooling and migration pursuits. In order to migrate for employment, youth typically rely on family or community networks to provide information about potential jobs and initial financial and social support (Kanaiaupuni, Donato, Thompson-Colón, & Stainback, 2005; Massey et al., 1993). At the same time, these networks funnel resources and information back to communities to support investments in education.

Existing scholarship proposes several mechanisms through which community migration networks may structure children's schooling opportunities—via financial resources, logistical and social support, and even ideational change (Kandel & Massey, 2002; McKenzie & Rapoport, 2011; Stark & Bloom, 1985). Growing migration flows simultaneously reshape the universe of adult pursuits available to children and the social support and sanctioning for tradeoffs between schooling, local work, or labor migration. Both migration and schooling have histories that are gendered, and thus the growing entrance of rural women into secondary education and increases

in the female composition of migration flows may have different implications for girls versus boys. In particular, adolescents' pursuit of schooling and/or migration is influenced not only by labor market opportunities, but also by local understandings of choices (and associated risks), which both vary by gender (Boehm, 2008; Chort, 2014; Curran & Rivero-Fuentes, 2003).

This study examines how international and domestic migration networks shape adolescent schooling and migration outcomes in Southern Mexico, with an emphasis on how these relationships are gendered. Our work is part of a growing sub-field of migration and development research that is "moving far beyond remittances" to explore the complex relationships between migration and broader development processes, including the social characteristics of migration's gender dimension (Clemens, Özden, & Rapoport, 2014).

We make three contributions to existing research on migration and adolescent education. First, we flexibly model adolescent migration and schooling choices, explicitly allowing these phenomena to involve tradeoffs or to be mutually reinforcing. Extant research largely overlooks the multiplicity of ways that schooling and migration may be related, treats domestic and international migration separately, and views migration and secondary schooling as competing outcomes (Kandel & Massey, 2002; McKenzie & Rapoport, 2011). Yet, because educational infrastructure has failed to keep pace with schooling demand in many impoverished parts of the country, domestic migration *for* schooling is an increasingly salient decision for rural youth (Santibañez, Vernez, & Razquin, 2005). Moreover, the ability of households to send their children to Mexican cities to attend school rises with remittances received from migrants abroad or with logistical and financial support from migrants within Mexico. Most studies of the relationship between migration and schooling either do not disaggregate migration by its purpose

(i.e., schooling versus work), or explicitly exclude ‘schooling migrants’ from their measures of migration (Kanaiaupuni, 2000), thereby overlooking these relationships.

Second, we propose that the gender composition of migrant networks matters for boys’ and girls’ migration and schooling decisions. Most research linking migration and schooling overlooks the gendered aspects of migration networks (McKenzie & Rapoport, 2007; Morrison, Schiff, & Sjoblom, 2008), despite evidence that female and male migration flows produce different forms of investment for children and different norms about acceptable adolescent pursuits (Cohen, Rodriguez, & Fox, 2008; Curran, Garip, Chung, & Tangchonlatip, 2005; Kanaiaupuni, 2000). We rely on both quantitative and qualitative methods in our analysis of these gendered relationships, agreeing with other migration scholars that the combination of different methods “can do the most to advance gender analysis of migration beyond its current state” (Donato, Gabaccia, Holdaway, Manalansan, & Pessar, 2006; see also Curran, Shafer, Donato, & Garip, 2006).

Third, we examine the mechanisms hypothesized to link migration networks and adolescents’ schooling and migration decisions. We focus on (a) ideational change, represented in adolescents’ qualitative views of their changing opportunities, (b) migrant network resources, including remittances and network composition, and (c) the “stability” of networks, measured by the duration of moves. This treatment adds nuance to previous analyses of these issues.

A random stratified sample of rural households surveyed in Southern Mexico permits this exploration of the migration and education pursuits of multiple cohorts of adolescents. We focus on behavior occurring between 15-18 years old, a critical time in youths’ life course in terms of work and education choices. While most rural Mexican youth now complete both *primaria* (elementary school) and *secundaria* (middle school), many fewer young people progress to

preparatoria (high school). The transition from *secundaria* to *preparatoria*—which on average occurs when youth are aged 14 to 16—is thus our key education measure of interest. We use multinomial logistic regressions to model a full range of alternative migration and education choices for boys and girls, assessing how existing male and female migrant networks shape outcomes net of a host of individual-, household-, and community-level factors. Qualitative focus groups with male and female youth from the sample regions inform our understanding of motivations shaping schooling and migration behaviors, particularly youth’s clear identification of the gendered risks and opportunities associated with domestic and international options.

Our approach provides a rich analysis of an unresolved question – how does migration affect education in sending regions? – utilizing a framework that considers multiple mechanisms and includes gender explicitly in these relationships.

RECENT TRENDS IN MIGRATION AND EDUCATION OPPORTUNITIES

Labor market opportunities for Mexicans have changed dramatically in the last three decades, as have public and private resources dedicated to education. A brief overview of these trends sets the context for our analysis of migration and education choices undertaken by Southern Mexican rural youth.

As described in Lustig (1998), Mexico remade its economy in response to the 1980s debt crisis by transforming an exhausted import substitution industrialization model via liberalization of trade and foreign investment (that included the signing of the North American Free Trade Agreement in 1993). This historic shift launched huge inflows of foreign direct investment (Hanson, 2003; Hanson, 2007), and led to rapidly rising export activity from labor-intensive *maquiladoras* in border states and from skill-intensive automobile and electronics factories in

mid-sized cities in northern and north-central states. Both regions attracted rural and urban migrants from other parts of the country and shifted the core of industrial activity away from Mexico City (Fussell, 2004; Hanson, 2007). Removal of state support and protection for agriculture and some labor-intensive import substitution industries also propelled both unskilled and skilled workers to find new economic opportunities, both at home and abroad (Richter, Taylor, & Yúnez-Naude, 2005). Rapid but volatile economic growth (Moreno-Brid & Ros, 2009) created major fluctuations in wages within Mexico and relative to the United States, which in turn led to episodic moments of domestic and international migration flows that deepened migrant networks.

In the 1980s and 1990s, migration flows originated largely from rural communities in Western Mexico. More recently, migration has expanded to include flows originating from major urban centers as well as rural areas in the Southern states (Durand, Massey, & Zenteno, 2001; Fussell, 2004; Marcelli & Cornelius, 2001). Women have long propelled domestic flows to metropolitan areas, though their destinations have diversified in recent decades to include Export Processing Zones and regional agro-industries (Curran & Rivero-Fuentes, 2003; Hanson & Harrison, 1999). International flows have largely been dominated by men, in part because U.S. immigration policy favored males (Donato, Wakabayashi, Hakimzadeh, & Armenta, 2008), and in part because of attendant fears about female propriety and safety (Boehm, 2008; Cohen et al., 2008). Though U.S. labor opportunities remained strong for unskilled, undocumented male migrants in the 1990s and 2000s (Fussell, 2004; Richter et al., 2005), the rapid expansion of migrant networks and rising labor opportunities for unskilled Mexican women in the United States also attracted millions of rural Mexican women (Donato, 2010; Pessar, 1999). Indeed, despite greater perceived physical risks and costs for female migrants associated with crossing an

increasingly militarized Mexico-U.S. border (Cerutti & Massey, 2001; Hagan, 2008), women became more active in international migration, both following male family members and, increasingly, leading the way (Cerutti & Massey, 2001; Donato, 1993).

During this same three-decade period in Mexico, total fertility fell from 6.5 to 2.5, and life expectancy increased from 64 to 76 years, due largely to rapid declines in child mortality. Not surprisingly, as family size declined and the health profile of children improved, educational attainment grew rapidly. In combination with rising skill premiums in Mexican labor markets, these demographic changes increase incentives and capacity for education investments. On the financing side, so do the existence of large international and domestic migration networks and the remittances or in-kind support they can provide (Hanson & Woodruff, 2003).

Education and social policy also played a transformative role in promoting greater educational attainment in Mexico (Fiszbein & Schady, 2009; Glewwe & Kramer, 2006). By 2009 Mexican men and women aged 24-35 both averaged 10 years of school, compared with 7.7 (men) and 6.9 (women) years for the same age group in 1989 (Gakidou, Cowling, Lozano, & Murray, 2010). This large growth in schooling attainment was supported by several changes in social policy. In 1993, a federal ruling extended mandatory education to nine years (completed middle school or *secundaria*), and public spending on education increased 40 percent over the next decade (Santibañez et al., 2005). Since 1998, the national initiative PROGRESA – later Oportunidades – has provided stipends to millions of Mexican households conditional on children's school attendance, with slightly higher stipends for girls' education. Though credited with modest improvements nationally in children's educational progress (Behrman, Sengupta, & Todd, 2005), the impact of Oportunidades in rural areas has been to reduce liquidity constraints and change norms that created large disparities in educational outcomes across Mexico

(Creighton & Park, 2010; McKenzie & Rapoport, 2007). These changes help explain the recent closing of Mexico's historic gender gap in schooling attainment (Grant & Behrman, 2010).

Though primary education completion is nearly universal in Mexico and completion of middle school (*secundaria*) is increasingly common, regional variation persists in the transition to high school and beyond. In the poorer Southern states of Oaxaca and Chiapas—where the communities in the present study are located—only 9.8 and 10.2 percent, respectively, of the 15+ population complete at least one year of high school, compared to 17 percent for Mexico overall (Instituto Nacional de Estadística y Geografía [INEGI], 2011). These variations result from a lack of available education services as well as from limited family resources and/or lower demand for children's formal education (Behrman et al., 2005; Santibañez et al., 2005). Some children must relocate if they wish to continue past middle school as many rural communities in Mexico lack high schools. Further, although education is technically free through grade nine, many families must cover significant expenses for children's transportation, uniforms, books and school celebrations (Kandel & Kao, 2001), and education also carries the opportunity cost of foregone youth earnings (Levison, Moe, & Knaul, 2001).

LINKING MIGRATION AND EDUCATION

As a result of economic restructuring, the changing geography of labor opportunity, sizeable investments in education infrastructure, and the attendant adult migration patterns, the community context in which children are raised and the opportunities available to them have changed rapidly in Southern Mexico. Whether, and how, these development patterns influence children's education and migration outcomes is our empirical question of interest.

Theoretically, the relationship between such contextual change and children's migration and schooling outcomes operates through multiple pathways and at multiple levels. Several lines

of scholarship from across the social sciences inform current thinking about these relationships. Figure 1 offers a simplified framework to integrate these arguments.

[Figure 1 here]

We conceptualize adolescents' schooling and migration outcomes (far right) as a function of the migration behavior occurring both in their communities and households (center). These characteristics are themselves a function of structural labor and schooling opportunities (far left). The empirical analysis offered below focuses primarily on the relationships between Figure 1's center and right panels. Of course, migration behavior, in turn, influences labor and schooling opportunities directly by affecting local labor supply and indirectly by affecting the savings and investment income available to community members. As we argue below, the function of each of these connections—migrant remittances, the household context, and socialization toward migration through community and family networks—is structured by gender.

Remittances are perhaps the most commonly referenced mechanism for how migration affects children's education outcomes by reducing financial constraints and enabling increased investment in schooling at the household level (Amuedo-Dorantes & Pozo, 2010; Calero, Bedi, & Sparrow, 2008; Edwards & Ureta, 2003; Hanson & Woodruff, 2003; Salas, 2014). Most studies find a positive association between remittances receipt and the educational aspirations and schooling outcomes of Mexican children (Lopez-Cordova, 2006; Nobles, 2011). At the community level, remittances may have significant spillovers through investment opportunities and the development of education infrastructure (Boucher et al., 2009; Durand, Kandel, Parrado, & Massey, 1996).

Notably, both the amount of money remitted and how remittances are used appear to vary by gender (Ramírez, García Domínguez, & Míguez Morais, 2005; Sorensen, 2005) and migrant

destination. In the Mexican case, men tend to send more money than women (Massey & Basem, 1992; Taylor, 1987), though not necessarily a larger proportion of their earnings (Cohen, 2010). A case study of Mexican rural households suggests that women's remittances are more likely to support educational expenditures of households, while men's remittances are more often directed toward personal investments in land or housing (De La Cruz, 1995). Migrants in the United States tend to remit larger amounts than domestic migrants, though initial payments are often used to pay off debts associated with travel to the destination. Remittances sent by domestic versus international migrants may also be spent differently within households, with the former supporting physical capital and the latter supporting health and education investments (Rivera & Gonzalez, 2009).

Complementary studies linking migration to schooling outcomes emphasize family dynamics, household labor allocation, and the sociocultural and identity-forming aspects of migration. Through these links, migration may *depress* schooling. Studies focusing on migrant household dynamics highlight the emotional (dis)stress resulting from family separation in general, and from parents' separation from children in particular (Cortés, 2013; Dreby, 2010; Hondagneu-Sotelo & Avila, 1997; Parreñas, 2005). In the short run, migration of family members appears to decrease the probability that children will further their schooling (Halpern-Manners, 2011; McKenzie & Rapoport, 2011) and to reduce children's behavioral and academic engagement (Antman, 2011; Heymann et al., 2009). In addition to heightened emotional stress, these patterns may arise due to reduced monitoring of children's progress and/or an increase in their domestic obligations.

At the community level, migration flows may affect perceptions about opportunity, identity, and the anticipated value of schooling. Scholars refer to a "culture of migration"

whereby U.S. migration becomes a widespread, normative, and expected route to economic progress (Cohen, 2004; Kandel & Massey, 2002). If children are socialized to value migration and to anticipate it for themselves, and if employment opportunities in the United States do not reward education, then the presence of large migration flows will depress education and increase the likelihood of migration among community youth. Indeed, previous studies find reduced educational aspirations and outcomes among children with access to U.S. migration networks, with particularly strong effects for boys (Kandel & Kao, 2001; Kandel & Massey, 2002; Nobles, 2011). By contrast, domestic networks that socialize children toward opportunities in Mexico's urban centers may generate increased demand for additional schooling (Boucher et al., 2009).

Here, too, gender plays an important role. The risks and opportunities culturally associated with migration are highly gendered (Kanaiaupuni, 2000; Cohen et al., 2008). Because pioneer female movement to the United States is less common, a new precedent with respect to female U.S. migration likely has a much larger impact than male U.S. migration on the options that non-migrant girls envision for themselves. Curran and Rivero-Fuentes (2003) reveal qualitative differences between male and female migration flows, finding a significant, positive effect of domestic female migrant networks on the internal migration of both boys and girls, but insignificant effects for male domestic networks. They hypothesize that this difference is attributable to Mexican female internal migrants experiencing more stable employment and establishing more permanent residences than men, which in turn provides subsequent migrants with better opportunities. For international migrants, analysis of U.S. and Mexican census data shows that female migrants are more highly selected on education than male migrants (Feliciano, 2008). The selectivity of a network can affect the educational aspirations of boys and girls who envision migration for themselves.

An additional link between migration and schooling that has received little attention is the growing proliferation of ‘education migrants’, children and young adults migrating within-country for schooling purposes (Hashim, 2005; Punch, 2007; Santibañez et al., 2005). This is an increasingly salient choice for rural youth with limited access to high-quality schools in their communities. Domestic migration also facilitates combining schooling with work, as better opportunities for one or both activities often exist in more population-dense areas. These links operate through the bottom arrow in Figure 1.

In sum, the presence, size, and composition of migration networks influence both the economic opportunity for children to migrate and/or continue schooling, their desire to do so, and the social support for their decisions by families and community members. The gender composition of migration flows may differentially affect education and migration outcomes, via differences in financial, social, and cultural capital available to non-migrant family and community members. The decision to migrate can further a child’s education or come at its expense. In light of these possibilities, adolescents’ migration and schooling choices must be understood in terms of gendered constraints in the local context where such decisions are made.

STUDY HYPOTHESES

Based upon our theoretical framework and existing empirical evidence, we propose four hypotheses that describe how adolescent schooling outcomes (specifically, the completion of at least one year of high school) and work outcomes will respond to changing adult migration patterns. These hypotheses describe the effects of family and community migration behavior on adolescent choices, and reflect our expectations regarding *net* effects of gendered migrant networks on youth’s choices operating at both the community and household levels.

1. *In the last two decades, migration for schooling purposes (versus labor purposes) will have increased significantly.* As demand for education has grown, migration for schooling will have increased for boys and girls, especially given uneven coverage of adequate schools in rural areas.
2. *The size of the existing female domestic migration network is positively correlated with youth's completion of some high school in the home community or by migrating, and is positively correlated with youth's domestic migration for work. The size of the existing male domestic migration network is not predicted to have a similar effect because male networks tend to be less stable.* According to Curran and Rivero-Fuentes (2003), more stable female migrant networks within Mexico provide greater access to regional employment opportunities that reward education, providing incentives for youth to pursue more schooling. These networks can also provide lodging and other assistance to youth who migrate for schooling or work purposes.
3. *The size of the existing male U.S. migration network is negatively correlated with boys' completion of at least one year of high school and positively correlated with their choice to migrate to the United States.* These existing male U.S. migration networks foster a “culture of migration” for boys as shown by previous research (Kandel & Massey, 2002). Though male U.S. networks at the household level might dampen this effect through provision of remittances that could support schooling, we expect the development of a migration culture among boys to outweigh the effects of increased household liquidity. We do not expect similar effects of male U.S. networks for girls because of the gendered nature of U.S. migration for adolescents. Thus, we expect less growth in adolescent male educational attainment when strong U.S. migration networks are available to support an international employment option.
4. *By contrast, female U.S. migration networks contribute to higher educational attainment for both boys and girls.* Increased educational opportunities may be a result of the purpose of female

U.S. migration, the corresponding tendency for remittances by female migrants to be invested in education, and/or the tendency for female migrants to be more highly selected on education.

DATA AND METHODS

Data

The survey, conducted in Southern Mexico between August 2005 and June 2006, sampled 845 households from nine regions of Oaxaca and Chiapas (Author, 2007). The regions were chosen to be representative of smallholder coffee growing areas. A random stratified sample of households was selected in each community according to prior information on migration history and membership status in a coffee cooperative. For each household, information was collected on all members and on all non-coresident children of household heads. For each individual, years and level of completed schooling and information regarding first and last sojourn to the United States and/or internal destinations was collected. The majority of domestic movement by migrants is from rural and often remote communities to larger towns or capital cities. Notably, migration for both schooling and non-schooling purposes was recorded.

In six of the nine regions, the lead author collected qualitative data through focus group sessions with community youth. Participants ranged in age from early to late teens, and groups of boys and girls were interviewed separately in all but one community. Questions probed youth's aspirations and opinions related to education and migration, including their perceptions of community norms and expectations associated with these opportunities for boys and girls. All focus groups were conducted in Spanish, lasted between 30 and 90 minutes, and were audio-recorded. The audio recordings were later transcribed by a native Oaxacan university student. These data revealed important insights about a) how and when youth develop an orientation toward migration, b) perceptions of local schools as insufficient to meet the youths' educational

aspirations, and c) perceptions of schooling and migration opportunities as gendered. The focus groups shed light on the individual motivations of community youth, and the social and cultural processes tied to these motivations, that we cannot directly capture in regression models.

Analytic Approach

The empirical analysis proceeds in three stages. We first document recent changes in migration flows and educational attainment in the region. We then examine *why* local migration networks matter for youth's schooling and migration decisions, using quantitative data on the resources embedded in these networks – focusing on network composition and remittances – and qualitative appraisals of these networks from community adolescents.¹ Finally, we use multinomial logistic regressions to test for links between these networks and adolescent schooling and migration outcomes. We model these paths as a set of competing outcomes that are not necessarily mutually exclusive (e.g., schooling might be pursued in the home community or with migration). The multinomial logit supports analysis of this more complicated set of outcomes, though it assumes that they are independent alternatives. Given the rapid change experienced by these rural communities, we measure features of the local context that were in place when respondents were 15 years old, reflecting the possibility that children of different ages from the same community can experience distinct local structural opportunities and constraints. Given evidence that both the characteristics of migration flows and their effect on children's outlook and opportunities are gender-specific, the analysis explores variation in these effects by the gender composition of emigration flows and by the gender of the adolescent.

Modeling Adolescent Schooling and Migration Decisions

We model adolescent migration and education choices between ages 15-18, a stage in the life course when many youth begin to migrate and the ages when most students enroll in high

school. Given recent expansions of education and migration options in the late 1990s, we limit the sample for these regressions to individuals aged 16-23 at the time of survey (2005-6), resulting in 1,063 individuals. All regression estimates are weighted with inverse probability sampling weights, and standard errors are clustered at the household level.

We distinguish five outcomes for adolescents: those who engage in 1) no migration and no high school through age 18 (baseline), 2) no migration and at least one year of high school, 3) within-Mexico migration *for schooling*, 4) within-Mexico migration for work², and 5) U.S. migration.³ Because of the known challenges of relating contextual change to individual-level outcomes (e.g., Diez-Roux, 2001), the analysis includes several other distinct features. First, we specify contextual variables that are conceptually distinct from our outcome measures. Second, we heed time ordering concerns. Finally, we use proxy variable as substitutes for direct measures that might be subject to endogeneity concerns. These three features are further described below.

Household and Community Socio-demographic Characteristics

We control for the number of older men and women and the number of younger children in the household to account for an adolescent's position within the household structure. 'Older' and 'younger' are measured in relation to the focal youth. As a measure of family-level human capital, a dichotomous indicator variable captures whether any female household member older than 30 has more than three years of education, the sample mean for this population. Because coffee farming provides an important work alternative to schooling and because land ownership is an important proxy for wealth and socioeconomic status in these communities, we control for the number of coffee hectares the youth's family has in production, and whether the household

belongs to a coffee cooperative (which boosts returns to production). A dichotomous measure that identifies whether the community had a high school by the time the adolescent turned 15 captures local schooling opportunity.⁴ Some schools were built during the observation period in this study, creating within-community temporal variation in local educational opportunities. Finally, we control for adolescent's age at time of survey.

Migration Networks

We use household survey data to construct measures of both community and household migration. For the community measures we take the proportion of male and female community members who were living in another part of Mexico or in the United States during the year the adolescent was 15 years old. As noted above, age 15 is a critical stage in an adolescent's life in terms of schooling and migration decisions. These measures thus vary both across and within communities depending on the child's age. We also separate these measures by the sex of the migrant, creating estimates of the size of gender-specific migration flows to domestic and international locations. Variance inflation factor tests (Fox, 1997) indicate sufficient data support to estimate coefficients for these four terms simultaneously.

Previous studies emphasize the importance of *household* migration networks, where household migration flows are typically measured by a binary or count measure of household members' prior migration experience (Cerutti & Massey, 2001; Curran & Rivero-Fuentes, 2003; Davis & Winters, 2001). However, modeling youth's migration and education outcomes as a function of previous household migration is vulnerable to endogeneity problems. For example, households with migrants might be more entrepreneurial or more education-oriented than households without migrants, making it impossible to disentangle the effects of these (often

omitted) household characteristics from the measured effects of household migrant networks. More recent studies have attempted to instrument household migration propensity using historical data such as 1924 migration rates (McKenzie and Rapoport, 2007) or the location of rail lines in the early 1900s (Woodruff and Zenteno, 2007). These types of instruments may be appropriate if migration has a longer history, but in the region of focus for this study international migration was pioneered by many of the older respondents.

To minimize endogeneity concerns, we interact the gender- and location-specific community migration network measures with indicators of household structure – specifically, the number of older male or female household members, as measured in relation to the focal household youth.⁵ The household structure was determined before migration to the United States and high school attendance were prevalent in the region, thereby lessening endogeneity concerns. The interaction terms thus capture the likelihood that the household itself has migrants. Indeed, the interaction of community migration and household structure predict the likelihood of migration by members of households in the sample (results available upon request). The measure avoids the potential for selection-based coefficient bias introduced by using direct household migration measures.

RESULTS

Education Gains and Shifting Migration Trends in Southern Mexico

Recent increases in schooling outcomes, particularly for women, and the growing importance of migration for work and school are highlighted in Table 1.⁶ Column I demonstrates dramatic increases in attainment of some high school for the younger birth cohorts. The increase is most substantial for women, who have surpassed men in recent years. Whereas only a small

fraction of men and women in older cohorts attained some high school, at the time of survey more than one-quarter of men and one-third of women aged 17-19 had completed at least one year of high school. These rates of participation in high school reflect a four- to five-fold increase relative to those experienced a decade earlier by the 26-30 year-old birth cohort.

[Table 1 here]

The increases in educational attainment are due in part to social policies aimed at reducing the financial burden associated with children's schooling. At the time of survey, 80 percent of households in the sample received Oportunidades with an average annual payment of \$500, accounting for 10 percent of household income. In addition to extra financial support, youth are influenced by a local culture that increasingly emphasizes the importance of schooling for life success and as an alternative to agricultural employment. Focus groups held with teens uncovered rising normative expectations with regard to educational attainment. Many youth expected to pursue education even beyond high school, and many parents encouraged their children to study as opposed to following their footsteps into agricultural fields or across borders. The following two quotations by male teenagers illustrate this point; focus group interviews with female youth revealed similarly high aspirations among many girls.

“My plan is to continue studying, to have a career. I don't want to work in agriculture because I know how my parents have suffered in the fields. And as my parents have told me, they've given us the opportunity to study so that we have a good quality of life and not suffer the way they did.”

“My father tells me that it's too risky [to migrate to the United States], and that for this reason I should continue with my studies, that maybe by studying I can make him proud by becoming a professional.”

Increasing educational attainment and expectations have been accompanied by rising (and shifting) migration patterns. While columns II and III of Table 1 exhibit the upward trend in both internal and international migration, domestic migration for schooling purposes also increased significantly across recent birth cohorts (Column IV). For example, 19 percent of males and 14 percent of females who were 17-19 years old at time of survey had migrated for education purposes; this type of migration was practically non-existent among cohorts older than 30. Among the youngest birth cohorts, females are much more likely than males to have migrated for schooling as opposed to work or other purposes. Indeed, the need to migrate domestically for education was a recurrent theme of the focus group discussions with rural youth, as reflected in the following quotations.

“Some of us would like to continue studying, but sometimes there’s not enough money. And since there are no schools close by, parents need to send kids who want to study to Oaxaca or Pochutla, or somewhere else.”

“There are schools here that don’t have what’s necessary...They don’t have classrooms that are suitable for studying. The bathrooms and the recreational fields are in bad shape.”

“If there were the opportunity to get a job here in town, I think that would be better. But without that opportunity it’s necessary to go to the city to keep working, to keep studying, to keep preparing oneself.”

Youth Perceptions of Gendered Migration and Education Opportunities

Our qualitative data provide further insights into the patterns in Table 1 indicating that education and migration choices for youth are distinct for boys and girls. For example, although youth reflected on many of the uncertainties and risks associated with migration in gender-neutral ways, the dangers of international border-crossing were widely perceived to be higher for

women. Such perceptions typically narrow the options for teen girls to domestic migration or staying in the natal community. These perceptions also underlie the importance of stable networks for their migration choices. Adolescent girls' reflected on these dangers:

“More men [migrate] because the women who have gone, when they come back they tell us of their experiences and how they are treated badly because they are women. Men can defend themselves but women can't, especially if they go alone.”

“My brother hasn't let me [migrate], because he says he suffered when he went and he doesn't want the same to happen to me. And it would be worse as a woman.”

Though increasing proportions of women migrate to both international and domestic destinations, both types of migration remain more prevalent among men in Southern Mexico (Table 1). The qualitative data also suggest that while a “culture of migration” affects both boys and girls, the allure and normative expectations surrounding migration are more widespread and strongly felt for boys. Youth repeatedly linked boys' lower interest in studying to migration aspirations. A fifteen-year-old girl entering high school discussed these gendered divisions among her classmates with regard to schooling versus migration.

“The majority of my classmates [who don't plan to enroll in high school] are boys who want to go to the United States or are no longer interested in studying. Now that it's obligatory to enroll in *secundaria* they're doing that, but many [boys] don't even want to finish. Of the girls in my class, only two don't want to study high school. The boys say that they're no longer interested in studying, that they're getting bad grades and that it doesn't make sense to waste their parents' money. They want to be self-sufficient and work.”

In combination, the quantitative and qualitative evidence show that gender structures how adolescent pursuits are perceived in these communities. Of course, the gendered

connections between observed adult and adolescent behavior may also operate through other mechanisms, including gender differences in pecuniary and non-pecuniary resources resulting from past migration of community members. We now turn to this question.

More Stable and More Educated – But Less Remitting – Female Migrant Networks

Scholars theorizing about the effects of migrant network composition on the education and migration choices of youth point to three mechanisms: education levels, length of sojourns, and remittances (Boucher et al., 2009; Cohen, 2010; Curran & Rivero-Fuentes, 2003).

Examining these characteristics for male and female migrants in our sample points to clear gender differences (see Table 2). First, positive selection on education is significantly more pronounced for female versus male U.S. migrants, which is consistent with national-level research on the gendered selectivity of Mexican migrants to the United States (Feliciano, 2008). Female migrants also have fewer children, reducing the demands of domestic work performed for their own families. Second, sojourn length differs between men and women and type of migration. Female domestic migrant networks are more permanent (Curran & Rivero-Fuentes, 2003), whereas male domestic migration tends to be more circular and may offer less support to potential young migrants. For domestic migrants, 89 percent of first female sojourns (for non-schooling purposes) lasted a year or more, compared to 69 percent of pioneer male domestic sojourns. For U.S. migrants, these percentages are 98 and 68 for women and men, respectively.

Evidence on the third mechanism, remittance patterns, is not as clear-cut. Men are more likely than women to be remitters, though this difference is only significant for domestic migrants. In terms of remittance levels, male U.S. remitters send over 60 percent more than female U.S. remitters (3,200 versus 1,960 U.S. dollars annually), whereas male and female domestic remitters send roughly equivalent amounts on average (~600 dollars annually).

However, further analyses reveal that migrant daughters are much more likely than migrant sons to be living as part of a separate household, which may reflect the greater stability of female networks and their greater likelihood of providing a ‘beachhead’ for other potential migrants. Moreover, when restricting the sample to migrants still considered as part of the sending household, male and female migrants to both destinations have roughly equivalent likelihoods of remitting and comparable remittance amounts (results available from authors).

In sum, the male and female adult migrants in our sample differ notably along various dimensions theorized to affect youth’s migration and education choices. Results from regression estimates, presented next, test whether the gender composition of the migrant network available to youth is differentially associated with boys’ and girls’ outcomes.

[Table 2 here]

Existing Migrant Networks and Adolescents’ Migration and Schooling Outcomes- Multinomial Logit Results

Table 3 describes the education and migration patterns observed in the sample of adolescents. Notably, 37 percent of males and 57 percent of females neither migrated between ages 15-18 nor attained any high school. We use this outcome as the baseline comparison in the multinomial logit regressions. Approximately one-quarter of the sample completed at least one year of high school. Roughly half of adolescents who attend some high school do so in the local community; half migrate somewhere else within Mexico to attend school. Overall, migration was far more prevalent among males than females in this age category, 51 percent compared to 29 percent. This is especially true in the migration for work categories, where young males are four times more likely than young females to migrate to the United States, and almost twice as likely to migrate domestically.

[Table 3 here]

Descriptive statistics for regressors are also reported in Table 3. Only 27 percent of the respondents had a high school serving their community by the time they were 15.

Approximately half of respondents lived in a household with an adult woman with more than three years of primary education. The average coffee land cultivated in the sample is three hectares, meaning that most individuals came from small-scale coffee producing households.

Community migration networks are measured using the proportion of adults in a youth's community who were living in the United States or who were living elsewhere in Mexico when the respondent was 15. On average, youth lived in communities in which five percent of adult males were in the United States (range=0-24%). By comparison, only an average 1.4 percent of the community's adult women lived in the U.S. (range=0-6.6%). We observe much larger domestic migration networks; we also observe less variation across communities in the proportion of adults migrating domestically.

The multinomial logit model examines five possible outcomes for youth during ages 15-18: (1) remain in the village without high school attendance, (2) attend high school in the village, (3) migrate within Mexico for high school, (4) migrate domestically for work, or (5) migrate to the United States. Coefficients are relative risk ratios and represent the odds of choices (2)-(5) relative to the baseline of no migration and no high school attendance.

[Table 4 here]

Domestic Migration Networks

For both male and female youth, the proportion of community adults of the same gender engaged in domestic migration is associated with local attendance of high school and migration within Mexico for work. Specifically, a larger proportion of adult women migrating domestically

increases the likelihood that girls who stay in their community will get some high school education (relative risk ratio [RRR]=1.19, $z=3.10$)⁷, and increases girls' likelihood of domestic migration for work (RRR=1.16, $z=2.76$). Similarly, larger community-level male domestic migration networks have a positive (though not statistically significant) effect on boys' within-community high school attainment (RRR=1.07, $z=1.13$), and significantly increase the likelihood of boys' within-Mexico migration for work (RRR=1.17, $z=2.93$).

The household level migration variables, represented by the gender-specific interaction of the community domestic migration rate and household structure, have weaker effects overall.⁸ Having more potential male migrants in a household dampens the positive relationship between community-level male internal networks and boys' odds of migrating internally for work (RRR=0.97, $z=-1.69$). This could reflect a choice to keep one male household member in local agricultural production to maintain the family farm.

International Migration Networks

We find positive cross-gender associations when examining community-level U.S. migrant networks in place when youth are age 15. Specifically, larger female U.S. migrant networks increase the likelihood that boys will attain some high school, either in their community (RRR=1.66, $z=2.54$) or by migrating within Mexico for school (RRR=1.50, $z=2.06$). For the first result, the coefficient on the interaction term (our proxy household migration measure) suggests that the positive effect of existing female U.S. networks on boys' schooling attainment is even more pronounced for male youth in households with a higher number of older women. Larger existing female U.S. networks also increase the likelihood that girls will migrate within Mexico for schooling (RRR=1.39, $z=2.28$). Male U.S. networks, in contrast, decrease the

odds of both boys' and girls' migration within Mexico for schooling, and increase the odds of boys' U.S. migration (RRR=1.10, $z=2.27$).

Other Variables

The presence of a high school in the community by the time an individual is 15 dramatically increases the odds that girls will complete some high school education in their communities (RRR=7.23, $z=4.06$). The large magnitude of this coefficient for girls, compared to a much smaller and non-significant coefficient for boys, is in line with previous research pointing to girls' greater responsiveness to local school availability (Glewwe & Kremer, 2006; Parker & Pederzini 2000) and has important implications for gender differences in education as schools are constructed in rural areas across Mexico.

At the household level, having a more educated older female in a household has positive effects on education for both boys and girls, but in different ways. Co-residing with a more educated adult woman substantially increases both boys' likelihood of completing some high school in their community (RRR=3.78, $z=2.46$) and girls' likelihood of migrating internally for schooling purposes (RRR=4.18, $z=2.71$). Additional younger members in a household lower the odds of internal migration for schooling purposes.

DISCUSSION

Education and migration opportunities for Southern rural Mexican youth have shifted and become intimately linked with both regional and international migration networks. We examined the effects of these contextual changes on adolescent schooling and migration outcomes, with explicit attention to the complexity of migration networks in terms of both

gender and destination (i.e. international versus domestic). We draw from both qualitative and quantitative data to arrive at four conclusions. First, regional work opportunities factor into education decisions at an early age; youth are socialized toward migration opportunities and actively consider these options as they make plans for the future. Second, though education and migration are increasingly portrayed as substitutes, the data suggest that migration is now an important complement to education pursuits (i.e., migration *for* schooling has increased notably). Third, decisions about schooling and migration operate, in part, through resources and information provided by community migration networks. Fourth, the effects of these migration networks are gendered.

Consistent with Hypothesis 1, the purpose of domestic migration has shifted from labor toward schooling. Among younger birth cohorts in the sample, migrating within Mexico to attend school is a common occurrence, and one that did not occur among older cohorts. Youth described the motivation to migrate for education as deriving from a perception of local schools, where they did exist, as being sub-standard in quality, or from the need to find work to help finance continued study.

We also predicted that the proportion of adult women migrating domestically (or, the female domestic migration network) would be positively correlated with boys' and girls' educational attainment (Hypothesis 2). We anticipated that youth education would be associated with female but not male domestic migration among adults from the community, given that female domestic migration tends to be more stable relative to male domestic migration (Curran & Rivero-Fuentes, 2003). Descriptively, we found evidence that female domestic migration networks do involve longer periods of residence relative to male domestic migration networks; we also found that female networks predicted girls' schooling and domestic migration behavior.

Contrary to expectations, female domestic migration networks did not predict boys' schooling and domestic migration behavior, but male domestic migration networks did. The results imply that boys' and girls' pursuit of within-community education and domestic migration might be driven less by the amount of resources available in a particular destination than by local, gender-specific socialization processes. Focus groups assessing boys' and girls' perspectives on migration and schooling opportunities provide further support to a gendered socialization process.

Finally, predictions regarding the effects of U.S. migration networks (Hypotheses 3 and 4) are largely supported by the results. Consistent with a gendered socialization framework, female and male U.S. migrant networks are positively linked to girls' and boys' subsequent U.S. migration, respectively. In terms of associations with high school attainment, male U.S. networks tend to depress schooling outcomes while female U.S. networks tend to improve them – particularly for boys, and regardless of whether youth attend schools at home or elsewhere in Mexico. The positive association between female U.S. migration networks and education outcomes is perhaps unsurprising given the more pronounced positive selection on education that we find for female U.S. migrants and what this might imply for their motivation for migrating and remitting. It is also consistent with theories about female migration being perceived as a sacrifice that youth should compensate for by working harder academically (Dreby and Stutz, 2012).

Our findings have several implications. First, though scholars have pointed to a “culture of migration” in Mexico, we find evidence that a linked and rapidly growing “culture of education” is also taking hold. Similar to the self-perpetuating, normative socialization cycle that develops in a culture of migration, dramatic increases in educational attainment and the

norms and expectations that surround these increases may be leading to a self-perpetuating education culture. The extent to which these two “cultures” are competing versus *complementary* was a key question motivating this study, and one deserving more attention in future research.

Second, research on the impact of migration flows gives limited attention to how migration opportunities are sensitive to youth’s experiences of, and ties with, migration networks comprised of women versus networks comprised of men. Yet the findings indicate that the gender composition of migrant flows is relevant for youths’ education and migration pursuits. For example, the sizeable positive association between existing female U.S. migration networks and *boys’* schooling outcomes is interesting in light of most research pointing to the negative influence of U.S. migration on boys’ educational aspirations and attainment. It is a striking example of how a gender-based view of migration networks offers a more nuanced picture of migration-education links.

Third, the results points to the importance of more research that bridges disparate lines of research on internal and international movement (Fitzgerald, 2006; King & Skeldon, 2010). These flows are clearly linked, and their interaction has meaningful implications for schooling and migration outcomes in rural areas. Finally, our analysis underscores the importance of local context in adolescent choices about migration and education. Migration is experienced with extraordinary regional heterogeneity in Mexico. Our regression analyses heed variation in the size, destination, and gender composition of flows across time. Both temporal and regional forms of variation matter for schooling and migration decisions, suggesting that adolescents are highly responsive to the local context in which they are raised. Accordingly, social programs that are locally targeted may be more effective in improving or equalizing educational outcomes.

Of course, there are limitations to the current research. First, though the theoretical framework posits that structural and social forces shape adolescents' motivations to pursue a variety of schooling and migration options, the survey data do not allow an explicit treatment of individual *motivations*. However, qualitative data from community youth revealed several important insights about individual motivations and how these appear to operate via gendered socialization processes. Additional mixed-methods research can help to better understand these processes and other mechanisms linking community migration context and adolescent choices. Second, the sample reflects a part of Mexico in which education and migration flows are changing particularly rapidly, which means that the findings may not be applicable to other regions with longer standing domestic and international movements, particularly those in urban migrant-sending areas where the mechanisms driving migration have been found to differ (Fussell & Massey, 2004).

Third, the study examines migration and schooling outcomes observed when respondents are in late-adolescence. As in other research on adolescent schooling, whether or not these changes in schooling behavior will translate into major welfare improvements is unknown. Follow-up research on the sample is required to make this assessment. Fourth, the regression analyses face the interpretation issues common to observational research. Despite careful attention to the development of an estimation strategy that sidesteps endogeneity concerns associated with direct measures of household-level migration, it is still possible that something at the community level has driven both changes to observed migration networks and adolescent behaviors. Note however, to threaten the interpretations made here, such an omitted variable must not affect adolescent outcomes through migration networks but through some other mechanism not observed in our analysis. This variable must also predict differences in both the

gender composition of the existing adult migrant network and *gender differences* in adolescent outcomes, further complicating the logic of an alternative explanation, should one exist.

Southern Mexico has recently undergone major expansions in domestic and international migration, social policy supporting schooling, and educational attainment. For the period under study, migration and education patterns are intertwined in nuanced ways that appear to vary for adolescent boys and girls based on both the destination and the gender of the migrant networks. An increasing emphasis on the value of education is emerging, particularly for girls. Whether these dynamics are transitory or a more permanent reflection of how migration and education are intertwined in rural areas of Mexico remains for future study. Application of a similar approach to other areas of Latin America where migration and social policy supporting education are undergoing significant changes would deepen our understanding of these issues.

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Endnotes

¹ Focus group content was analyzed by the first author. Transcripts were transformed into a series of verbatim, descriptive statements—one or more sentences aligned with a particular topic. Descriptive statements were then grouped into various macro-themes of interest: for example, schooling and migration aspirations, reasons for continuing study, reasons for wanting to migrate, and perceptions of gender differences regarding migration and education options and norms. Illustrative quotations selected for this study were drawn only from macro-themes that emerged in at least half of sampled communities. Other themes related to youth's perceptions about education and migration options that emerged less consistently or emphatically across regions were not included in this study.

² We use “migration for work” and “migration for non-schooling purposes” interchangeably. This is done for simplicity, since in reality there are individuals who migrate for non-schooling purposes who do not work (e.g. those who migrate for marriage).

³ Variance tests (Long & Freese, 2006) confirm that the five categories should be retained (versus collapsed). It is possible that an individual might migrate both domestically and internationally within ages 15-18, or might engage in domestic migration both for schooling and for work. In the rare occasion when both outcomes are reported, we privilege the less common outcome for classification purposes. That is, those reporting both domestic and international migration (1% of the sample) are coded as international migrants. Those reporting movement for both schooling and for work are coded (1% also) as education migrants. Reversing classification for these small sub-samples produces substantively equivalent results.

⁴ Some youth commuted daily, by foot or by vehicle, to nearby towns in order to attend high school. Our measure of local schooling opportunity is conservative in that it is restricted to the presence of a high school in a youth's community of residence.

⁵ The measures of older male and female household members are mean-centered; thus, coefficients on the community-level migration variables can be interpreted as effects of community migration for youth with the 'average' number of older household members.

⁶ Education and migration patterns across age cohorts are based on information about individuals linked to households present in the communities in 2005-06. The findings of increasing migration and education for younger cohorts may thus be overstated if they omit the migration of entire households comprised of older generation individuals.

⁷ The result is interpreted as such: a 1 percent difference in the proportion of community women who are domestic migrants at the time a community female adolescent is 15 years old is associated with a 19 percent difference in her relative risk of completing some high school within her community, compared to the baseline of staying in her community and attaining no high school.

⁸ We also ran models that replaced our proxy measure for household-level migration (the gender- and location-specific interaction between the community migration rate and household structure) with a gender- and location-specific binary measure of migration experience by household members. Overall, results from these models show relatively consistent results on the community measure, although they suggest much stronger household-level effects than we find using the proxy measures. This is an outcome that we anticipate given the endogeneity problems inherent in these direct household measures. We do not report them here. They are available upon request.

Table 1: Education and Migration Trends by Gender

Age	I		II		III		IV	
	Attained some high school (%)		Domestic migration experience (non-schooling) (%)		U.S. migration experience (%)		Domestic migration for schooling experience (%)	
	Men	Women	Men	Women	Men	Women	Men	Women
41-50	4	1	38	9	21	3	1 ^a	1 ^a
31-40	4	2	38	24	23	3	2 ^a	0 ^a
26-30	6	7	47	21	26	5	3 ^a	5 ^a
23-25	14	13	44	29	33	12	10 ^a	10
20-22	19	22	50	26	36	9	14	11
17-19	27	36	36	17	19	3	19	14

N=3,516 (1,673 men, 1,843 women)

(a) Estimate is different from 17-19 year old cohort at $p < .05$. This test was only run for column IV.

Table 2: Gender Differences in Migrant Network Characteristics

	Non- migrants	Domestic migrants		U.S. migrants	
Males					
Years of schooling †	5.4	6.9	a	5.9	a
Number of children †	2.6	2.5	a	2.5	a
Percent whose 1st sojourn > 1 year †	-	69	-	68	-
Percent sending remittances ††	-	34	-	62	-
Pesos remitted per year ††	-	6,164	-	32,003	-
Females					
Years of schooling †	4.4	6.4	a	7.4	a
Number of children †	3.3	2.3	a	1.4	a
Percent whose 1st sojourn > 1 year †	-	89	-	98	-
Percent sending remittances ††	-	15	-	48	-
Pesos remitted per year ††	-	5,913	-	19,642	-
Gender difference (Male - Female)					
Years of schooling †	1	0.5		-1.5	b,c
Number of children †	-0.7	0.2	c	1.1	b,c
Percent whose 1st sojourn > 1 year †	-	-20	b	-30	b
Percent sending remittances ††	-	19	b	14	
Pesos remitted per year ††	-	251		12,361	b

† Persons aged 23-50 at time of survey (N= 1,015 Men, 1,128 Women)

†† Non-student migrants older than 16 and living elsewhere at time of survey (N=423 men, 176 women)

(a) Estimate is different from non-migrants at p<0.05

(b) Estimate differs by gender at p<0.05

(c) Migrant selection process differs by gender at p<0.05

Table 3: Descriptive Statistics for Multinomial Logit Variables

Multinomial Logit Outcome Variable	Boys (N=506)	Girls (N=557)		
No migration, No high school (baseline) (%)	37.3	56.9		
No migration, some high school (%)	11.7	13.7		
Domestic migration for schooling (%)	12.5	11.6		
Domestic migration for work (%)	24.6	14.2		
US migration (%)	14.0	3.6		
Independent variables	Mean	Std. Dev.	Min	Max
<u>Community</u>				
Community female US migration at age 15 (%)	1.4	1.7	0.0	6.6
Community male US migration at age 15 (%)	4.9	6.3	0.0	24.2
Community female Mexican migration at age 15 (%)	11.0	5.9	1.5	28.4
Community male Mexican migration at age 15 (%)	14.7	6.7	2.0	29.2
High school in community at age 15 (1=yes, 0=no)	0.27	0.44	0.0	1.0
<u>Individual</u>				
Age	19.6	2.3	16.0	23.0
Sex (1=female, 0=male)	0.52	0.50	0.0	1.0
<u>Household</u>				
Number of older women in household	2.3	1.6	0.0	11.0
Number of older men in household	2.2	1.4	0.0	8.0
Number of younger household members	2.8	1.9	0.0	10.0
Total coffee hectares in production for household	3.2	3.7	0.0	45.3
Household organized at age 15 (1=yes, 0=no)	0.48	0.50	0.0	1.0
> 3 yrs schooling for older household female (1=yes, 0=no)	0.45	0.50	0.0	1.0

*N=1063 for all independent variable statistics

Table 4: Multinomial Logistic Regression Analysis (Comparison Group: No Migration, No High School)

Boys												
	No migration, Some high school		Domestic migration for schooling		Domestic migration for work		US Migration					
<u>Community</u>	RRR	z	RRR	z	RRR	z	RRR	z				
Community female US migration at age 15	1.66	*	2.54	1.50	*	2.06	0.83	-1.24	0.90	-0.52		
Community male US migration at age 15	1.01		0.31	0.89	†	-1.77	1.00	-0.05	1.10	*	2.27	
Community female Mexican migration at age 15	0.90		-1.46	0.93		-1.12	0.97	-0.49	0.94		-0.95	
Community male Mexican migration at age 15	1.07		1.13	1.02		0.38	1.17	**	2.93	1.09	1.37	
High school in community at age 15 (1=yes, 0=no)	1.30		0.58	0.40	†	-1.70	0.79	-0.49	1.16		0.27	
<u>Individual</u>												
Age	1.21		1.20	0.89		-0.81	1.15	1.23	1.19		1.54	
<u>Household</u>												
Number of older women in household	1.03		0.09	0.89		-0.39	0.84	-0.68	0.90		-0.40	
Number of older men in household	1.04		0.10	1.41		1.12	1.47	1.35	0.76		-0.82	
Number of younger household members	1.03		0.25	0.82	†	-1.95	1.03	0.30	1.09		0.85	
Total coffee hectares in production for household	0.92		-1.11	0.94		-0.79	0.95	-1.00	1.05		1.29	
Household organized at age 15 (1=yes, 0=no)	1.91		1.25	2.54	*	2.58	0.95	-0.14	3.19	*	2.57	
> 3 yrs of schooling for older household female (1=yes, 0=no)	3.78	*	2.46	1.96		1.57	1.23	0.69	0.58		-1.42	
Female US migration rate * # older women	1.16	†	1.73	1.14		1.62	0.96	-0.37	0.99		-0.13	
Female Mexican migration rate * # older women	0.97		-1.16	0.98		-0.63	1.01	0.22	1.03		1.34	
Male US migration rate * # older men	0.99		-0.35	1.03		1.61	1.00	0.26	0.98		-1.15	
Male Mexican migration rate * # older men	0.99		-0.39	0.96		-1.55	0.97	†	-1.69	1.00	-0.19	
Constant	0.00	†	-1.70	5.50		0.51	0.01	†	-1.95	0.00	*	-2.43

Notes: Estimates are relative risk ratios (RRR). N=506.

†p<.10 *p<.05 **p<.01 ***p<.001

Girls

	No migration, Some high school		Domestic migration for schooling		Domestic migration for work		US Migration			
	RRR	z	RRR	z	RRR	z	RRR	z		
<u>Community</u>										
Community female US migration at age 15	0.94	-0.34	1.39	*	2.28	0.96	-0.29	1.23	1.14	
Community male US migration at age 15	0.93	-1.21	0.92	†	-1.70	0.99	-0.17	1.03	0.54	
Community female Mexican migration at age 15	1.19	**	3.10	1.02	0.41	1.16	**	2.76	1.02	0.23
Community male Mexican migration at age 15	0.86	**	-2.72	0.98	-0.38	0.94	-1.24	0.97	-0.35	
High school in community at age 15 (1=yes, 0=no)	7.23	***	4.06	0.67	-0.71	1.75	1.47	3.24	*	2.18
<u>Individual</u>										
Age	0.88	-0.78	0.86	-1.05	1.07	0.59	0.93	-0.46		
<u>Household</u>										
Number of older women in household	1.00	0.01	0.90	-0.44	1.36	1.48	0.90	-0.29		
Number of older men in household	1.30	0.80	1.24	0.72	0.72	-1.13	0.40	†	-1.90	
Number of younger household members	0.91	-0.71	0.90	-1.10	1.04	0.45	1.21	1.52		
Total coffee hectares in production for household	0.93	-0.83	1.03	0.73	1.05	1.30	1.06	†	1.71	
Household organized at age 15 (1=yes, 0=no)	1.11	0.23	1.54	0.95	1.20	0.63	0.66	-0.63		
> 3 yrs of schooling for older household female (1=yes, 0=no)	1.44	0.95	4.18	**	2.71	0.93	-0.21	1.31	0.48	
Female US migration rate * # older women	1.06	0.63	0.93	-0.74	0.98	-0.25	1.03	0.23		
Female Mexican migration rate * # older women	1.00	-0.14	1.00	-0.15	0.99	-0.41	0.98	-0.53		
Male US migration rate * # older men	0.98	-0.93	1.00	-0.01	0.98	-1.02	1.01	0.37		
Male Mexican migration rate * # older men	0.97	-1.29	0.98	-1.04	1.01	0.65	1.04	†	1.69	
Constant	3.91	0.33	2.14	0.23	0.02	†	-1.48	0.06	-0.79	

Notes: Estimates are relative risk ratios (RRR). N=557.

†p<.10 *p<.05 **p<.01 ***p<.001

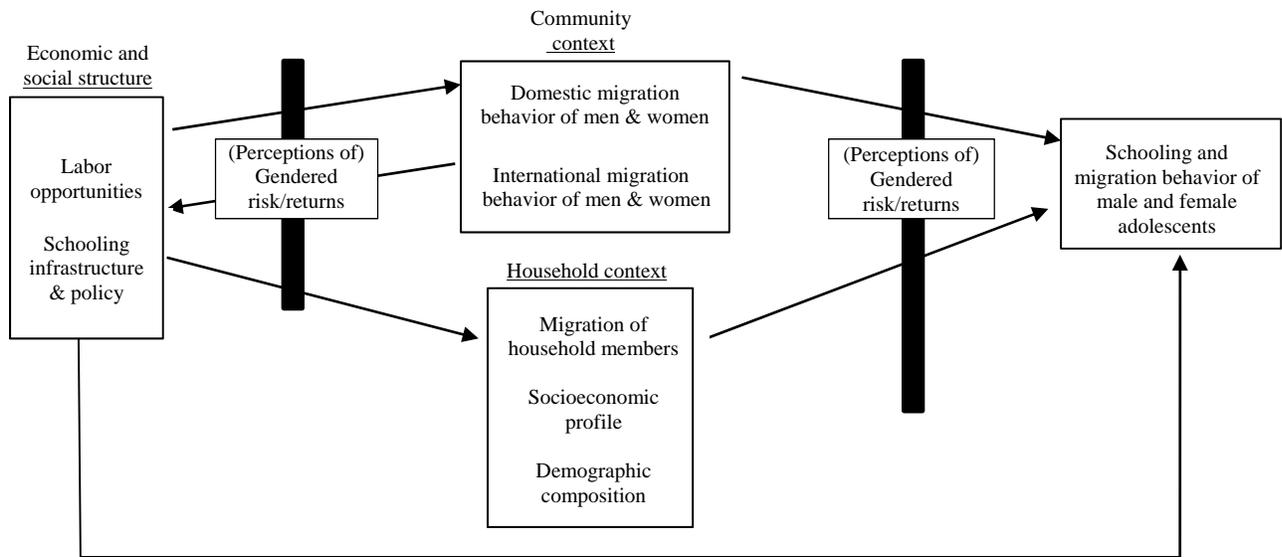


Figure 1. Linking Migration and Education

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