ENGENDERING MIGRANT NETWORKS: THE CASE OF MEXICAN MIGRATION*

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This article compares the impact of family migrant and destination-specific networks on international and internal migration. We find that migrant networks are more important for international moves than for internal moves and that female networks are more important than male networks for moves within Mexico. For moves to the United States, male migrant networks are more important for prospective male migrants than for female migrants, and female migrant networks lower the odds of male migration, but significantly increase female migration. We suggest that distinguishing the gender composition and destination content of migrant networks deepens our understanding of how cumulative causation affects patterns of Mexican migration.

Two major developments in the study of migration in the past 20 years have been the recognition of the importance of gender and of social networks in the migratory and assimilation process. Until recently, these two fields have remained mostly separate (Curran and Saguy 2001; Grieco and Boyd 1990). Despite the differences that have been demonstrated in the motivations, risks, and norms that govern and promote the movement and assimilation processes for men and women, it has been a common assumption in quantitative research on social networks that networks act in the same ways and have the same effect on men and women's migration (Pessar 1999b). In addition, this research has often assumed that male and female former migrants offer the same kind of help to prospective movers and have the same relationship with members of their communities of origin (Curran and Saguy 2001). By examining the gender composition and destination content of family migrant networks, we deepen interpretations of how cumulative causation and migrant networks influence patterns of migration.

We extend prior research on Mexican migration by comparing the effects of family migrant networks on men's and women's migration to the United States and within Mexico. We evaluate the impact of migrant networks on the independent migration of young adults within Mexico and to the United States because their patterns of migration differ in each case. Men have dominated the independent migration of young adults to the United States (Delauney 1995; Donato 1994), whereas women's movement abroad faces strict patriarchal restrictions (Donato 1994; Hondagneu-Sotelo 1994; Lindstrom 1997). In contrast, women have had a larger and long-standing presence in internal economic migration since the 1940s (Arizpe 1975, 1985; Muñoz, de Oliveira, and Stern 1977; Szasz 1999).

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BACKGROUND AND MOTIVATION

Social Networks and Migration

Social networks in relation to migration are commonly understood as the links between residents in a community of origin and individuals who are living in another place or who previously migrated, regardless of their current residence (Hugo 1991; Massey 1990; Massey et al. 1987). These ties to migrants have been incorporated into most theories that are used to explain international migration, including world systems theory (Portes 1978), dual labor market theory (Piore 1979), social capital (Massey 1990), and new economics models (Stark 1991; Stark and Levhari 1982; Taylor 1986). The concept of networks for explaining migration has strong theoretical and intuitive purchase, as well as empirical support.

Social networks facilitate migration in several ways. Contact with migrants shows individuals that they may be better off in a place other than their current residence (Hugo 1991). Migrant networks reduce travel costs by providing information on safe and cheap routes or smugglers and reduce emotional costs. They lessen "assimilation shock" if immigrants arrive in an environment where others speak their language (Choldin 1973) and where living among other foreigners can easily prevent deportation (Massey 1990). Migrant networks also increase the expected benefits of migration when contact with previous migrants helps individuals find jobs. Finally, migrant networks help to reduce living expenses and provide financial assistance on arrival.

Quantitative studies have demonstrated the importance of social networks as a mechanism that facilitates migration, even after an individual's previous migratory experience, individual and household socioeconomic characteristics, and characteristics of the community of origin are controlled. For Mexican migration to the United States, Massey and García España (1987) showed that the likelihood of men moving increases significantly when at least one member of their household previously migrated to the United States. Massey and Espinoza (1997) also found that kinship networks play an important role in increasing the odds of first and subsequent migrations for heads of households.

The importance of migrant networks has received less attention in studies of internal migration in Mexico. To our knowledge, only two qualitative studies and one quantitative study have examined the role of social networks in promoting internal migration and assisting migrants in the assimilation process. In the early 1970s, Arizpe (1975) observed two communities in central Mexico and found that migrants' accounts of higher wages and vast opportunities for employment motivated many other individuals to migrate even when the information provided was faulty. Lomnitz (1977) described the emergence of rural immigrant neighborhoods in Mexico City during the 1960s and 1970s, where exchanges of support among neighboring migrants provided a social safety net.

A decade later, Taylor (1986) found that in two rural communities in Mexico, the presence of immediate kin of the household head in another Mexican state was only weakly associated with the odds of internal migration. Instead, migrant networks to the United States more strongly affected migration to the United States. Taylor argued that the weaker effects of migrant networks on internal migration were the result of a well-established link to domestic labor markets, saturating each community with information about the costs, benefits, and opportunities of moving to urban destinations in Mexico. Unfortunately, other than Taylor's relatively small-scale study of the differential effect of networks for various destinations, no other study has compared internal and international migration.

Engendering Social Networks

The literature on gender and migration has shown that the processes, motivations, and social norms governing men's and women's movements and the way in which male and female migrants settle in the receiving society are different (Curran and Saguy 2001;

Hondagneu-Sotelo 1994; Lindstrom 1997; Pedraza 1991; Pessar 1999a, 1999b; Zlotnik 1993). Hence, the importance of networks may vary for men's and women's migration, and the potential for help is not the same according to the gender of the previous migrants.

The effect of social networks on the probability of migration may be different for men and women because the costs, risks, and benefits of migration differ by gender. Prior research on Central American migration demonstrated that women are perceived to, and do, face greater risks when migrating to the United States (Cerruti and Massey 2001; Hondagneu-Sotelo 1994; Lindstrom 1997; Mahler 1999; Menjívar 2000). As a consequence, women benefit more than do men from traveling accompanied or from information about safe routes.

In addition, men and women have different sources of support in communities of origin and destination. Lindstrom (1997) found that in rural Mexican communities, men's migration to the United States relies on the experience of a wide array of friends and distant kin, as well as close family members, whereas women's migration depends exclusively on ties to close family members. Because of prevailing ideas about women's vulnerability and norms of family honor, women can move only if there is a close relative with whom to travel or with whom to live (Lindstrom 1997). In a related vein, network resources within the family are not similarly available to men and women. Mexican men's migration is commonly encouraged, and men are generally able to get other family members to assist them in their attempts to migrate. Assistance for women's migration is dependent on the kind of move women plan. When women migrate as part of a family move, they are able to capitalize on their family networks, independent of the previous migrant's gender. When women attempt to migrate on their own, either as independent migrants or to reunite with their husbands who have migrated before them, male members of their families often oppose their move. In these situations, women must rely on the help of "women's networks" composed of female family members and friends (Hondagneu-Sotelo 1994).

Likewise, the demonstrative effect of social networks can be gendered. When the migration of women is less frequent than men's, the experience or presence of previous female migrants may teach women that they can migrate as well. Mahler (1999) found that in El Salvador, the presence of female *viajera*s (transnational migrants traveling between El Salvador and the United States) shows young children (especially girls) in the community of origin that migration is a viable strategy for women's social mobility. Similarly, Cerruti and Massey (2001) showed that a mother's prior migration increases the likelihood that both sons and daughters migrate, but it is more influential on a daughter's move, and a father's prior migration is significant for a son's migration, but not for a daughter's.

When there is a gender division in the labor market of the receiving society, migrants may benefit more from migrants of the same gender who provide them with more relevant information or contacts. This is the case for Salvadorans (Menjívar 2000), Mexicans (Hondagneu-Sotelo 1994), and Guatemalans (Hagan 1998) migrating to the United States. Among these migrants, the majority of women work as domestic laborers, whereas men work primarily as unskilled laborers (farm, restaurant, or construction workers). Gender-specific migration is promoted when, as Hagan (1998) noted, employers ask men or women for references on new workers and kin are called from Guatemala to migrate. Even if there is little gender segregation among migrants in the destination labor market, there may be distinctly gender-segregated social spheres among migrants, so male and female migrants do not have the same resources to help other migrants. Menjívar (2000) found that Central American female migrants are more likely to have extensive social networks than are their male counterparts. These women's networks reach outside immigrant enclaves to take advantage of the social services required to make ends meet in the United States. Having access to female migrant networks may be important for prospective female migrants to overcome not only the economic, but also the social barriers to migration.

The migration process is dynamic, as are gender relations. For example, Kanaiaupuni (2000) found that the gender composition of village migrant networks has diminishing effects on men's and women's propensities to migrate with time. We also suggest that gender composition effects will vary, depending on the history and context of men and women's migration to a particular destination. In our study, we evaluated the effect of social networks on men's and women's decisions to migrate to the United States or within Mexico. Contrary to Cerruti and Massey (2001), we measured the effect of the prior migration of any household member. We extend Kanaiaupuni's (2000) analysis by exploring the effect of the gender composition of the migrants closest to the individuals (those within their immediate families) instead of the village migrant networks. Unlike previous studies of migration, our analysis focused on the migration of single young adults for a variety of methodological concerns addressed later in the Data and Methods section.

The Case of Mexican Migration

Patterns of migration are distinctly gendered in the Mexican context. That is, young men have predominated in the migration streams to the United States, but young single women have had an important presence in migrant streams within Mexico. Decisions to move, especially to the United States, are often proscribed by gender socialization, expectations, and concerns about risks (Hondagneu-Sotelo 1994; Kanaiaupuni 2000; Lindstrom 1997; Szasz 1999). Because of a culture of "domesticity" (Benería and Roldán 1987; Kanaiaupuni 2000; Lagarde 1993), women are perceived to face greater risks and are subjected to greater control over their movements, especially when they move on their own. As a result, women face different barriers to U.S. migration than men do and must rely on different sources of support for getting to the United States (Hondagneu-Sotelo 1994; Lindstrom 1997).

Young single women have had an important presence in migratory movements within Mexico since the 1940s. Although they did not constitute the majority of internal migrants until 1980, they dominated the migration flows to metropolitan areas, where they worked as domestics and in the service sector (Arias 1995; García, Muñoz, and de Oliveira 1979; Szasz 1999). Since 1980, the destinations of women's migration within Mexico have diversified, expanding to Export Processing Zones and to regional agroindustries, where women work in manual activities and the service sector (Arias 1995; Fernandez-Kelly 1983; Szasz 1999). Overall, women's independent, internal migration is associated with moves of long duration and steady employment. The internal migration of young men differs from that of young women in various aspects, especially in the case of rural migrants. Men tend to move to destinations closer to their place of origin; their migration is mostly seasonal, not permanent; and they take more flexible jobs, like street vendors, construction workers, or *jornaleros* (daily wage laborers) in agriculture (Arizpe 1975, 1985). This difference in the migration experience of young men and young women implies differences in the ability of migrants to provide resources to potential or new migrants and the quality of those resources. The long-term experience and steady employment of migrant women within Mexico may mean that they have a broader array of resources to offer potential migrants than do male internal migrants. It may also be the case that the information and resources offered by women internal migrants to future migrants is less gender specific than are those offered by their male counterparts.

In contrast to internal migration patterns, young men dominated the migrant flows to the United States through the 1980s (Cornelius 1990; Donato 1994). While women's main motive for migrating to the United States has been family reunification, men have migrated for economic reasons (Donato 1994; Hondagneu-Sotelo 1994). Men's and women's migration to the United States tends to last longer than does their migration within Mexico. Mexican women, however, participate less in the American labor market than do Mexican men (Delauney 1995) and work in very different labor markets. Kossoudji and

Ramsey (1984) found that in 1980, 57% of Mexican women, but only 1% of Mexican men, working in the United States labored in private households.

Given these patterns of migration and prior research on gender, social networks, and migration, we propose several different kinds of gender-differentiating effects in the migration process. We have three sets of hypotheses. The first set of hypotheses compares differences across the destinations:

1. Women will be less likely than men to migrate, but this difference will be greater for international migration than for internal migration.

2. Social networks will have a positive effect on international and internal migration, but the effect of social networks will be larger in the case of international migration.

3. For international migration, the effect of social networks will be positive and more important for women than for men, but the effect of social networks will be no different for men and women who are considering internal migration.

The second set of hypotheses proposes that the migratory experiences of previous migrants are qualitatively different if the previous migrants are men rather than women, and vice versa:

4. Given the extensive and well-developed migrant experiences of women in the internal migrant streams of Mexico, female migrant networks will have a larger, positive effect than will male migrant networks on internal migration.

5. Given men's larger and more diverse presence in the United States, male migrant networks will have a larger facilitating effect than female migrant networks on international migration.

The third set of hypotheses proposes that the gender composition of migrant networks interacts with the gender of the migrant to have a different impact on the propensity to move.

6. For both internal and international migration, migrant networks that are composed of men will have a larger, positive effect on men's migration than on women's.

7. Similarly, migrant networks that are composed of women will have a larger, positive effect on women's migration than on men's.

DATA AND METHODS

Data

The data used in this project came from the 1999 Mexican Migration Project (MMP).[1] This data set contains information about 52 communities in Mexico that were surveyed between 1982 and 1997. Each community was sampled only once, and for most of these communities, there was a complementary sample taken in the United States of households from the originating communities. We did not use the complementary sample in the United States.

The MMP sample was drawn from the 13 states that are the source of most migrants to the United States. The survey was not designed to represent an area of high internal

1. The data set and information about the MMP survey is available at http://www.pop.upenn.mexmig, and a description appears in Massey, Goldring, and Durand (1994).

migration, but 9 of the states that were included had among the highest rates of internal emigration during the late 1970s and 1980s, and 3 had medium to low rates of internal emigration (Corona 1993; Partida Bush 1993). Even in a region of high migration, the rate of adults' emigration to the United States (the ratio of adults aged 16 and older who migrated in the year before the survey to all adults aged 16 and older) varied greatly across communities, from almost 2% to 66%. The communities sampled also offer a wide variation in the rate of adult internal emigration (from almost 5% to 41%).

Within each community, households were randomly sampled. Within each household, the investigators obtained basic social and demographic information at the time of the interview for the household head, the spouse and children of the household head (even if they lived outside the household), and all other individuals who were considered household members (including aunts, cousins, and friends who lived in the household). Migration data about the first and last move were collected about any household member who had some migration experience.

Definition of the Study Population

Only individuals who were listed as "children of the household head," had never married, and were aged 17–25 at the time of the survey are included in the study. Restricting the analysis to never-married children of the household head means that we had a sample of men and women who had similar status in the household and whose migration can be defined as independent or economic. Most of the study migrants worked at the destination. Of the young adult men who migrated within Mexico, 86% worked, and of those who migrated to the United States, 87% worked. The young adult women were slightly less likely to work, but they worked at the same rate in both destinations (84%).

The age and marital restriction captured those individuals who were most at risk of migration who still lived in their parents' households and would be influenced by family migrant networks.[2] Married children who lived in separate households would be exposed to a different set of migratory networks. The criteria for establishing the lower margin at age 17 reflects our empirical observation that the percentage of never-married sons who migrated during the two years before the survey increased from about 5% at age 16 to about 10% at age 17 for migration to the United States, and from 3% to 5% for internal migration. Women's migration started at somewhat younger ages, especially in the case of internal migration, but there was also an increase at age 17, from 2% to 3% for internal migration. Furthermore, economic motives for migration become more important at age 17. The percentage of individuals who worked during their last migration was lower for those aged 16 (69.39% for men and 65.22% for women) than for those aged 17 (79.21% for men and 70.97% for women).

Estimating the Odds of Migrating

One limitation of the data is that a population at risk of migrating at any time before the survey cannot be reproduced because information about individuals comes from households that were present during the survey, not from households that had disappeared before the survey (especially as a result of migration within Mexico, since there is a complementary sample for those households that moved to the United States, but not for those that moved within Mexico). The missing individuals affect the sampling proportions for migrants and nonmigrants.

If we were to estimate a multinomial regression that compared migrating within Mexico, migrating to the United States, or not migrating at all, the differences in the sampling proportions would affect the estimation of the β coefficients. This effect does not occur when a logistic model is estimated. When the sampling criteria are independent

2. The survey does not include information about migrant networks beyond the immediate family.

of the covariates included in the analysis, the probability of being in the sample factors out and does not affect the estimation of the βs. This is the reason why the coefficients in a logistic regression are similar, regardless of whether the data are sampled prospectively or retrospectively. However, the intercept in the retrospective scheme is different and does not represent the value of the true log-odds (McCullagh and Nelder 1989). We took advantage of this characteristic of the logistic models, and treated the data as if they came from two matched case-control samples. Doing so allowed us to estimate the association (odds ratios) between the covariates and the odds of migration. However, it did not allow us to estimate the migration rate.

We constructed two separate samples. In one sample, cases were individuals who migrated at least once across state boundaries within Mexico during the two years before the survey, and controls were those who did not migrate during that period; in the other sample, cases were individuals who migrated to the United States at least once during the two years before the survey, and controls were those who did not migrate. In each instance, every migrant was matched with one or more individuals in the reference or control population (nonmigrants), according to two criteria: age at the time of the survey (specified in single years) and community of origin. Age is directly linked to the probability of migration, and the community of origin summarizes several other variables that relate to the propensity to migrate, including year of the survey, rural or urban origin, wage and employment opportunities in the place of origin, and the prevalence of internal and international migration in the community. Among the study population, only 15 out of 7,513 (0.20%) migrated both within Mexico and to the United States during the two years before the survey. These cases were eliminated from the sample.

To make comparisons across the two samples, we had to guarantee that they were independent. Therefore, we randomly divided the nonmigrants who matched the age and community of both internal and international migrants into two groups. Consequently, the nonmigrants in the sample for internal migration were different from the nonmigrants in the sample for international migration.

The sample for internal migration was composed of 259 individuals who migrated within Mexico during the two years before the survey and 1,086 individuals who did not. The sample for international migration is composed of 837 migrants and 3,722 nonmigrants. These migratory statuses were used as the dependent variables in the analysis.

Covariates

Four sets of measures were central to the study: gender, family migrant networks, gender composition of family migrant networks, and interactions between gender and family migrant networks. Gender was measured dichotomously with male as the omitted category.

The measure of a family migrant network is destination specific. We measured family migrant networks within Mexico by coding whether any family member (other than the observed individual)—including mothers, fathers, brothers, sisters, sons, and daughters—migrated within Mexico at least two years before the survey.[3] Eligible prior migrants included sons and daughters of the household head who no longer lived in the household. A similar coding scheme was used for family migrant networks to the United States.

Men's and women's migration may be differently influenced by access to and the use of networks outside the immediate family. We could not measure the size or extent of these networks. However, previous research highlighted the importance of family networks over other networks in men's migration (Massey and García España 1987) and

3. In work not shown here, we also estimated the effects of a count, rather than a dummy variable, and found similar results. We chose the dummy variable because it simplifies the interpretation of the results, especially when we test interaction effects.

showed that family networks are one of the most important determinants in the migration of both men and women (Cerruti and Massey 2001). Our measure of family migrant networks is similar to Massey and García España's (1987) "household network ties," Kanaiaupuni's (2000) "migrant children networks," and Lindstrom's (1997) network of "close family members."

We also measured the gender composition of the migrant network. *Female migrant network within Mexico* measures whether any woman in the family had migrated within Mexico two or more years before the survey. Similarly, *male migrant network within Mexico* measures whether any male member of the family had migrated internally two or more years before the survey. We constructed similar measures for migrant networks to the United States. This distinction of male and female networks is the best measure of the gender composition of the networks, given the sample size available. Disaggregating the network measures further into female-only, male-only, and male-and-female networks was not possible because of the few cases in some alternatives. For instance, only 3% of the sample for international migration had a female-only network.

Besides controlling for age and community of origin through our matching process, we also controlled for previous migratory experience, family migrant networks to the alternative destination,[4] educational level, and family size. Prior migration experience is destination specific and accounts for the information and personal contacts an individual gains that may otherwise be obtained through his or her family's migrant networks (Massey and García España 1987). Previous migration experience within Mexico or the United States measures whether the individual made a first trip to the destination at least two years before the survey.

Educational level was measured categorically, dividing years of schooling into those with 0–6 years, 7–9 years, 10–12 years, and 13 or more years. This codification captures the nonlinear relationship between the propensity to migrate and education observed in prior research on Mexican migration. Migration is higher among those with some secondary education, but lower among those with primary and more than a secondary education (Jasso and Rosenzweig 1990).

Employment before migration may also affect the probability of men and women migrating (e.g., see Kanaiaupuni 2000). Unfortunately, we could not control for the individual condition of employment at the moment at which the risk of migration began in our sample. However, by controlling for community, we indirectly controlled for the rate of male and female employment in the place of origin, among other community factors.

Family size was measured by summing the number of current household members and the number of sons and daughters of the household head who did not live in the household. Previous research demonstrated that family size increases the probability of migration. Part of this effect may result from larger families having larger social networks and therefore greater access to migration possibilities (Massey et al. 1987; Massey and García España 1987; Stark and Taylor 1991).

The means and proportions of all variables in the analyses are presented in Table 1. About 19% in the internal-migration sample and about 18% in the international-migration sample had migrated within the past two years. For the two samples, more than 59% of the individuals had a family migrant network to the respective destination, primarily a male network in both samples. With regard to education, the level of education was slightly higher in the internal-migration sample than in the international-migration sample. The two samples had slightly more men than women, the mean age was about 20 years, and the average family size was about nine members.

4. Previous studies have shown that migrant networks to the United States may have a negative effect on the odds of internal migration, whereas internal migrant networks may have a negative effect on the odds of international migration (Lindstrom and Lauster 2001).

Table 1. Description of Dependent and Independent Variables

Variable	Proportion in Subsample for Internal Migration	Proportion in Subsample for International Migration
Dependent Variables		
Migrated within Mexico	.193	—
Migrated to the United States	—	.184
Independent Variables		
Sex		
Men	.533	.579
Women	.467	.421
Family migrant network within Mexico	.594	.550
Family migrant network to the United States	.557	.681
Female migrant network within Mexico	.250	—
Male migrant network within Mexico	.524	—
Female migrant network to the United States	—	.250
Male migrant network to the United States	—	.653
Previous migratory experience within Mexico	.098	—
Previous migratory experience to the United States	—	.200
Educational level		
0–6 years	.306	.402
7–9 years	.326	.293
10–12 years	.233	.208
13 or more years	.135	.091
Mean age (standard deviation)	19.8 (2.376)	20.2 (2.397)
Mean family size (standard deviation)	9.3 (3.140)	9.6 (3.167)
Number of communities	43	51
Sample Size	1,345	4,559

Models

We include the notation only for our first model (Eq. (1)). Our logistic-regression estimation takes into account the fact that the matching mechanism yields serially correlated observations of individuals of the same age and from the same community. We fit a fixed-effects model within these two variables. The other models we estimate build on the baseline model in an additive way, and the text explains each of them. To test our first hypothesis, that women's propensity to migrate is lower than men's but significantly more so for international migration, we examine the coefficient for *woman* within each equation estimated on the separate destination samples (β_1) and then compare $\beta_{1internal} > \beta_{1international}$.

$$\log\left(\frac{P(dest)}{P(not_move)}\middle| age, community\right) = \alpha_{age,community} + \beta_1 woman + \beta_1(controls_i). \qquad (1)$$

In our second model, we test whether family migrant networks have a positive effect on the decision of young adults to migrate internationally and internally, but that the effect of networks is larger on international migration than on internal migration. We add a measure of the *family migrant network* to the baseline model and estimate a coefficient, β_2. According to our hypothesis, $\beta_{2international} > \beta_{2internal} > 0$.

Our third model tests whether the general effect of family migrant networks is the same for men and women who are considering internal migration, but not the same for men and women who are considering international migration. It is done by adding an interaction term for *woman* with *family migrant network* (*woman* × *family migrant network*$_{dest}$) and estimating a coefficient β_3. We examine whether β_3 is equal to zero in the model for internal migration and significantly greater than zero in the model for international migration.

In the fourth model, we test whether networks that are composed of female migrants have a larger effect than do networks that are composed of male migrants on the likelihood that young adults will migrate by adding a measure of *female migrant network*$_{dest}$ to our baseline model and estimating a coefficient, β_4. In the same model, we test whether networks that are composed of male migrants have a larger, positive effect on migration than do networks that are composed of female migrants by adding a measure of *male migrant network*$_{dest}$ and estimating a coefficient, β_6. We evaluate support for our hypotheses by examining whether $\beta_{4internal} > \beta_{6internal} > 0$ and whether $\beta_{6international} > \beta_{4international} > 0$. We use a one-tailed Wald test to compare the coefficients.[5]

Our fifth model builds on the fourth, testing whether female networks have a larger, positive effect in facilitating the migration of young adult women than do male networks and whether male networks have a larger, positive effect in facilitating the migration of young men. We add interaction effects of *women* × *female migrant network*$_{dest}$ (estimating β_5) and *women* × *male migrant network*$_{dest}$ (estimating β_7). We expect to find $\beta_5 > 0$ and $0 > \beta_7$ for both internal and international migration.

The results of our estimations are presented in Tables 2 and 3. For ease of presentation, the log-odds coefficients are transformed into odds ratios (exp(β)). The general interpretation is that odds ratios between 0 and 1 indicate decreased odds of migration, given a certain condition, and odds ratios greater than 1 increase the odds of migration. We evaluate support for our hypotheses on the basis of one-tailed *t* tests of significance for the log-odds coefficients.

RESULTS

Results for Internal Migration

The coefficients for educational level, migratory experience, and household size do not vary among the five models. Educational level is not significant, implying that the odds of internal migration do not vary with years of schooling. Family size is also not significantly associated (at the .10 level) with the odds of migration. Previous migratory experience does contribute significantly to explaining internal migration. In the five models, the odds of migrating within Mexico are almost double for individuals who had prior migration experiences than for those who had never migrated. Contrary to the results of Lindstrom and Lauster (2001), family migrant networks to the United States do not have a significant effect on the odds of migration within Mexico once one controls for age, gender, educational level, previous migratory experience, family size, and community of origin.

There is some evidence that women have slightly lower odds of migrating than do men for the age group and region considered. The odds of migration are 17% lower for

5. The Wald statistic in this case is $W = (\beta_4 - \beta_6)^2/\mathrm{var}(\beta_4 - \beta_6)$, and is distributed as a chi-square with 1 degree of freedom.

Table 2. Logistic Regression Estimates of Internal Migration (Odds Ratios Presented)

Migrant Versus Nonmigrant	Parameter	Model 1	Model 2	Model 3	Model 4	Model 5
(Man)						
Woman	$\exp(\beta_1)$	0.830	0.830	0.766	0.833	0.666
(Has No Family Migrant Network)						
Family Migrant Network Within Mexico	$\exp(\beta_2)$	—	1.456*	1.380	—	—
Woman × Family Migrant Network	$\exp(\beta_3)$	—	—	1.112	—	—
(Has No Female Migrant Network)						
Has Female Migrant Network Within Mexico	$\exp(\beta_4)$	—	—	—	1.807*	1.841*
Woman × Female Migrant Network	$\exp(\beta_5)$	—	—	—	—	0.972
(Has No Male Migrant Network)						
Has Male Migrant Network Within Mexico	$\exp(\beta_6)$	—	—	—	1.202	0.997
Woman × Male Migrant Network	$\exp(\beta_7)$	—	—	—	—	1.494
(Has No Family Migrant Network to the United States)						
Family Migrant Network to the United States	$\exp(\beta_8)$	1.095	1.098	1.098	1.110	1.116
(Has No Migratory Experience)						
Has Migratory Experience Within Mexico	$\exp(\beta_9)$	2.072*	1.875*	1.880*	1.668*	1.701*
(0–6 Years of Education)						
7–9 Years of Education	$\exp(\beta_{10^1})$	0.821	0.819	0.818	0.810	0.805
10–12 Years of Education	$\exp(\beta_{10^2})$	1.095	0.928	0.923	0.873	0.871
13 or More Years of Education	$\exp(\beta_{10^3})$	0.847	0.841	0.836	0.798	0.799
Family Size	$\exp(\beta_{11})$	0.989	0.983	0.983	0.978	0.980
Log-Likelihood		–424.22	–421.67	–421.60	–417.06	–416.21
LR Chi-Square		14.34*	19.64**	19.79**	28.87**	30.56**
N		1,345	1,345	1,345	1,345	1,345

*A one-tailed test indicates that the coefficient behaves as predicted at $p < .05$.

**A one-tailed test indicates that the coefficient behaves as predicted at $p < .01$.

women than for men in three of the models, 24% lower in the third model, and 33% lower in the fifth model. However, this difference approaches significance only in the fifth model, with a probability of .10 (for a one-tailed test).

The results in the second model show that family migrant networks within Mexico increase the odds of internal migration by 46%. The significance of family migrant networks disappears in the third model, which adds an interaction term with gender. Nevertheless, the odds ratio of family migrant networks is similar ($\exp(\beta_2) = 1.380$) to that in

Model 2, while the odds-ratio coefficient for the interaction term ($\exp(\beta_3)$) is close to 1. Thus, the presence of internal migrant networks increases the odds of internal migration for both men and women.

In our fourth model, having female migrant networks has a larger positive influence on migration than does having male migrant networks. The effect of female migrant networks is positive and significant, whereas that for male migrant networks is not different from zero. With regard to the difference between the coefficients, the effect of female migrant networks is significantly larger than the effect of male networks (Table 2, Model 4: $\log(1.807) > \log(1.202)$, $\chi^2 = 2.52$, $p \leq .056$). The odds of internal migration of individuals with female migrants in their families are 1.8 times the odds of those without female migrants (significant at the .01 probability level). Because the model controls for male migrant networks, the interpretation of the effect of female migrant networks should be understood to be the effect over and above that of having a male migrant in the family.

In our fifth model, female migrant networks positively and significantly affect the migration of both men and women and are equally important for women and men. Female migrant networks continue to increase the odds of migration for men ($\beta_4 > 0$, $p \leq .004$), but the effect is not statistically different for women (testing the significance of the coefficient for the interaction, β_5, in Model 5). Male migrant networks, on the other hand, do not affect the odds of internal migration of either men or women. The effect of male migrant networks on men's migration (β_6) and on women's migration ($\beta_6 \times \beta_7$) is not significantly different from zero.

One explanation for the positive and significant effect of having female migrant networks on the internal migration of both men and women is that a female migrant's experience is qualitatively different from a male's. Because women's migration within Mexico is more permanent and female migrant's employment is more stable than male migrants', this finding may not be surprising. Permanence in a place of destination may yield diverse access to resources that would be useful to men or women, yielding greater benefits from female migrant networks than from male migrant networks.

Results for International Migration

The effect of education on the odds of international migration is not linear, but also not significant. The direction of effects is similar to that of previous studies (see Jasso and Rosenzweig 1990), and we suspect that the lack of significance is due to our study population's young age. Family size has a positive but insignificant effect. Previous migratory experience has an important and significant effect on the odds of international migration. The odds of migrating to the United States were at least 70% higher for those who had previously migrated internationally than for those who had not. The odds of international migration are the same for individuals with family internal migrant networks than for those without such networks.

Women from the same community who are of a similar age, educational level, and migratory experience are noticeably less likely than are men to embark on an independent migration to the United States during their young adult years. The odds of women migrating internationally are about 80% lower than the odds of men migrating internationally for all five models.

The odds ratio of family migrant networks in Model 2 ($\exp(\beta_2)$) confirms that the migration experience of other family members has a positive and significant effect (at a probability level of .01) on young adults' migration to the United States. The odds of migration for those with migrant networks are 2.4 times the odds of migration for those who have no migrant networks. We do not find support for our hypotheses that family migrant networks have a differential effect on men's and women's migration. The odds ratio of the interaction term ($\exp(\beta_3)$ in Model 3) is more than 1, but is not significant, which implies that the increase in the odds of international migration associated with the

Table 3. Logistic Regression Estimates of International Migration (Odds Ratios Presented)

Migrant Versus Nonmigrant	Parameter	Model 1	Model 2	Model 3	Model 4	Model 5
(Man)						
Woman	$\exp(\beta_1)$	0.222**	0.212**	0.180**	0.213**	0.185**
(Has No Family Migrant Networks)						
Family Migrant Network to the United States	$\exp(\beta_2)$	—	2.408**	2.333**	—	—
Woman × Family Migrant Network	$\exp(\beta_3)$	—	—	1.209	—	—
(Has No Female Migrant Network)						
Has Female Migrant Network to the United States	$\exp(\beta_4)$	—	—	—	1.049	0.715
Woman × Female Migrant Network	$\exp(\beta_5)$	—	—	—	—	5.387*
(Has No Male Migrant Network)						
Has Male Migrant Network to the United States	$\exp(\beta_6)$	—	—	—	2.210**	2.520**
Woman × Male Migrant Network	$\exp(\beta_7)$	—	—	—	—	0.524
(Has No Family Migrant Network Within Mexico)						
Has a Family Migrant Network Within Mexico	$\exp(\beta_8)$	1.074	1.029	1.029	1.031	1.045
(Has No Migratory Experience)						
Has Migratory Experience to the United States	$\exp(\beta_9)$	2.008**	1.731**	1.734**	1.711*	1.670*
(0–6 Years of Education)						
7–9 Years of Education	$\exp(\beta_{10^1})$	1.254	1.243	1.241	1.241	1.220
10 – 12 Years of Education	$\exp(\beta_{10^2})$	0.792	0.760	0.760	0.755	0.754
13 or More Years of Education	$\exp(\beta_{10^3})$	0.663	0.670	0.670	0.666	0.675
Family Size	$\exp(\beta_{11})$	1.041	1.023	1.023	1.023	1.027
Log-Likelihood		–1,328.97	–1,302.05	–1,301.86	–1,304.70	–1,278.18
LR Chi-Square		384.15**	438.00**	438.37**	432.70**	485.72**
N		4,559	4,559	4,559	4,559	4,559

*A one-tailed test indicates that the coefficient behaves as predicted at $p < .05$.

**A one-tailed test indicates that the coefficient behaves as predicted at $p < .01$.

presence of previous migrants in the family is the same for young adult men and young adult women.

In Model 4, male migrant networks are more important than female migrant networks for predicting international migration. The coefficient for male migrant networks is significantly larger than the coefficient for female migrant networks (i.e., comparing whether $\beta_6 > \beta_4$ in Model 4: $\log(2.210) > \log(1.049)$, $\chi^2 = 18.90$, $p \leq .000$). Individuals with male

migrant networks are 2.2 times more likely to migrate than are those without such networks. The presence of female migrants does not significantly increase the odds of migration. These findings mirror those for internal migration in which female migrant networks were more important than male migrant networks. In this case, the longer history of men's migration to the United States and the greater array of job opportunities for men decrease risks and increase benefits to a potential migrant.

In the fifth model, we test whether female migrant networks are more important for women and male migrant networks are more important for men. We find that the interaction effect of *woman* and *female migrant network* is significantly greater than 1 at a probability level of .001 ($\exp(\beta_5)$) and indicates that the effect of female migrant networks is greater for women than for men. Similarly, the interaction effect of *woman* and *male migrant network* is less than 1 and significant at a probability level of .05, indicating that male migrant networks are more important for men than for women.

Multiplying these interaction effects by the network effects yields the effect of female and male networks on the odds of women's international migration ($\exp(\beta_4) \times \exp(\beta_5)$ and $\exp(\beta_6) \times \exp(\beta_7)$, respectively). A comparison of these odds ratios with the effects of networks on the odds of men's migration ($\exp(\beta_4)$ and $\exp(\beta_6)$) reveals that the odds of migration among young adult men with male migrant networks are 2.5 times the odds of migration of those with no male migrant network. The presence of male migrants in the family, however, does not have a significant effect on the odds of migration of young adult women ($\exp(\beta_4) \times \exp(\beta_5) = 1.326$, $p > .10$). Female migrant networks, on the other hand, are associated with an increase, by 3.8 times, in the odds of young women migrating. But female migrant networks diminish the odds of men's migration by 30% compared to men without female networks.

Comparing Internal and International Migration

The difference between men's and women's propensity to migrate is significantly greater for international migration than for internal migration. Women have much lower odds of migrating internationally than do men. For internal migration, women have lower odds of migrating but the difference is not statistically significant. In a comparison of β_1 in Model 1 of Table 2 and Table 3, we find that $\beta_{1internal} > \beta_{1international}$ ($\log(0.831) > \log(0.222)$, $t = 7.148$). In addition, family migrant networks play a larger role for migration to the United States than for migration within Mexico. Contrary to Taylor (1986), we find that the presence of migrants in the family has a positive, significant effect on the odds of internal migration. This effect, however, is less important than the effect of U.S. migrant networks on migration to the United States. The coefficient for internal migrant networks, $\beta_{2internal}$, is smaller than the coefficient for international migrant networks, $\beta_{2\text{international}}$, ($\log(1.456) < \log(2.408)$, $t = -2.422$).

When migrant networks are divided into male and female networks, further differences between internal and international migration are revealed. Male migrant networks facilitate international migration and female migrant networks facilitate internal migration. The magnitude of the effect of male migrant networks on international migration is no different from the effect of female migrant networks on internal migration ($\log(2.210) > \log(1.807)$, $t = 0.945$).

Furthermore, Model 5 in Tables 2 and 3 shows that male and female migrant networks differentially influence the international migration of men and women, but not their internal migration. Male and female migrant networks and their interaction with gender are all significant at a probability level of .05 for international migration. In the case of internal migration, only the coefficient of female migrant networks is significant, but its effect is the same for men and women.

These results reflect four observations about the migration process. First, internal migration is less risky and difficult than international migration and hence individuals

need less information and resources provided by migrant networks to migrate. These findings affirm those of Taylor's (1986) smaller-scale study. Second, the barriers to international migration are much greater for women than for men, but are little different for internal migration. Third, female migrant networks within Mexico are more useful to both men and women than are male migrant networks. Fourth, male and female migrant networks to the United States reflect different arrays of resources, and potential migrant men and women have different access to, or make different use of, the information and resources available through these gender-differentiated networks.

CONCLUSIONS

The results from our study contribute to our understanding of the relationship between social networks and migration, as well as gender and migration. We presented evidence from the literatures on both topics to show how migrant networks influence migration through various gender relations. We compared young adult men's and women's propensities to move, depending on the destination. We compared the differential impact of migrant networks on young adult men's and women's decisions to move to particular destinations. We evaluated how the gender composition of migrant networks influences migration to different destinations. In addition, we compared the effect of gender-differentiated migrant networks on the migration of young adult men and women across destinations. Our analysis of the independent migration of young Mexicans to the United States and within Mexico confirmed many of our hypotheses.

Our most important finding is that the effect of being linked to a former migrant within the household varies by the gender of the previous migrant for both international and internal migration. Being female and having access to a prior female migrant network is important for facilitating international migration; similarly, being male and having access to a male migrant network is important for facilitating international migration. However, female migrant networks within Mexico are equally helpful to men and women and male internal migrant networks have no influence on internal migration.

Although our study and the data available to us did not give us information about the content of migrant networks within households, beyond their gender composition, we know from prior ethnographic research that men and women live the migration process differently. We observed that men and women face different barriers to migration, which require the mustering of different kinds of resources to migrate. Upon their arrival in a place of destination, their sources of social support and access to jobs and opportunities may differ, depending on how gender-segregated the labor market or migrant enclave or how well-established the migrant network. It is not surprising that female migrant networks are more useful for facilitating migration within Mexico because a significant number of women have been participating in the migration streams for more than 40 years, and these women have obtained steady and diverse employment, yielding a broad array of resources for male and female migrants alike (Arias 1995; Arizpe 1975; Lomnitz 1977).

As other studies have shown for Mexico-U.S. migration, the barriers to female international migration are much higher than they are for male international migration. Even though men have been migrating to the United States for many years, they are not equally helpful to potential male and female migrants. This difference is partially due to gender differences in places of origin and destination. Women have to garner more resources and information either to convince their families that they can migrate or to resist their families' influence and migrate anyway. The resources that prior male migrants provide may be unavailable to women or insufficient to overcome these barriers. Prior female migrants may have important demonstrative effects, as was shown in prior ethnographic work (Mahler 1999), as well as different resources and information about destinations that can help to overcome the barriers to migration (Hondagneu-Sotelo 1994; Menjívar 2000). Ethnographic research has also shown that male migrants can be more isolated in places of

destination and know less about the wider array of social services and support available to ensure safety and survival (Menjívar 2000), which are especially important for prospective female migrants. This difference between male and female migrants' experiences may be limited to the Central American migrants studied by Menjívar and not extend to Mexican migrants who have had a longer history of migration to the United States. Nevertheless, our results do not suggest otherwise.

The gender division of labor for Mexican migrants to the United States explains why men with female migrant networks have significantly lower odds of international migration. Having a female migrant network limits prospective male migrants' opportunities because female migrants to the United States are less likely to work and to know about job opportunities. If they do work, female migrants may have access only to jobs that men would not accept (e.g., as domestic workers or hotel maids). The opportunities that female migrants offer are so gender specific that men with female migrant networks prefer not to migrate. Although we cannot show exactly why the gender composition of the network matters, ethnographic work suggests several reasons for why it should.

Other ways in which gender may influence the content of migrant networks and subsequent patterns of migration, but that we were not able to study, are the frequency of male and female return migration, male and female migrants' visits to their communities of origin, male and female contact through telephone or remittances, male and female differences in documented and undocumented status, or differential rates of failed or successful migration. Ethnographic evidence from a variety of places has suggested important gender differences in many of these patterns (Curran and Saguy 2001). For example, in two systematic studies of the Dominican Republic, men and women were found to have different patterns of remittances, investments in communities of origin, and expectations about return migration (Georges 1990; Grasmuck and Pessar 1991). This may also be true for Mexican migrants.

Replicating these models using data from other settings may yield different results, given different combinations of restrictions on migration and behavior or the immigrant labor market. For example, the ethnographic literature on Filipino immigrants to Hong Kong suggests that under conditions of similarly segmented labor markets, the effect of gendered networks on men's and women's migration differs from the Mexican case because the barriers to international migration for both men and women are lower, while the obstacles to men's employment are higher in the place of destination than they are for women's employment. Female migrants from the Philippines to Hong Kong have a well-developed, destination-specific migration network that channels them into the domestic work sector of the Hong Kong economy. Channeled through these female migrant networks, a growing number of Filipino male migrants to Hong Kong are clustered in domestic jobs (as child care providers, drivers, gardeners, and odd-job repairmen) (Constable 1997; Trager 1988)—jobs they would not normally have occupied either in their communities of origin or other destinations (like the United States or the Middle East). Comparative studies of variation in the barriers to migration and in the size, structure, composition, and content of social networks should yield greater insights into how and why social networks influence migration processes and result in particular migration patterns and outcomes.

Our results not only deepen our understanding of how cumulative causation influences Mexican migration to the United States but also help to explain an increase in the presence of women in this flow, especially after the increase in female migration during the late 1980s and early 1990s. Women who migrated to the United States in a family-reunification strategy after the Immigration and Reform Control Act of 1986 will serve in the near future as important sources of support within migrant networks that are particularly important for other women who want to migrate from Mexico for economic reasons. We suspect that the rates of female international migration are likely to grow faster than

are those of male international migration in the near future. The limitations of these data, the retrospective study design, and our logistic regression estimation did not allow us to estimate a migration rate to test this speculation.

Our study investigated young adult, unmarried migrants. Although this group is an important part of the migrant stream out of Mexican communities, it is not representative of Mexican migrants (either internal or international). The dynamics found here may be less relevant to older or married migrants, especially those who migrate for family reunification motives. For example, married female migrants may be more likely to rely on their husbands' networks, either their husbands' own migration experiences and resources or those of their in-laws.

Furthermore, our study limited our measure of migrant networks to those within the immediate family. We controlled for variation in community-level migrant networks, but did not test for its effects. At this date, there are no publicly available data that would allow for prospective studies of the influence of extended networks of migration (either family based or friendship based) on individual migration. However, research in this area is an important next step. Ethnographic studies have suggested that the weak or strong tie of migrant networks in places of origin and destination may differently influence men's and women's migration behaviors.

These limitations and our study suggest future avenues of analysis and data collection. By demonstrating the gendered effects of migrant networks, we have effectively linked ethnographic research, which has shown important gender differences in the barriers to migration in places of origin and migration experiences in places of destination, with the quantitative literature on migrants that has shown the importance of social networks. Our comparison of internal and international migration shows how gender-differentiated migrant networks interact with gender barriers to migration to have a differential influence on young men's and women's independent economic migration. Future research, either qualitative or quantitative, should continue to deepen our understanding of this process by pursuing questions (that cannot be answered with these data) about how and why gender relations affect migration patterns and how gender influences the size, structure, composition, and content of migrant networks.

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