Migration, Financial Constraints, and Entrepreneurship: Evidence from Mexico

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Abstract

There has been evidence on the entrepreneurial behavior of migrants in receiving countries or after they return to home countries, but little research on the entrepreneurship of left-behind persons when migrants are still abroad. Using data from the Mexican Family Life Survey, this paper examines the effects of ongoing migration on the entrepreneurship of left-behind family members. Striking evidence shows that migration stimulates the entrepreneurship of left-behind members through improved financial status. The preferred estimates indicate that having migrant family members increases an individual's rate of participation in entrepreneurship by at least 50% relative to the mean. The analysis also demonstrates the differential migration effects and differential motives pertinent to becoming new entrepreneurs by gender. These findings have profound implications for the empowerment of women and how public policies such as microcredit may promote entrepreneurship through the relaxation of financial constraints.

Key words: Migration, Entrepreneurship, Financial Constraints, Women, Mexico

JEL classification: L26, J61, J16, J24, O54

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1 Introduction

What makes an entrepreneur? This is a nontrivial question in studying development economics. The entrepreneur is a key figure for authors like Schumpeter (1934) because, quite simply, s/he is the *persona causa* of economic development. Among factors that affect entrepreneurship, migration means not only changes in income and physical capital, as well as investments in human capital and social capital, but also shocks to preferences, especially attitudes toward risk. The widespread reallocation of labor forces across regions and countries calls for research to inquire how migration shapes the entrepreneurial behavior of migrants and their families. There has been evidence showing that migrants are more likely to be self-employed and become entrepreneurs than natives in host countries and, to some extent, even make better entrepreneurs (e.g., Borjas [1986], Light and Bhachu [1993], Lofstrom [2002], OECD [2010], and Hunt [2011]). Research also finds a higher level of entrepreneurial activities among returnees to home countries than non-migrants (e.g., Ilahi [1999], McCormick and Wahba [2001], Dustmann and Kirchkamp [2002], and Piracha and Vadean [2010]). How about family members, especially women, left behind in home countries? Do they become more actively engaged in entrepreneurship when some members are absent on account of migration? These questions have not yet been well explored in the economic literature, but constitute another essential dimension of the migration effect on entrepreneurship. Answers to such questions are crucial for understanding the occupational choice and economic wellbeing of left-behind people, small business development, and employment creation in sending communities.

Mexico provides a promising locus for studying these issues. The Mexican labor force is distinguished by high rates of both international migration and entrepreneurship (Thom and Xu [2010]). It is relatively common for Mexican families to have some migrant members. The left-behind are not just children and elderly people but also include working-age adults, especially women, who are potential entrepreneurs.[1] Self-employment differs from wage-earning activities in its nature and, as such, is often used in the literature as a proxy for entrepreneurship in a broad sense (e.g., Evans and Leighton [1989], Blanchflower and Oswald [1998], Lazear [2004], and Cagetti and De Nardi [2006]).[2] OECD (2005) ranked Mexico as one of the three member countries with the highest rate of self-employment along with Korea and Turkey. Among OECD countries, female self-employment was observed to grow by a large amount from 2003 to 2005 only in Mexico and two other countries (Czech Republic, Slovak Republic), which coincides with the time period of the survey data used in this paper and the expansion of Mexico-to-U.S. migration (OECD [2005]). It is natural to consider whether there is a link between high migration and self-employment in Mexico and whether the development of female entrepreneurship is somehow related to migration. It is also of special interest to understand female occupational choice for a developing country like

[1] International migration is male dominated in Mexico. See Section 3 for more details.

[2] Being common practice does not justify that self-employment is a perfect measure of entrepreneurship. Nevertheless, the analysis of self-employment is one important step toward understanding entrepreneurship.

Mexico, where only about 30% of married and 50% of single women are employed.[3]

From a theoretical viewpoint, there are potentially multiple channels through which migration may affect entrepreneurial choice. It is thus an empirical question to evaluate the net effect. Using data from the Mexican Family Life Survey (MxFLS), this paper is one of the first studies to investigate the implications of international migration for the entrepreneurial behavior of non-migrants in sending families. Another contribution of this paper is to add new evidence on the role of financial constraints in relating migration to entrepreneurship. Remittances and higher family income associated with migration, due to the wage differences across the border, may release the financial constraints that left-behind family members previously faced. In this way, the analysis yields an in-depth understanding of the main mechanism behind the migration effect. By examining the differential effects of migration across gender, this study also contributes to the literature on female entrepreneurship that remains underrepresented, at least as it relates to migration.

Random selection of migration is rare in the real world. To make causal inferences, it is crucial to control for important confounding factors. This paper addresses the endogeneity and self-selection issues using three plausible alternative strategies: controlling for lagged dependent variable, fixed effects (FE) modeling, and the instrumental variable (IV) approach, following the suggestion of Angrist and Pischke (2009). Inferences are made based on those broadly similar results and robust findings. There is scant research with successful application of the panel data approach in the literature of migration mainly because of data limitations, despite the fact that many researchers have encouraged its use. The panel structure of the MxFLS data allows for a comparison between the outcomes of the same respondent before and after the incident of migration relative to the comparable respondent in the base group. This application of the FE method strengthens the identification and empirical findings. Given the debates over instrumental variables used in migration related studies, this paper chooses a less controversial variable, prior migration network, in light of the strong path dependence of migration.

In relation to the existing literature, this paper is close to the work of Woodruff and Zenteno (2007). Specifically, their examination of the impact of attachment to migration networks on the performance of microenterprises in Mexico found migration to be associated with higher capital investment and higher profit. The research question in this paper is different from theirs in two main aspects. First, their study restricted the sample of analysis to existing microenterprises and focused on their behavior on the intensive margin of capital use, production, and profit. In contrast, this paper examines the creation of new and nascent enterprises and entrepreneurs on the extensive margin, i.e. probability of occurrence. Second, they only considered microenterprises in urban Mexico, while the analysis of this paper covers both urban and rural areas. The inclusion of rural areas is important given that rural residents account for 45% of male and 33% of female Mexico-to-U.S. migrants (Fernandez-Huertas Moraga [2013]). Moreover, the development of entrepreneurship is arguably more important for long-term poverty reduction in rural areas.

[3]These figures are derived from the author's calculations using data from the Mexican Family Life Survey.

Another paper that relates to this research is Yang's (2008). That study investigated the influence of remittances' change generated by the exchange rate fluctuation, during the Asian financial crisis, on household's participation in entrepreneurial activities and entrepreneurial income. This paper differs from Yang's work by looking at individual's (not only household's) entrepreneurial choice from a perspective of gender inequality.[4] Moreover, the methods used in the two papers are different with regard to identifying the mechanism of the migration effect at play.[5]

To preview the findings, striking evidence shows that Mexico-to-U.S. migration spurs entrepreneurship in sending families. The preferred estimates indicate that having a current U.S. migrant family member increases an individual's participation in entrepreneurship by at least 50% relative to the mean. The analysis documents a strong gender inequality with a larger positive effect of migration going to female entrepreneurs. Migration is also found to be more important to individuals who faced prior financial constraints. The additional tests provide evidence that migration gives them better access to the credit market. In other words, individuals may leverage the remittances they receive. Entrepreneurship may be seen either as a survival strategy for those who cannot find other means of income earning or as evidence of entrepreneurial spirit and the desire to own businesses. With respect to these motives, the greater effect of ongoing migration on the self-employment of individuals with the least household wealth seems to favor the idea that the observed boost in entrepreneurship is more necessity-based than opportunity-driven. However, the financial channel does not absorb all of the migration effect on left-behind women. Therefore, males may join in entrepreneurship due to economic necessity while females may choose to become entrepreneurs for more than that reason alone.

These results have deep policy implications. Development programs such as microcredit may enhance entrepreneurship by relaxing credit constraints. Migration may not necessarily undermine the economies of sending communities and regions, but may, in fact, actually lead to a higher level of entrepreneurial activities among the left-behind. Further, the policies that ease migration may exert greater influences on female entrepreneurship. More women-oriented programs are yet to be introduced, and they can be effective indeed.

This paper proceeds as follows. Section 2 develops a framework for understanding the link between migration and entrepreneurship. Sections 3 and 4 describe the data and empirical strategy, respectively. Section 5 reports and interprets the findings. Section 6 concludes with a discussion of policy implications.

[4]Yang (2008) provided some evidence on individual's self-employment. However, the sample only includes 10-17-year old children whose participation rate in the labor force and entrepreneurship is very low. Furthermore, the evidence was mainly interpreted alongside other human capital outcomes of children.

[5]Yang (2008) employed the variation of capital intensity of specific types of entrepreneurial activities to identify whether financial constraints matter or not. This paper examines individual and household's access to the credit market and the migration effect for individuals whose financial constraints are most likely to be binding without migration.

2 How Would Migration Affect Entrepreneurship?

This section provides grounding for the link between migration and entrepreneurship. From a theoretical perspective, the seminal model by Evans and Jovanovic (1989) provided a useful framework for thinking about individual entrepreneurial choice under liquidity constraints. In particular, their work used a parameter (multiple) to measure the degree of liquidity constraints and argued that the financial capital that one can invest in a business is the multiple of individual assets (or wealth). In an economy with imperfect credit markets, this multiple is smaller than infinity. This model, then, has two important implications. First, individuals with high entrepreneurial ability opt for entrepreneurship. Second, new businesses are financially constrained, and the amount of capital available for investment is limited by personal wealth.

Indeed, entrepreneurship is often hindered by financial constraints (Bianchi and Bobba [2013]). In the empirical literature, the inadequacy of individual and household assets as well as the lack of credit access is regarded as the main obstacle to entrepreneurial development in both developed and developing countries. For example, a recent study by Chatterji and Seamans (2012) documented that the deregulation of the U.S. credit market expanded the access to credit, allowing liquidity-constrained individuals to borrow, and increased the rate of new business formation. In the developing world, previous research found evidence from a wide range of countries that returnees are more likely than non-migrants to be entrepreneurs because they can use personal wealth accumulated during migration to start businesses (see Ilahi [1999] for the case of Pakistan; Dustmann and Kirchkamp [2002] for Turkey; Mesnard [2004] for Tunis; Woodruff and Zenteno [2007] and Bercovitz, Martens and Savage [2013] for Mexico; and Wahba and Zenou [2012] for Egypt). Meanwhile, policymakers in developing countries have supported microcredit programs in an effort to provide basic access to credit as a means of promoting self-employment, reducing poverty and empowering socially-excluded persons, especially women (Brana [2013]).

According to the same argument and under the assumption that family members pool resources, the concept remains that remittances sent by migrants lead to better financial conditions for left-behind members and enable them to finance their business ideas. Previous literature identified intra-family wealth transfer as a major channel underlying the observed family links in entrepreneurship (Parker [2008]). The creation of new businesses may be financed using the monetary remittances themselves or by leveraging remittances through borrowing, or a combination of the two modes. In particular, left-behind individuals may use the expected future cash transfer from their migrant family members to secure loans that they would not otherwise be able to acquire. This is especially relevant when the local credit market is underdeveloped.[6] Nevertheless, the prediction of the net use of loans to finance business ideas remains undetermined and constitutes an empirical question; this is because remittances may also substitute loans for families with

[6]This argument is similar to that established by Angelucci (2013), who provided evidence showing that potential poor migrants use the expected cash transfer from a welfare program (Oportunidades) as collateral to borrow and finance their trip to the U.S. rather than using the transfer itself.

financial shortages in some cases (Ambrosius and Cuecuecha [2013]).

Reducing financial barriers via migration may have a greater impact on women than men. In general, women are more likely to be unemployed and face discrimination in the gender-segmented labor market. They may demand more necessity-based entrepreneurial activities but face obstacles to access the credit market. This may be due to the adverse selection of banks, since women's business ideas are less attractive to banks and considered small and risky (Brana [2013]). In some instances, women also experience more difficulties in providing collateral as they average lower personal earnings than men. In such situations, the lack of financing sources puts women at a disadvantage to men when trying to create their own businesses. Both the direct relaxation of financial constraints through remittances and the indirect conveniences in obtaining loans associated with migration appear more important for the development of female entrepreneurship.

Cross-border migration usually exposes migrants to knowledge and information, which can be transferred to family members remaining at home, known as "social remittances." This type of information dispersion is likely to bring more business ideas and knowledge of innovations to sending families. Bercovitz, Martens and Savage (2013) found that cross-border work experience may reduce key entrepreneurial obstacles as migrants who gain human capital through on-the-job training while working in the U.S. and those who are exposed to an entrepreneurial-supportive social context via employment in entrepreneurial firms in the U.S. are more likely to employ remittances for entrepreneurial activities. With such knowledge spillover within families, the entrepreneurial ability of non-migrant individuals may be increased. In other words, migration may also work via the second key element of Evans and Jovanovic's (1989) model, i.e. entrepreneurial ability.

In short, migration can make it easier for left-behind family members to raise capital. Knowledge dispersion may inspire new ideas. Since knowledge, entrepreneurial ability, and business ideas are not observed in the MxFLS data, the focus will be given to credit access when examining the mechanism behind the migration effect on entrepreneurship. However, migration does not necessarily shape the emergence of new businesses in a stimulative way. For example, left-behind family members may be occupied with many of the duties previously performed by migrants. It may be more difficult for them to operate enterprises on account of the lack of labor help and emotional support that occurs when migrants are absent from home. Migration also means shocks to preferences, but the impact is ambiguous. Therefore, careful empirical research is needed to understand the net effect of migration on entrepreneurship of the left-behind, to which the rest of this paper is devoted.

3 Data and Variables

3.1 Data Set

The data used in this paper are from the first two waves of the Mexican Family Life Survey (MxFLS), completed in 2002 and 2006 respectively. The MxFLS is the first Mexican survey with national representation and a longitudinal design, tracking the population for long periods of time, regardless of residential decisions. The initial survey interviewed over 35,000 individuals from 8,440 households in 150 communities nationwide (Rubalcava and Teruel [2006]). The follow-up wave has a recontact rate of 90% at the household level (Rubalcava and Teruel [2008]).

The MxFLS contains detailed information on demographic characteristics, employment, occupation, business ownership, and access to credit, which is essential to this research. The information on international and domestic migration, as well as non-migration absence, is also available from the MxFLS data. The same respondent and household are tracked over time in the MxFLS. Entry into entrepreneurship following migration, by starting an enterprise or entering self-employment, is then observed in the MxFLS data. These distinctive features render the MxFLS data set ideal for the purpose of this paper.

3.2 Sample

To construct a sample for this study, it is important to recall some important patterns of Mexico-to-U.S. migration. First, Mexico-to-U.S. migration is male dominated. Using data from Mexico's 2005 labor force survey, Fernandez-Huertas Moraga (2013) showed that 64% of domestic migrants were male, while the percentage of male migrants to the U.S. was as high as 81%. Second, the fraction of female U.S. migrants has been increasing over the past two decades (Marcelli and Cornelius [2001]).

To maintain focus on the migration effect on left-behind family members, this study restricts the sample to all adult members from households with at least two members aged between 15 and 59 years old at the time of the MxFLS-1. The MxFLS requires all respondents older than 14 to answer an "adult" questionnaire. This paper simply defines children who are older than 14 as adult children and explicitly state when 18 is used as the cutoff age for adulthood. The unit of observation is then an individual member, who could be a mother, father or adult child, or the household as a whole.[7] In particular, inactive workers may have withdrawn from the labor force and may be less affected by migration or other economic shocks. As such, a subsample of active workers is also constructed to include only those who were employed at the time of the MxFLS-2.[8]

[7] The analysis at the household level can be found in Appendix 2.

[8] Some respondents who were unemployed may be searching for jobs so they were still in the labor force. However, the MxFLS does not have a direct question to identify those who were still looking for jobs and those who had stopped searching.

The restriction on the sample is imposed to reduce the heterogeneity of sampled households and to ensure that they all have the same type of migrant candidates: parents, spouses, siblings, and adult children. It also facilitates the empirical analysis on occupational choice, given that all individuals in the sample are prime-age (15-59) men and women. Young children or elderly people, who have not entered or have already withdrawn from the labor markets, are not the focus of this paper.[9]

In the end, this construction leads to a sample of nearly 2,100 households, which consist of about 7,400 adult individuals living in Mexico in both waves of the MxFLS.

3.3 Variables

The primary explanatory variable of interest is whether left-behind individuals have a current Mexico-to-U.S. migrant family member or not. Migrants who departed from Mexico before the second wave of the survey, i.e. before the MxFLS-1 or between the MxFLS-1 and 2, and were still living in the U.S. in 2006 are identified from the migration panel of the MxFLS-2. To ensure that migrants and their left-behind family members have strong interactions involving economic activities, the family relationship between migrants and non-migrants are restricted to parents, spouses, children, and siblings. Return migrants are excluded because the decision to return is likely to be endogenous and depends on the *ex post* realizations of their migration experiences (Kaestner and Malamud [2013]). Labeled as "any migration," the migration variable is binary, indicating whether or not a left-behind individual has any migrant parent, spouse, child or sibling relation in the U.S. who departed Mexico before 2006 and who was still residing in the U.S. at that time. It should be noted that this definition does not guarantee that all migrants moved to the U.S. for economic reasons. In Section 5, however, I will provide evidence showing that it is, in fact, very close to economic migration.

Notice that the definition of migration used in this paper is based on an extended family network. Previous work has documented the importance of focusing on extended family relationships as an informal unit for risk sharing and capital acquisition (see Angelucci et al. [2009]). This paper follows Angelucci et al. (2009) and considers both intergenerational links (parents and children) and intragenerational links (spouses and siblings).

Table 1 groups migrants according to their relationship with left-behind members. For the left-behind individuals analyzed, 409 out of 7385 (5.5%) have a migrant child living in the U.S., 826 (11.2%) have a migrant sibling, 85 (1.2%) have a migrant parent, and 66 (0.9%) have a migrant spouse. The incidences of migration in the first four columns sum up to the number in the last column. That is, 1386 (18.8%) individuals have a close migrant relative in the U.S. at the time of

[9]There is a branch of literature that studies the migration effect on child labor, which is important but certainly beyond the scope of this paper. Powers and Wang (2013) examined the time reallocation of children following the migration of some adults in their households.

MxFLS-2. This fraction is higher than that in the Mexico Census: According to the Census 2000, 6.2% of Mexican households had some household member who left to live in another country in the period of 1995-1999, preceding the survey. It is not surprising to see a higher migration rate in the MxFLS data. First, both the fraction and the number of Mexican immigrants to the U.S. stably increased over time during the period of 2000-2007, before the financial crisis. Second, the transnational ties in this paper are based on family relationships. In other words, migrants and left-behind persons do not have to live in the same household before migration occurred. If eligible migrants are restricted to those originating from left-behind individuals' households, the rate of having a migrant among sampled individuals from the MxFLS data becomes very close to that in the Census.

Some interesting patterns of Mexico-to-U.S. migration are also observed in the MxFLS data. In the subgroup of migrants who have reported their demographic information, the analysis shows that daughter-migrants are more prevalent than father-migrants in this sample, which is consistent with the increasing trend of female migration discussed above. The male-to-female ratio of U.S. migrants is also in line with that calculated from other sources showing that nearly 75% of trips to the U.S. longer than 1 year were achieved by males. Further, it is adult children, not parents (in particular fathers), that are the dominant group of U.S. migrants, and this finding is consistent with demographic characteristics of Mexican migrants in the U.S. (Hanson and McIntosh [2010]).

A set of dependent variables are employed to measure entrepreneurship. Participation in entrepreneurship is proxied by the status of self-employment as a broad measure and the status of being an employer as a narrow measure. Both variables are binary and have appeared in the literature of entrepreneurship. Self-employed individuals earn no wage or salary but derive income from exercising their profession or business on their own account and at their own risk. In the MxFLS data, both measures are identified using the original survey question, "What's your position or role in the main job?" A person is counted as self-employed if s/he reported as self-employed, working in a family business as an unpaid worker or a boss, employer or business proprietor. A person is counted as an employer only if s/he reported as working as a boss, employer or business proprietor. Farmers working on their own plots are not counted as entrepreneurs in either case.

This paper considers broad self-employment as the preferred measure of entrepreneurship because self-employment has further-reaching implications for poverty reduction in Mexico. Previous studies (e.g., Fairlie and Woodruff [2007]) documented that the majority of self-employed Mexicans work by themselves, if separate own-account workers from employers. The fraction of own-account workers in all entrepreneurs is 88% for males and 89% for females. In the MxFLS data, the fraction of employers is 20% in all self-employed persons identified above and 2.5% in all sampled individuals. The low frequency of being an employer increases the challenge to examine the migration effect on entrepreneurial behavior. Nevertheless, on account of the importance of opportunity-based entrepreneurship and associated job creation, this paper also analyzes the

influence of migration on left-behind family members becoming employers and considers it as complementary evidence to the main findings on self-employment.

Other covariate variables, including individual, household, and household head's demographic characteristic are controlled for in regressions. An individual's age, gender, education, and cognitive ability, measured by Raven's score,[10] determine her/his time allocation. All of this information is directly available from roster files. Household income is a main factor for explaining occupational choice, but it is endogenous to the dependent variables. Consequently, the level of household assets is used as a substitute, given that it is relatively exogenous in the short run. Following Kaestner and Malamud (2013), household asset level is defined as the aggregated pecuniary value of housing and land, bicycles and motor vehicles, electronic and kitchen appliances, savings and financial assets, farming equipment, and livestock. The sample quintile membership of the individual's household in the distribution of household assets is included as a dummy variable in regressions. Household structure determines both the demand and supply of housework and market production as well as the strength of family ties. In particular, the number of young children (0-6 years old) is entered into regressions because they are more likely to influence the labor force participation and occupational choice of females.[11] Shocks that hit families between the two waves of the survey such as death, sickness or unemployment of some members are also observed from the MxFLS data and are controlled for in my analysis. Following Woodruff and Zenteno (2007), original states are grouped into six regions: north, south, capital, center, border, and other. Regional dummy variables can absorb the heterogeneity in aggregate supply and demand and other factors in local labor markets.

The strength of the local economy also influences the decision to become an entrepreneur. The community module of the MxFLS makes it possible to construct contextual variables to control for the potential influence of community economic environment. First, different sectors may have different distributions of entrepreneurship. The original MxFLS reports 12 major sectors: farming, cattle/forestry/hunting/fishing, metallurgy, mining and excavation, manufacturing, assembly plant, electricity/gas/water/petroleum, construction, wholesale and retail commerce, transportation/storage/media, finance and insurance, and social services.[12] A set of dummy variables are created, accordingly, to capture the variety of industries and productive activities at the community level. Second, if there is a sufficient supply of well-paid formal jobs around, self-employment or small enterprise options may become less appealing. Two additional variables at the community level to capture the attractiveness of being employed are hourly wages of adult male and female laborers. It is expected that the higher the average wage is, the lower the probability that an individual from this community will work as self-employed.

[10] The test consists of a series of color figures that measure visual reasoning ability.

[11] According to previous studies, a woman is less likely to participate in income-generating work if she has a child younger than 6. Fertility may be endogenously determined within a family along with the decision of migration and occupational choice. It is not especially desirable to use fertility as a control variable if migration defers fertility. The findings are not sensitive if fertility is excluded from the regression models.

[12] This classification is similar to that of the U.S. Census.

Table 2 displays the summary statistics for dependent and independent variables. In the full sample, 13% of respondents reported as self-employed in 2006. In the active worker subsample, the rate is as high as 25% for the same year.[13] Males are relatively less representative than females (44% vs. 56%). All respondents averaged at 33 years old and 6.4 years of schooling. Raven's score averages at 1 by definition (standardization). Individuals are from households with 6 total members, 4.6 prime-age adults (15-59 years old) and 0.4 young children (0-6 years old) on average. As regards the geographical region, nearly 40% of individuals are from the center areas. Rural residents account for 45% of the observations. In addition to the migration shock, 7% of individuals experienced the loss of a household member, 12% experienced a sick member, 8% experienced an unemployed member, and 4% experienced a natural disaster, such as flood, between 2002 and 2006.[14] The final rows present the summary of community-leading enterprises and average hourly wage by sex.

4 Empirical Strategy

Random selection of migration is a useful benchmark but not a very realistic assumption. In most cases, migration from Mexico to the U.S. is correlated with confounding factors that affect both migration and entrepreneurship. Therefore, the key to the causal inferences of the migration effect is to control for important confounding factors that could be observed or unobserved. This paper uses three plausible alternative strategies introduced below to ensure the robustness of the findings and draws inferences based on those broadly similar results.

4.1 Cross Sectional Analysis

To start, assume that migration is randomly assigned to individuals. The treatment group consists of adult individuals who have migrant family members living in the U.S. in 2006, while the base group consists of adults who have no current U.S. migrant members. Family background in the base group is heterogeneous because it includes families (1) without U.S. migrants but with domestic migrants to other cities or localities in Mexico, (2) without any type of migrants but with some members left for non-migration reasons, and (3) without any absent members.[15] The focus of this paper is on the average difference in the outcomes between individuals from families with U.S. migrants and those from all types of non-U.S.-migrant-sending families.[16]

[13]The rate of self-employment is usually calculated as the ratio of the number of self-employed people to the total number of employed people in empirical research.

[14]In the MxFLS data, it is observed whether or not such a shock arrived between the two waves of the survey, but not the specific time if it occurred.

[15]Wang (2013) studied the differential effects of international migration, domestic migration, and non-migration absence on the labor supply of left-behind women.

[16]This difference is arguably more important than that generated by other types of absence for entrepreneurship given the substantially higher income and longer duration associated with U.S. migration.

Consider individual i from household h. The baseline model is then specified as

$$y_{ih} = \alpha + \beta_1 X_{ih} + \beta_2 X_h + \gamma USMIG_{ih} + e_{ih}, \quad (1)$$

where y_{ih} is the outcome variable showing the status of self-employment or employership in 2006, $USMIG_{ih}$ is the explanatory variable of interest, which is a dummy variable indicating whether some family member of individual i is a U.S. migrant or not, and X_{ih} and X_h are vectors of control variables at the individual and household levels. Coefficient γ measures the average overall effect of U.S. migration on the entrepreneurship of left-behind persons. When the exogeneity hypothesis cannot be rejected, the above cross sectional analysis yields consistent estimates. Otherwise, the results could be biased and misleading.

The estimation is based on the linear probability model (LPM) to get an intuitive interpretation of coefficient γ as the probability that the outcome variable equals 1 given migration and other control variables. The results from Probit regressions are very similar and hence not reported in this paper. The control variables entered in regressions include individual characteristics (sex, age, education, and cognitive ability), household characteristics (household assets, family structure, and rural locality), geographical dummies, unexpected shocks (death, illness, unemployment of some household member, and natural disaster), and community environment for employment and business (leading industry, and gender-specific wage rate). It is important to note that the coefficient γ is interpreted as the effect of ongoing migration, not involving return migration.

The analysis then proceeds with the relaxed assumption that past entrepreneurial experience, which is time varying, is an important confounding variable for migration. In other words, what makes being assigned to a migrant family special is the previous status of entrepreneurship of the individual being analyzed. This may occur when an individual's employment and income affect the family's ability to send a member abroad. To address this type of endogeneity, equation (1) is re-estimated by including a dummy variable for the status of self-employment or employership at the time of the MxFLS-1, which is the lagged dependent variable. This new model, in fact, controls for the initial status of entrepreneurship directly. The estimated coefficient γ would be consistent if individuals are randomly assigned to migrant and non-migrant families, conditional on their initial entrepreneurial status.

4.2 Fixed Effects Model

Another type of confounding factors are unobserved but fixed over time. For example, families with a higher earning ability could afford to send family members abroad and at the same time, may tend to operate businesses. Family members who share the same attitudes toward undertaking risks due to their personalities may be more likely to migrate to the U.S. and start businesses. In both cases, the LPM estimates are biased upwards and the observed correlation

between migration and the entrepreneurial behavior of left-behind family members is spurious.

To correct for this type of endogeneity, this paper exploits the panel structure of the MxFLS data and implement the fixed effects (FE) approach to further evaluate the migration effect. Since each individual has only two observations, in 2002 and 2006 respectively, the FE approach is equivalent to the first order differencing. Having repeated observations helps to rule out the influences of some unobserved factors and leads to consistent estimates if all important confounding factors are invariant over time.

Rewrite the model as

$$y_{iht} = \alpha + \beta_1 X_{iht} + \beta_2 X_{ht} + \gamma USMIG_{iht} + \mu_{ih} + \theta_h + e_{iht}, \tag{2}$$

where the outcome variable y_{iht} is the status of self-employment or employership at time t, the control variables X_{iht} and X_{ht} represent individual and household characteristics observed at t, the migration variable $USMIG_{iht}$ indicates whether having any family member living in the U.S. or not at t, μ_{ih} and θ_h denotes unobserved and time invariant characteristics of the individual and the household, and e_{iht} stands for the error term. Time index $t = 1$ or 2 represents the wave of the survey in which an observation is made.

Taking first difference over t gives

$$\Delta y_{ih} \equiv y_{ih2} - y_{ih1} = \beta_1 \Delta X_{ih} + \beta_2 \Delta X_h + \gamma \Delta USMIG_{ih} + \Delta e_{ih}, \tag{3}$$

The unobserved time-invariant factors that relate to both the dependent variable and the migration variable are then removed. Therefore, the migration effect γ is identified by the FE approach under valid assumptions. The key for causal inferences using FE estimates is that migration is randomly assigned to Mexicans conditional on these fixed omitted variables. However, the FE estimates should be interpreted with caution. The FE approach may attenuate the migration-entrepreneurship relationship due to bias arising from measurement error. The differenced regressors may become noisier, and measurement error tends to bias the FE estimates down to zero.

4.3 Instrumental Variable Strategy

The last strategy is to re-estimate the migration effect using the instrumental variable (IV) approach. As discussed above, the FE approach may not be able to rule out the confounding effect of time varying factors or reverse causality, especially when the timing of migration and of starting businesses is not observed in the data. Given the debates over instrumental variables used in migration related studies, this paper chooses a less controversial variable, prior migration network, to predict the likelihood of current migration. All models are estimated using two stage least squares.

The migration prevalence variable is constructed using the Mexico Census 2000 (10.6% sample) and the associated international migration supplement from the IPUMS (Ruggles et al., 2010). Following Massey, Goldring and Durand (1994) and McKenzie and Rapoport (2007), this paper defines migration prevalence as the proportion of households in a municipality that have at least one migrant during the time period of 1995-1999. According to Mexico Census, a migrant is one who left to live in another country, primarily to the U.S., during the five years preceding the survey. This definition includes both permanent and temporary migrants, as well as current and returned (at the time of Census) migrants. It, however, does rule out non-economic trips to the U.S. for vacation, work assignment, visits to relatives, or other related reasons (Ruggles et al., 2010). There are at least two advantages of using the Mexico Census 2000 to calculate municipal migration prevalence. First, to consider migration rates during 1995-1999 is more helpful for capturing the average trend of migration prevalence than is the migration rate obtained from a single year. Second, municipality is the smallest geography in the Census. Migration prevalence defined at the municipality level has more variation than that defined at the state level.

The rationale behind the correlation of historical network and current individual migration is that migration exhibits strong path dependence and that the local strength of migration in history was exogenously determined by the demand in the U.S. labor market and the spread of the railroads. To put it differently, some states and municipalities, mainly from west central Mexico, have high migration rates due to historical and socioeconomic factors. Demirguc-Kunt et al. (2011) and Sellars (2011) provided more details about such historical factors that determined migration prevalence in history, including the rail lines constructed in 1920. As networks lower the cost of migration for future migrants, they become self-perpetuating and continue to influence the migration decisions of households today. Therefore, migration streams from different states and municipalities have then reinforced themselves over time. High migration municipalities remain dependent on migration, while migration in new sending areas grows gradually over time.

The key identification assumption is that municipal migration rate with a 5-year lag does not affect an individual's current entrepreneurial choices, apart from its influence via ongoing migration. In particular, the identification of the migration effect requires the independence between municipal migration rates and municipal average unmeasured characteristics affecting entrepreneurship, e.g. economic conditions, financial depth, and aggregate demand to goods and services provided by self-employed workers and small businesses.

Several issues may potentially threaten the validity of the instrument and therefore need to be addressed. The first issue is the potential correlation between aggregate migration network and the distribution of entrepreneurial ability (especially if the influence of entrepreneurial ability is persistent). However, Woodruff and Zenteno (2007) established evidence suggesting that the rail lines were not significantly correlated with the distribution of entrepreneurial ability at the time of early migration.

The second potential challenge is that aggregate migration prevalence may be correlated with

other factors, like aggregate demand and financial depth, affecting the development of local entrepreneurs. The following methods address this concern.

First, previous studies indicated that the same group of states and municipalities with high migration rates in history continue to supply the largest number of migrants to the U.S. The pattern has not changed through many dramatic shifts in politics and policy on either side of the border (Mckenzie and Rapoport [2007]). A recent study by Bachmeier (2013) also confirmed that international migration from Mexico to the U.S. from 1995-2000 is largely a function of the volume at migrants' point of origin a decade prior. Previous networks determine the prevalence of a municipality's migration more so than other factors. The influence of confounding factors that could affect the development of local entrepreneurs on changing migration prevalence should be minimal.

Moreover, because the current data does not allow for a clear identification of all migrants' geographic places of origin in Mexico, the method of McKenzie and Rapoport (2011) is applied in this paper to control for a number of lagged variables around the same time period as the lagged measure of migration prevalence. The controls are average employment rate, average literacy rate and educational attainment.[17] Meanwhile, controlling for community-level economic characteristics (e.g., male and female wage rates as well as the type of leading enterprise) may also help to address the potential influence of confounding aggregate factors.

5 Findings

5.1 Baseline Results

This section first presents empirical evidence from cross sectional estimation, with or without controlling for the initial status of entrepreneurship. In particular, gender differences in the effect of migration on entrepreneurial behavior are documented.

5.1.1 Self-Employment

Table 3 presents the LPM findings of the migration effect. The dependent variable is a dummy variable indicating the status of self-employment in 2006. The variable of U.S. migration in the first row is the main regressor of interest. Models are estimated without (columns (1)-(2)) and with (columns (3)-(6)) the initial entrepreneurial status being controlled for. In particular, the initial status of entrepreneurship are controlled for in different ways: The lagged dependent variable is included as an additional regressor in columns (3)-(4), while the sample for analysis is restricted

[17] Notably, the potential correlation between these variables and migration prevalence may represent the influence of migration over the 1995-1999 period.

to non-entrepreneurs in the initial wave of the survey in columns (5)-(6).[18] The purpose of restricting the analysis to non-initial-entrepreneurs is to exclude the potential influence of withdrawal from self-employment. This approach of tailoring the sample allows the dependent variable to clearly represent entry into entrepreneurship between the two waves of the survey. A comparison between columns (3)-(4) and columns (5)-(6) may reveal whether the findings are influenced by the multiple categories of occupational transition between 2002 and 2006. For each specification, the estimates are presented using the full sample and the active worker subsample with the same set of control variables.

Table 3 provides strong evidence that the probability of self-employment of left-behind persons correlates with the U.S. migration of a family member. The higher probability of becoming new and nascent entrepreneurs leads to the higher participation rate in self-employment observed in 2006. For the three pairs of regressions, the direction and the magnitude of the migration effect estimated with and without (not reported due to space limitation) the control variables are largely similar. Having a current migrant family member may increase the likelihood of the left-behind person to be self-employed in 2006 by 3.6% (7%) in the full (active worker) sample without considering the entrepreneurial status in 2002. As shown in columns (3)-(6), the observed effects hardly decline after the initial entrepreneurial status is controlled for. Migration raises the likelihood of entering into self-employment by 3.5% in the full sample, and this effect is as high as 8% among individuals who were working in 2006. Under the assumption that the lagged entrepreneurial status is the only important confounding source, this implies that shifting from a non-migrant family to a migrant family may increase an individual's probability of becoming a new and nascent entrepreneur by 40% relative to the sample mean.

The following rows display the estimated coefficients and standard deviations of the control variables. These estimates are in general consistent with the prediction. First, males average a higher participation rate in self-employment in 2006 than females and are more likely to enter into self-employment if they were previously unemployed (the reverse is true if they were previously employed). Second, older individuals left-behind are estimated to be more likely than younger individuals to be self-employed. Third, in the active worker subsample, well-educated people are slightly less likely to be self-employed than relatively less educated people. Interestingly, the effects of household assets on the probability of self-employment and the likelihood to enter are consistent with Evans and Jovanovic's (1989) model. Individuals from households with lower assets are less likely to be entrepreneurs due to financial constraints. The estimates exhibit an asset gradient in column (2): Compared with counterparts from households with the highest level of assets, individuals are 9%, 7%, 5%, and 4% less likely to be self-employed if they are from households with assets at the lowest, 2nd, 3rd, and 4th quintile, respectively. The magnitude of this financial barrier effect is similar to the migration effect.

[18] The lagged dependent variable has a zero value for all non-initial-entrepreneurs and is thus automatically omitted by regressions using the restricted sample.

Also, there is evidence supporting the idea discussed in Section 3 that different sectors may have different distributions of self-employment. The bottom rows of Table 3 show that the agricultural sector restricts self-employment, while the sectors of cattle/forestry/hunting, mining, and construction may provide more opportunities for self-employment. The higher the hourly wage of male employees, the less likely an individual from this community is to be self-employed, although the estimates are not always significant.

5.1.2 Gender Effect

To examine whether migration has symmetric effects on left-behind males and females, Table 4 displays the gender-specific estimates. Compared to the results reported in Table 3, the most important finding is the significant and larger effect of U.S. migration on female entrepreneurship, increasing the likelihood for women to become new entrepreneurs to a greater extent than men. Women are about 4% more likely to become self-employed when they have a U.S. migrant family member than those who do not have any, as shown in columns (1) and (3) without and with the control for the initial entrepreneurial status. The effect is nearly 12% for active female workers (columns (2) and (4)). The effect may increase to 5% and 15%, respectively, for those who were not entrepreneurs in 2002 (columns (5) and (6)).

In the lower panel, however, migration does not seem to influence the likelihood for men to enter into self-employment, even though the correlation between the probability of being self-employed in 2006 and having a migrant family member is still high and statistically significant for active male workers (column (2)). In none of the other columns, is the estimated coefficient on the migration variable significantly different from zero.

This analysis by sex of left-behind family members reveals an important dimension of gender inequality in entrepreneurship. The evidence of the differential effects is also consistent with the OECD report for its member countries, which showed that more women than men start their own businesses in the informal sector, probably out of economic necessity, especially in Egypt and Mexico (OECD [2012]). Therefore, one (probably) unintended consequence of policies to ease migration is the improvement of women's representation in entrepreneurship. This is mostly relevant for developing countries, like Mexico, that have high migration rates.

5.2 FE and IV Estimates

As discussed in Section 4, the FE approach is a preferred strategy if the sources of endogeneity of migration are likely to be time-invariant.[19] In that scenario, the coefficient of migration estimated from the FE model may be interpreted as the causal effect of being randomly assigned to a

[19] Antman (2012) speculated that this may not be a strong assumption.

migrant family, rather than a non-migrant family, on an individual's status as an entrepreneur at the time of the survey.

The results obtained by the FE approach are presented in Table 5. The dependent variable for these regressions is the status of self-employment at the time of the MxFLS-1 or 2.[20] The left panel presents the estimated migration effects from the sample that does not exclude initial entrepreneurs. When females and males are pooled together, migration increases the participation rate of left-behind persons in entrepreneurial activities by 2.3% (15% relative to the mean). For all male adults, having a U.S. migrant family member increases the chance of being self-employed by as much as 4.5% (a 20% increase relative to the sample mean). The estimated effects are not statistically significant in other sample specifications, which seem to contradict the LPM findings. One possibility is that measurement error biases the FE estimates down to zero given the discrete nature of the dependent variable and the two-period structure of the panel data.

When the sample for analysis is restricted to non-entrepreneurs in the initial wave of the survey, the findings are very different from those for the unrestricted sample shown in the left panel but consistent with the main LPM results in Tables 3 and 4. The right panel of Table 5 shows that having a U.S. migration family member increases an individual's participation in self-employment by 2% and the number doubles if the individual was employed in 2006. The magnitudes of both effects are around 50% relative to the mean. Breaking down the estimates by sex, the probability of a left-behind woman becoming a new and nascent entrepreneur increases by 2% (8% for an active female worker) shifting from non-migrant family to migrant family. This is a large effect, which is about a 70% (80%) increase relative to the mean of the female (active female work) sample. However, the impact of such a shift on creating new male entrepreneurs is quite limited, about 1% (0.2 mean) and insignificant. The FE estimates of the migration effect are very close to the findings from the lagged dependent variable model in Table 4 (columns (5) and (6)) in terms of the magnitude (relative to the mean).

In short, the FE estimates provide further evidence that migration increases the participation of left-behind family members in entrepreneurship, although the gender-specific effects appear somewhat different from the LPM findings. It can be inferred from the FE estimates that left-behind women are more likely to become self-employed following the U.S. migration of some family member, while men may not.

The IV approach addresses the confounding effect of time varying factors and reverse causality. Appendix 1 presents the first stage analysis. The endogenous variable of current migration is regressed on the lagged municipal migration prevalence (in the period of 1995-1999) and other control variables. The first row of Table A.1 indicates that a 6% (mean of the variable) increase in municipal migration rate between 1995-1999 tends to increase the probability that an individual living in this municipality has a current migrant family member in 2006 by 11%. In all speci-

[20]The size of the full sample or the active worker subsample is about double of the corresponding sample used in Table 3 and 4 because every individual now has repeated observations if not for missing values.

fications, the F-statistics reported in the bottom of Table A.1 are large, which relieves the weak instrument concern.

Table 6 contains the IV estimates, for which municipal migration prevalence in the period of 1995-1999 is used as the instrument. In the pooling sample of females and males (in the top panel), an individual is 13.3% more likely to become an entrepreneur if assigned to a migrant family rather a non-migrant family. That is about a 90% increase relative to the mean. This is similar to the effect found for active workers in magnitude. The size of the migration effect is even larger in the sample of non-initial-entrepreneurs.

Separating male and female respondents, the middle panel presents the estimates for women. Consistent with the FE results, the IV estimates indicate that migration tends to increase female participation in entrepreneurship by creating more entries into this career. To be specific, a woman with a migrant family member is 13.7% (1.4 mean) more likely to be self-employed than one without. The estimated coefficient in column (3) indicates that migration may create new female entrepreneurs by as much as 10.9% (1.6 mean). Meanwhile, it is not surprising that the migration effect is larger in the active worker subsample, comparing columns (2) and (4) with (1) and (3). The lower panel presents the results for the sample of all males and the subsample of males who are non-initial entrepreneurs. In none of the specifications from column (1)-(4), does having a migrant family member significantly affect men's participation in entrepreneurship. These results are also largely consistent with the findings of the lagged dependent variable and FE models.

5.3 Understanding the Mechanism

After establishing the evidence that migration stimulates entrepreneurship of non-migrant family members, a natural question follows: why is it so? As discussed in Section 2, the relaxation of financial constraints is potentially an important channel through which migration can exert its influences. This section develops new empirical tests to further examine the mechanism behind the migration effect.

To be concrete, define a new variable to capture financial constraints. Household assets are observed in the first wave of the MxFLS, i.e. before the occurrence of most migration under consideration. An individual is regarded as facing financial constraints if his/her household locates at the lowest quintile of the distribution of household assets in the MxFLS-1. Then, this binary constraints variable and its interaction with the migration variable are included as additional regressors into the baseline specification (1). If migration increases the self-employment of left-behind persons through the relaxation of financial constraints, the coefficient on the interaction term between migration and constraints should be positive. That is, the migration effect is larger for individuals from households that were previously financially constrained than from households without such constraints or those that are less constrained.

Table 7 presents the LPM estimates for this new model with a structure similar to Table 4. The analysis examines the pooled sample and also treats males and females separately to allow for the differential migration effects as observed above. In general, the results reported in Table 7 are consistent with the theory of financial constraints. The negative effect of the constraints variable found in the top panel indicates that financial constraints are indeed an important obstacle to the development of entrepreneurship. Individuals (active workers) who were financially constrained are 3% (6%) less likely to become entrepreneurs than those without such constraints. Moreover, the estimates in the last two columns show that migration has a larger effect on creating new entrepreneurs among individuals or active workers who faced financial constraints in the initial survey. It is this piece of evidence that lends support to the hypothesis of financial mechanism. The fact that the coefficients on the migration variable are still large and statistically significant almost over all regression models suggests that the impact of migration may take place via more than one mechanism.

In the middle panel, the results of the female sample are largely in line with the financial constraints theory as well as the findings in the pooled sample. The bottom panel contains the results for males only. Facing financial constraints in the MxFLS-1 negatively affects the status of male self-employment in the MxFLS-2. Migration, however, is more important for boosting the entry into self-employment for men who faced prior financial constraints, according to columns (5) and (6). Furthermore, unlike the analysis for the pooled or the female sample, migration may affect the creation of male entrepreneurs solely via the financial mechanism, since the coefficients on the migration variable is close to zero. This evidence may account for the less significant effect of migration on male entrepreneurship found in previous parts.

The interpretation of findings in Table 7 requires two assumptions: (1) the 20% individuals with the least household assets in MxFLS-1 face the binding financial constraints; and (2) these individuals start small businesses out of necessity. Then the empirical analysis in this part provides suggestive evidence that migration may spur the necessity-based entrepreneurial activities of both males and females whose financial constraints were binding before migration occured. Besides the improvement of financial status, more females may start businesses for other reasons. The reasons behind the different mechanisms across gender underlying the migration effect could be the demand of housework and other non-economic activities in females' time use. In this sense, women may have reasons such as working part-time or enjoying the flexibility of working schedule other than necessity to become new and nascent entrepreneurs.

A complementary test further examines the relation between the access to the credit market and the status of U.S. migration. Two variables are used to proxy the credit access: the dummy for whether or not asking for any loan and the log transformation of the amount borrowed, unconditional on receiving any loan, during the past 12 months before the interview. Importantly, over 95% of those requested loans were actually granted loans.[21] The "asking for any loan" vari-

[21] This outcome does not imply that it is easy to obtain loans in Mexico. The high approval rate is likely due to the

able is thus very indicative, showing both the change in the need for credit and the improvement in the condition (wealth effect) to secure a loan. The main hypothesis to test is that migration gives left-behind family members better access to the credit market. That is potentially due to the wealth creation or the expected cash transfer from migrant family members that would improve the availability of collateral or the benefit of the social ties linked to migration networks. The underlying assumption of this test is that the loan obtained would be used in a productive manner, such as initial capital for new startups. This assumption is reasonable, according to the tests for the motivations of loan requests in the MxFLS-1 (See Appendix 3). Women from migrant families are more likely to request loans for production investment (e.g., purchase of equipments and other production materials), while little evidence shows that loans are used to cover direct migration expenses.[22]

In Table 8, the credit access variable, the asking indicator or the loan size, is regressed on the migration variable using the OLS (columns (1)-(4)) and FE (columns (5)-(8)) methods, respectively. Strong evidence for the link between the family status of migration and the access to loans of left-behind individuals is found. Pooling males and females together, the top panel documents a positive overall relation between migration and credit access in all regression models. In the middle panel, having a U.S. migrant family member increases the chance of asking for and obtaining a loan in the year prior to the interview by 5% (6%) for female adults (active workers), according to columns (1) and (2). The findings on the amount of loan received in the same time window are similar, as shown in columns (3) and (4).[23] Finally, in the bottom panel, all estimates for the migration effect on credit access are statistically significant for males and are of a similar magnitude across sample specifications.

The right panel presents results using the fixed effects approach. For both the probability of having any loan and loan size, the direction and magnitude of the migration effect are largely consistent with the OLS findings. The main difference is that FE estimates indicate migration does not significantly influence male's loan size. The magnitude of coefficients from the FE estimation is similar to those from the OLS estimation, but standard deviations almost double. Since column (5) and (6) indicate migration significantly increases a male's probability of having any loan, the intensive margin (amount of loan conditional on having a loan) may account for this difference.

Overall, the findings drawn from Tables 7 and 8 show that financial constraints are a major obstacle to the development of entrepreneurship, and, in particular, for those with low household assets. The relaxation of financial constraints may create more nascent entrepreneurs. The analysis also indicates how the underlying mechanisms of the migration effect may differ by gender. Economic necessity seems likely to be the most important driving force for left-behind males to

fact that respondents tend to indicate they have requested any loan only when they have received it.

[22]More details can be found in Appendix 3. Since only the data from the first wave survey is currently available, I cannot explicitly tell individuals' purposes of borrowing in the MxFLS-2. Admittedly, this is a caveat of the test.

[23]Since the loan size is log transformed, the interpretation of the coefficients is a percentage difference associated with corresponding regressors.

participate in entrepreneurship. However, women from migrant-sending families are more likely to enter into entrepreneurship out of economic necessity and also for non-pecuniary benefits, such as flexible working arrangement and social status. All of this evidence points to the importance of understanding the nature of female occupational choice and entrepreneurial behavior.

5.4 Employership

The above analysis is based on the broad definition of entrepreneurship as self-employment. Table 9 continues to display the effect of migration on being an employer, which is a narrow measure of entrepreneurship. For the pooled (top panel), female (middle panel), and male (bottom panel) samples, the estimated coefficients and standard deviations reported are obtained using the LPM, FE, and IV strategies, all with the control for the initial status of entrepreneurship, as well as the LPM approach to the specification with financial constraints.

In general, the top panel of Table 9 shows that there is some evidence for the effect of U.S. migration on employership (column (2)) and the underlying financial mechanism (column (4)). More importantly, Table 9 sheds light on the gender-specific effects of migration. Both LPM and FE estimates indicate that migration stimulates the creation of female employers, by 1.5% and 2.4% respectively. The magnitude is around 78% and 100% relative to the sample mean. The IV estimates are also positive and very close to the FE estimates but are not significant or precise. There seems to be no statistically significant evidence for the migration effect on male employership.

For the role of financial constraints, the LPM estimates reported in column (4) do not support the hypothesis that migration will generate a greater stimulative effect on female employership for women from households with prior financial constraints in terms of low household assets (the financial constraints were most likely binding if migration did not occur). However, there is suggestive evidence that males originating from families with financial constraints are more likely to become an employer following the U.S. migration of other family member. This is consistent with the findings from Table 7. Taken together, these findings indicate that the mechanisms at play that drive the emergence of new employers could be different or more complicated than those drive self-employment. This is understood in light of higher upfront costs and the higher entrepreneurial skills necessary for starting a business with employees.

5.5 Robustness

5.5.1 Transition of Entrepreneurial Status

The analysis up to this point infers the migration effect on creating new entrepreneurs by restricting the sample to non-entrepreneurs in the MxFLS-1. It also establishes the gender-specific effects on left-behind family members. This section further evaluates the effect of migration on

a full profile of the transition of entrepreneurial status over time. Specially, a new dependent variable that has four possible outcomes is created: "exit" (change from being an entrepreneur in the first wave of the survey to be a non-entrepreneur in the second wave), "remaining" (being an entrepreneur in both waves), "entry" (change from being a non-entrepreneur in the first wave to be an entrepreneur in the second wave), and "nonparticipation" (being a non-entrepreneur in both waves). Multinomial logistic regression is employed to estimate the model. The same set of the individual-, household-, and community-level control variables as before are included into regressions, in addition to the migration variable of interest.

Table 10 presents the results for the female sample in the left panel and for the male sample in the right panel. The outcome categories from column (1) to (3) (and similarly, (4) to (6)) are exit, remaining, and entry, respectively. The base category is then nonparticipation in entrepreneurship. Relative risk ratios are reported to indicate the ratio of the probability of choosing one outcome over the probability of choosing the base outcome.

For women with a U.S. migrant family member relative to those without any, the relative risk for entering into self-employment over nonparticipation in both waves is estimated to increase by 1.98 (column (3)), holding the other variables in the model constant. In other words, women from migrant families are more likely to become new and nascent entrepreneurs than those from non-migrant families. The relative risk of the dependent variable falling into the exit and remaining outcomes (columns (1) and (2)) seems not to change with migration in the female sample. For males, having a U.S. migrant family member may not influence the relative risk of falling into other outcomes compared with the base (columns (4)-(6)). Although all models are estimated using the cross sectional data, Table 10 at least provides suggestive evidence that migration may stimulate left-behind women becoming entrepreneurs without significant influence on men on average.

5.5.2 Economic Migration

Without survey questions for migrants living in the U.S., it is uncertain whether all migrants identified above moved to the U.S. for economic reasons (e.g., working) and whether they have the ability to send remittances to left-behind families. For example, some may leave Mexico for vacation or to visit relatives in the U.S. The effect of migrants traveling for non-economic reasons may bias the estimates downwards to zero, because their migration may be very short and not generate any income. To alleviate this concern, the migration variable is recoded so that economic migrants only include those who have participated in the initial wave survey and have graduated from school in the MxFLS-2. The underlying assumption is that individuals may not go to the U.S. for schooling if they have already left school in Mexico.

The results estimated for the female and male samples using this new definition of migration are presented in Table 11. The LPM estimates in Table 11 are very close to their counterparts

in Table 4. This analysis also implies that the main definition of migration used in this paper is very close to the definition of economic migration. The potential existence of migration for non-economic reasons does not undermine the main findings drawn above.

5.5.3 Previous Occupation of Migrants

The increase in the rate of new female entrepreneurs along with migration may reflect the shift of business ownership from male migrants to left-behind females rather than the start of new businesses. Controlling for the previous employment status of migrants, especially migrant husbands, helps determine which case occurs. Since the migration variable in this paper is defined beyond the household as having a migrant relative (including spouse, sibling, child, or parent) or not, I cannot observe the occupation of all migrants. I run a robustness check for the subgroup of nonmigrants whose migrant family member is from the same household with occupation being observable. The previous findings are not sensitive to this change of specification.

6 Conclusion

Using the data from the first two waves of the MxFLS, this paper establishes the evidence showing that Mexico-to-U.S. migration increases entrepreneurship of left-behind individuals in Mexico, mainly by inducing individuals' entries into self-employment. Limited evidence supports that migration creates more family-owned non-agricultural businesses (see Appendix 2 for more details). However, this does not imply that the boost of migration to entrepreneurship is trivial. Previous work (e.g., Fairlie and Woodruff [2007]) documented that the majority of self-employed Mexican people work by themselves. The rate of own-account workers over all entrepreneurs is 88% for males and 89% for females. This may account for why migration seems to influence individual occupational choice but not household business ownership. Further, the estimated effect is only short term, but the asset accumulation required to start an enterprise and the transition from an own-account worker or a business owner may take a substantial period of time.[24] This may also explain the lack of direct evidence on household business ownership in the MxFLS data.

Moreover, the analysis documents a gender inequality in the migration effect: Having a U.S. migrant family member significantly stimulates the emergence of female entrepreneurs and employers, in particular for women who faced prior financial constraints. However, this financial channel does not absorb all of the migration effect. In contrast, cross sectional estimates suggest that more men may switch to self-employment in association with migration only when financial constraints were binding. These findings have two implications. First, one important mechanism through which migration exerts influences on the development of entrepreneurship is the

[24]This is consistent with the existing finding that returned migrants are more likely to own businesses than non-migrants.

relaxation of financial constraints and the access to the credit market. Second, males may join in entrepreneurship due to economic necessity while females may choose to become entrepreneurs for more than that reason alone.

Female entrepreneurship is important not only for gender equality but also because it is a key driver of economic growth and social development. The findings of this paper have rich policy implications. First, the evidence of the larger effect of ongoing migration on entrepreneurship for women than for men suggests that policies easing migration may reduce gender inequality in entrepreneurial activity and income. Second, the finding that the migration effect is largest for individuals from families with the lowest assets implies that migration can be a strong force towards poverty reduction and economic growth. Entrepreneurship provides a route out of poverty and an alternative to unemployment. Indeed, there is some recent evidence from longitudinal data showing more upward mobility in the income distribution among low-income and self-employed workers than among low-income wage or salary workers (Holtz-Eakin, Rosen and Weathers [2000]). Additionally, business owners experience faster earnings growth on average than wage or salary workers after a few initial years of slower growth for some demographic groups (Fairlie [2004]).

As emphasized, the focus of this paper is ongoing migration (i.e. migrants are still abroad), and the main findings are interpreted as short-term effects. It is certainly important to explore the long-term effects of migration on entrepreneurship and, in particular, how businesses and careers started by left-behind family members survive. Further analysis in this direction helps to more thoroughly evaluate the implications of international migration for poverty reduction, job creation, and local economic development. It also needs a data set that is more comprehensive than the currently available MxFLS data. Release of the third wave of the MxFLS may allow tracking the employment and business records of individuals over a longer period of time. Future work is required to extend the current study to expanded time horizons. Having said that, this paper concludes simply by reiterating that the empirical evidence for the short-term effect of ongoing migration on entrepreneurship of left-behind family members is necessary towards an all-round understanding of the consequences of migration and is new to the literature.

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Appendix 1. The First Stage Analysis for the IV Model

Table A.1 presents the first stage analysis for the IV model. The endogenous variable of current migration is regressed on the lagged municipal migration prevalence (in the period of 1995-1999) and other control variables. The first row of this table indicates that a 6% (mean of the variable) increase in municipal migration rate between 1995-1999 tends to increase the probability that an individual living in this municipality has a current migrant family member in 2006 by 11%. In all specifications, the F-statistics reported in the bottom of Table A.1 are large, which relieves the weak instrument concern.

Appendix 2. Household Ownership of Non-agricultural Business

This appendix presents the analysis at the household level. Household ownership of non-agricultural business is used to measure entrepreneurship. To be concrete, the migration variable becomes a dummy indicating whether or not the household owned any family enterprise at the time of the second wave survey, excluding agricultural businesses. The MxFLS does not inquire the size of non-household-member employees that a business hired at the time of the survey. It is therefore infeasible to determine the characteristics of the business. However, according to the question on the number of non-household-member employees when the business was established, the size of businesses in the sample averages very small: 95% of them hire no more than five employees.

To estimate the effect of migration on business ownership, specify the model at the household level as

$$y_h = \alpha + \beta X_h + \gamma USMIG_h + e_h, \tag{4}$$

where the dependent variable y_h indicates whether or not household h owned any non-agricultural enterprise in 2006. The migration variable $USMIG_h$ and the control variables X_h are defined in the same way as in the individual-level analysis except that the demographic characteristics of household head (sex, age, education, and cognitive ability) are also controlled for.

The sample for this analysis is the same set of households with at least two adult members (aged between 15 and 59 years old) at the time of the MxFLS-1. Table A.2 displays the summary information of the dependent and independent variables for the sample. 14% out of 2,083 households owned a family enterprise in 2006. This number is slightly lower than 17% in 2002. The distribution variables for household wealth show that the subsamples are roughly representative of the asset distribution of the entire sample. Sampled households on average have 6 total members and 4 primary-age members, which are very close to the averages from the individual-level sample. About 46% of sampled households are from rural areas. As to the characteristics of household heads, their age averages at 45 and almost all are male (nearly 99%). The average education

attainment is low, with over 50% of household heads only completed elementary school, 19% completed secondary school, 8.4% completed high school, and 8.2% completed college. The Raven's score of heads averages as high as that of other family members.

Table A.3 reports the estimates at the household level using the LPM with and without controlling for the initial status of ownership in 2002, the FE model, the IV strategy and the LPM with the financial constraints variables. The instrumental variable used in column (4) is again municipal migration prevalence between 1995 and 1999. In none of the specifications, the estimates are statistically significant. There seems to be no evidence supporting that U.S. migration spurs the creation of small family owned non-agricultural businesses. As discussed in the main text, this does not contradict or undermine the main findings of this paper.

Appendix 3. Motivation of Loan Request

The underlying assumption of the test reported in Table 8 is that the loan obtained would be used in a productive manner, such as purchase of production inputs. In the MxFLS, neither the time of getting any loan nor the time of migration is observable to researchers. It is possible that loans are used to cover the expenses of migration rather than to support the entrepreneurial activities of left-behind family members. In that case, the results in Table 8 would be spurious and misleading. To explicitly address this concern, I explore the details of the purpose of borrowing. The MxFLS asked the purpose for requesting loans, but only the data from the first wave is currently available. The following analysis is based on the information about migration and access to the credit market observed in the first wave of the survey. This test is valid if the effects of migration are symmetric between wave 1 and wave 2.

I categorize the reasons of borrowing into five groups: (1) economic shock (e.g., lack of liquidity, payments of other debts, contingencies like accident and unemployment); (2) medical treatment; (3) consumption (e.g., food and drink, housing, apparel, and transportation); (4) education (e.g., tuition, uniforms, and books); and (5) production investment (e.g., purchase of equipments and other production materials).

Table A.4 presents the correlation between having a U.S. migrant relative and the probability of having any loan (column (1)) and having a loan for a specific reason (columns (2)-(6)). All specifications are estimated using separate linear probability regressions. Consistent with the findings in Table 8, column (1) of Table A.4 suggests a positive correlation between migration and access to the credit market. This correlation exists both in the samples of left-behind females (the middle panel) and males (the bottom panel). Findings in the remaining columns show gender differences. Women with a U.S.-migrant relative are more likely to request loans in order to cover the need of health care, consumption, and production investment than women without any migrant relative. Debts of men from migrant families are more likely to be used for the consumption purpose than

those from families without migrants. Overall, the findings in Table 8 and Table A.4 suggest that loans are likely used for investment by women. Little evidence shows that the new debts are used to cover migration-related expenses.

Table 1. Migration by Family Relationship with Left-Behind Individuals

	Child	Sibling	Parent	Spouse	Any member
U.S.-migration	5.5%	11.2%	1.2%	0.9%	18.8%
	(409)	(826)	(85)	(66)	(1386)
Total number of individuals	7,385	7,385	7,385	7,385	7,385

Notes: The sample includes 7,385 left-behind adult individuals from households with at least two adult members (between 15 and 59 years old at the time of the initial wave survey). In each column, the first row reports the percentage of migration and the second row reports the number of incidences.

Table 2. Summary Statistics

Variable	Obs.	Mean	SD	Min	Max
Self-employed in MxFLS-2	7,385	0.129	0.335	0	1
Self-employed in MxFLS-2 (active workers)	3,774	0.251	0.434	0	1
Self-employed in MxFLS-1	5,884	0.186	0.389	0	1
Employer in MxFLS-2	7,385	0.025	0.156	0	1
Employer in MxFLS-1	5,884	0.028	0.164	0	1
Any migration	7,385	0.188	0.390	0	1
Male	7,385	0.437	0.496	0	1
Age	7,385	32.66	13.73	15	59
Years of schooling	7,385	6.434	3.682	0	18
Raven's score	7,385	1.000	0.468	0	3
Household assets, 1st quintile	7,385	0.176	0.381	0	1
Household assets, 2nd quintile	7,385	0.200	0.400	0	1
Household assets, 3rd quintile	7,385	0.201	0.401	0	1
Household assets, 4th quintile	7,385	0.208	0.406	0	1
Number of household members	7,385	6.315	2.351	3	20
Number of adult members	7,385	4.619	1.524	1	12
Number of children younger than 6	7,385	0.427	0.708	0	4
Border	7,385	0.220	0.414	0	1
North	7,385	0.193	0.395	0	1
South	7,385	0.065	0.246	0	1
Center	7,385	0.391	0.488	0	1
Capital	7,385	0.090	0.286	0	1
Rural areas	7,385	0.451	0.498	0	1
Death of household member	7,385	0.069	0.253	0	1
Sickness of household member	7,385	0.117	0.322	0	1
Unemployment of household member	7,385	0.077	0.266	0	1
Natural disaster	7,385	0.037	0.189	0	1
Community leading enterprise: Agriculture	7,385	0.806	0.396	0	1
Community leading enterprise: Cattle/forestry/hunting	7,385	0.577	0.494	0	1
Community leading enterprise: Metallurgy	7,385	0.059	0.236	0	1
Community leading enterprise: Mining	7,385	0.048	0.214	0	1
Community leading enterprise: Manufacturing	7,385	0.370	0.483	0	1
Community leading enterprise: Assembly	7,385	0.247	0.432	0	1
Community leading enterprise: Power	7,385	0.089	0.285	0	1
Community leading enterprise: Construction	7,385	0.356	0.479	0	1
Community leading enterprise: Wholesale and retail	7,385	0.572	0.495	0	1
Community leading enterprise: Transportation/storage	7,385	0.191	0.393	0	1
Community leading enterprise: Financial services	7,385	0.166	0.372	0	1
Community leading enterprise: Social services	7,385	0.211	0.408	0	1
Community leading enterprise: Other	7,385	0.258	0.437	0	1
Community hourly wage of men (log)	7,385	-2.39	5.650	-6.91	6
Community hourly wage of women (log)	7,385	-2.67	5.561	-6.91	6

Notes: Active workers are those employed at the time of the second wave survey.

Table 3. LPM Estimates of Migration Effect on Self-Employment

	(1)	(2)	(3)	(4)	(5)	(6)
	Initial entrepreneurs not excluded				Initial entrepreneurs excluded	
	All adults	Active workers	All adults	Active workers	All adults	Active workers
Any migration	0.0359***	0.0700***	0.0370***	0.0662***	0.0352***	0.0776***
	(0.010)	(0.018)	(0.011)	(0.018)	(0.011)	(0.019)
Self-employed in 2002			0.291***	0.334***		
			(0.012)	(0.017)		
Male	0.115***	0.002	0.0891***	-0.0386***	0.0566***	-0.0539***
	(0.007)	(0.014)	(0.009)	(0.015)	(0.008)	(0.015)
Age	0.00578***	0.00778***	0.00366***	0.00506***	0.00218***	0.00348***
	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)
Years of schooling	0.001	-0.0054***	0.001	-0.0042*	-0.001	-0.0069***
	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)
Raven's score	0.007	0.005	0.004	-0.003	-0.006	-0.016
	(0.009)	(0.016)	(0.010)	(0.016)	(0.009)	(0.017)
Household assets, q1	-0.0403***	-0.0931***	-0.0273*	-0.0657***	-0.016	-0.0534**
	(0.013)	(0.023)	(0.015)	(0.024)	(0.014)	(0.025)
Household assets, q2	-0.0286**	-0.0703***	-0.014	-0.035	0.000	-0.014
	(0.012)	(0.022)	(0.014)	(0.023)	(0.013)	(0.024)
Household assets, q3	-0.017	-0.0471**	-0.007	-0.030	-0.004	-0.026
	(0.012)	(0.022)	(0.014)	(0.022)	(0.013)	(0.024)
Household assets, q4	-0.012	-0.0378*	-0.003	-0.018	-0.015	-0.0424*
	(0.012)	(0.021)	(0.013)	(0.021)	(0.013)	(0.023)
# household members	0.00721**	0.0106*	0.005	0.005	0.001	0.004
	(0.003)	(0.006)	(0.004)	(0.006)	(0.004)	(0.006)
# adult members	-0.00891**	-0.0181**	-0.00846*	-0.0141*	-0.003	-0.011
	(0.004)	(0.008)	(0.005)	(0.008)	(0.005)	(0.008)
# young children	-0.007	-0.008	-0.005	-0.002	-0.003	-0.001
	(0.007)	(0.013)	(0.008)	(0.013)	(0.007)	(0.014)
Border	-0.0418*	-0.054	-0.0443*	-0.029	0.017	0.054
	(0.023)	(0.041)	(0.027)	(0.041)	(0.025)	(0.044)
North	0.003	0.034	0.005	0.051	0.033	0.0855*
	(0.023)	(0.041)	(0.027)	(0.042)	(0.026)	(0.045)
South	0.0867***	0.159***	0.0684**	0.132***	0.0798***	0.152***
	(0.027)	(0.048)	(0.031)	(0.049)	(0.031)	(0.054)
Center	0.0450**	0.0992**	0.034	0.0936**	0.0621**	0.133***
	(0.023)	(0.040)	(0.026)	(0.040)	(0.025)	(0.044)
Capital	0.040	0.0859*	0.027	0.0852*	0.0774***	0.149***
	(0.027)	(0.047)	(0.031)	(0.048)	(0.030)	(0.051)
Rural areas	0.0210*	0.0355*	0.0221*	0.031	0.0209*	0.0352*
	(0.011)	(0.020)	(0.013)	(0.020)	(0.012)	(0.021)

Death	-0.0286*	-0.0545**	-0.0339**	-0.0591**	-0.0324**	-0.0654**
	(0.015)	(0.026)	(0.017)	(0.027)	(0.016)	(0.028)
Illness	0.0234**	0.023	0.0297**	0.029	0.0265**	0.033
	(0.012)	(0.021)	(0.014)	(0.022)	(0.013)	(0.023)
Unemployment	0.010	0.014	0.009	0.018	0.019	0.022
	(0.015)	(0.026)	(0.017)	(0.026)	(0.016)	(0.027)
Natural disaster	0.0714***	0.0734**	0.0552**	0.052	0.0692***	0.0883**
	(0.020)	(0.034)	(0.023)	(0.035)	(0.023)	(0.039)
Agriculture	-0.0314**	-0.0620***	-0.0419***	-0.0686***	-0.0260**	-0.0459**
	(0.012)	(0.022)	(0.014)	(0.022)	(0.013)	(0.023)
Cattle/forestry/hunting	0.009	0.001	0.016	0.016	0.0232**	0.0383*
	(0.010)	(0.019)	(0.011)	(0.019)	(0.011)	(0.020)
Metallurgy	0.019	0.061	0.007	0.050	0.025	0.068
	(0.022)	(0.039)	(0.025)	(0.039)	(0.024)	(0.041)
Mining	0.032	0.0837**	0.031	0.0684*	0.035	0.0732*
	(0.020)	(0.037)	(0.023)	(0.036)	(0.022)	(0.039)
Manufacturing	-0.001	-0.023	0.000	-0.020	0.018	0.019
	(0.011)	(0.021)	(0.013)	(0.021)	(0.012)	(0.022)
Assembly	0.011	0.015	0.018	0.027	0.007	0.009
	(0.013)	(0.024)	(0.015)	(0.024)	(0.014)	(0.025)
Power	-0.026	-0.045	-0.033	-0.054	-0.0414**	-0.0797**
	(0.019)	(0.034)	(0.022)	(0.034)	(0.020)	(0.035)
Construction	0.0352***	0.0532***	0.0297**	0.0343*	0.0235*	0.0390*
	(0.011)	(0.020)	(0.013)	(0.020)	(0.012)	(0.022)
Wholesale and retail	-0.013	-0.009	-0.006	0.000	-0.005	0.005
	(0.009)	(0.017)	(0.011)	(0.018)	(0.010)	(0.019)
Transportation/storage	-0.011	-0.026	-0.004	-0.013	-0.021	-0.045
	(0.015)	(0.026)	(0.017)	(0.027)	(0.016)	(0.028)
Financial services	0.005	-0.009	0.006	-0.015	0.004	-0.006
	(0.016)	(0.029)	(0.018)	(0.029)	(0.018)	(0.031)
Social services	-0.003	0.008	0.010	0.017	0.006	0.013
	(0.014)	(0.025)	(0.016)	(0.025)	(0.015)	(0.027)
Other industry	0.0367***	0.0534***	0.0328***	0.0412**	0.0329***	0.0565***
	(0.011)	(0.020)	(0.012)	(0.020)	(0.012)	(0.021)
Male hourly wage	-0.00482*	-0.00862*	-0.001	-0.002	0.003	0.004
	(0.003)	(0.005)	(0.003)	(0.005)	(0.003)	(0.005)
Female hourly wage	0.004	0.007	-0.001	0.001	-0.003	-0.005
	(0.003)	(0.005)	(0.003)	(0.005)	(0.003)	(0.005)
Constant	-0.144***	0.015	-0.0931**	0.047	-0.064	0.041
	(0.033)	(0.062)	(0.041)	(0.066)	(0.039)	(0.070)
Mean of dep. var.	0.129	0.251	0.152	0.265	0.087	0.164
No. of observations	7,385	3,774	5,884	3,387	4,787	2,526
R-squared	0.112	0.109	0.191	0.203	0.041	0.073

Notes: The dependent variable is a dummy indicating the status of self-employment at the time of the second wave survey. See the narrative and Table 2 for the details of the control variables. All models are estimated using linear probability regression. * indicates p<0.10, ** p<0.05, and *** p<0.01.

Table 4. LPM Estimates of Migration Effect on Self-Employment by Sex

	(1)	(2)	(3)	(4)	(5)	(6)
	Initial entrepreneurs not excluded				Initial entrepreneurs excluded	
	All adults	Active workers	All adults	Active workers	All adults	Active workers
Female						
Any migration	0.0430***	0.119***	0.0468***	0.122***	0.0476***	0.147***
	(0.011)	(0.029)	(0.012)	(0.030)	(0.012)	(0.032)
Control for initial entrepreneurship			X	X	X	X
Mean of dep. var.	0.079	0.244	0.095	0.257	0.068	0.196
No. of observations	4,156	1,350	3,364	1,237	2,962	1,019
R-squared	0.053	0.119	0.097	0.171	0.032	0.114
Male						
Any migration	0.027	0.0380*	0.026	0.034	0.018	0.026
	(0.018)	(0.023)	(0.020)	(0.022)	(0.021)	(0.025)
Control for initial entrepreneurship			X	X	X	X
Mean of dep. var.	0.192	0.256	0.229	0.269	0.118	0.143
No. of observations	3,229	2,424	2,520	2,150	1,825	1,507
R-squared	0.150	0.122	0.240	0.238	0.071	0.069

Notes: The dependent variable is a dummy indicating the status of self-employment at the time of the second wave survey. The control variables are included but not reported. See the narrative and Table 3 for the details of the control variables. All models are estimated using linear probability regression. * indicates p<0.10, ** p<0.05, and *** p<0.01.

Table 5. FE Estimates of Migration Effect on Self-Employment

	(1)	(2)	(3)	(4)
	Initial entrepreneurs not excluded		Initial entrepreneurs excluded	
	All adults	Active workers	All adults	Active workers
Pooled				
Any migration	0.023*	0.035	0.019*	0.0425**
	(0.014)	(0.022)	(0.011)	(0.020)
Control for initial entrepreneurship	X	X	X	X
Mean of dep. var.	0.155	0.251	0.040	0.083
No. of observations	15,433	7,748	10,778	5,161
R-squared	0.013	0.01	0.089	0.169
Female				
Any migration	0.011	0.023	0.0223*	0.0808**
	(0.016)	(0.035)	(0.012)	(0.032)
Control for initial entrepreneurship	X	X	X	X
Mean of dep. var.	0.097	0.213	0.032	0.100
No. of observations	8,371	2,740	6,454	2,086
R-squared	0.016	0.045	0.071	0.204
Male				
Any migration	0.0447*	0.045	0.010	0.012
	(0.025)	(0.027)	(0.022)	(0.025)
Control for initial entrepreneurship	X	X	X	X
Mean of dep. var.	0.225	0.271	0.051	0.072
No. of observations	7,062	5,008	4,324	3,075
R-squared	0.018	0.015	0.142	0.166

Notes: The dependent variable is a dummy indicating the self-employment status at each wave of the survey. See the narrative and Table 3 for the details of the control variables. All models are estimated with individual fixed effects. * indicates p<0.10, ** p<0.05, and *** p<0.01.

Table 6. IV Estimates of Migration Effect on Self-Employment

	(1)	(2)	(3)	(4)
	Initial entrepreneurs not excluded		Initial entrepreneurs excluded	
	All adults	Active workers	All adults	Active workers
Pooled				
Any migration	0.133***	0.187**	0.118**	0.218***
	(0.052)	(0.081)	(0.049)	(0.085)
Control for initial entrepreneurship	X	X	X	X
F-statistic in first stage	293.38	178.34	243.66	144.81
Mean of dep. var.	0.152	0.265	0.087	0.164
No. of observations	5,884	3,387	4,787	2,526
R-squared	0.181	0.195	0.029	0.058
Female				
Any migration	0.137**	0.336**	0.107*	0.346**
	(0.058)	(0.137)	(0.057)	(0.141)
Control for initial entrepreneurship	X	X	X	X
F-statistic in first stage	163.69	62.22	134.23	55.92
Mean of dep. var.	0.095	0.257	0.068	0.196
No. of observations	3,364	1,237	2,962	1,019
R-squared	0.085	0.141	0.027	0.080
Male				
Any migration	0.125	0.131	0.145	0.135
	(0.092)	(0.104)	(0.088)	(0.107)
Control for initial entrepreneurship	X	X	X	X
F-statistic in first stage	118.65	100.62	103.00	78.90
Mean of dep. var.	0.229	0.269	0.118	0.143
No. of observations	2,520	2,150	1,825	1,507
R-squared	0.236	0.236	0.061	0.073

Notes: The dependent variable is a dummy indicating self-employment at the time of the second wave survey. The instrumental variable is municipal migration prevalence in the time period of 1995-1999 and is created using Mexico Census 2000. See the narrative and Table 3 for the details of the control variables. The 2SLS method is used for estimation. * indicates p<0.10, ** p<0.05, and *** p<0.01.

Table 7. LPM Estimates of Migration Effect on Self-Employment with Financial Constraints

	(1)	(2)	(3)	(4)	(5)	(6)
	Initial entrepreneurs not excluded				Initial entrepreneurs excluded	
	All adults	Active workers	All adults	Active workers	All adults	Active workers
Pooled						
Any migration	0.0254**	0.0639***	0.0245**	0.0571***	0.019	0.0568***
	(0.011)	(0.019)	(0.012)	(0.019)	(0.012)	(0.022)
Financial constraint	-0.029**	-0.060***	-0.029**	-0.057***	-0.025**	-0.056**
	(0.011)	(0.020)	(0.013)	(0.021)	(0.012)	(0.022)
Migrant × constraint	0.028	0.046	0.044	0.073	0.0695***	0.124**
	(0.026)	(0.045)	(0.028)	(0.046)	(0.027)	(0.048)
Control for initial entrepreneurship			X	X	X	X
No. of observations	7,385	3,774	5,884	3,387	4,787	2,526
R-squared	0.082	0.107	0.177	0.202	0.033	0.069
Female						
Any migration	0.0387***	0.105***	0.0401***	0.101***	0.0378***	0.126***
	(0.012)	(0.032)	(0.013)	(0.033)	(0.013)	(0.035)
Financial constraint	-0.018	-0.0580*	-0.0242*	-0.0751**	-0.016	-0.055
	(0.012)	(0.034)	(0.015)	(0.036)	(0.014)	(0.037)
Migrant × constraint	0.026	0.084	0.038	0.120	0.050*	0.110
	(0.027)	(0.073)	(0.031)	(0.077)	(0.029)	(0.078)
Control for initial entrepreneurship			X	X	X	X
No. of observations	4,156	1,350	3,364	1,237	2,962	1,019
R-squared	0.053	0.118	0.096	0.171	0.032	0.111
Male						
Any migration	0.027	0.039	0.024	0.031	0.000	0.004
	(0.020)	(0.025)	(0.022)	(0.024)	(0.023)	(0.027)
Financial constraint	-0.0422**	-0.0567**	-0.034	-0.041	-0.0385*	-0.0508*
	(0.020)	(0.026)	(0.023)	(0.026)	(0.023)	(0.027)
Migrant × constraint	0.017	0.018	0.024	0.027	0.104**	0.123**
	(0.046)	(0.058)	(0.052)	(0.058)	(0.053)	(0.061)
Control for initial entrepreneurship			X	X	X	X
No. of observations	3,229	2,424	2,520	2,150	1,825	1,507
R-squared	0.147	0.117	0.238	0.236	0.072	0.071

Notes: The dependent variable is a dummy indicating the status of self-employment at the time of the second wave survey. All regressions include migration, financial constraints, the interaction term, and the control variables as described in the narrative. All models are estimated using linear probability regression. * indicates p<0.10, ** p<0.05, and *** p<0.01.

Table 8. Link between Credit Access and Migration

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	LPM				FE			
	Asking for any loan		Amount of loan (unconditional)		Asking for any loan		Amount of loan (unconditional)	
	All adults	Active workers	All adults	Active workers	All adults	Active workers	All adults	Active workers
Pooled								
Any migration	0.0441***	0.0470***	0.525***	0.813***	0.0360***	0.0403*	0.534**	0.739**
	(0.009)	(0.014)	(0.134)	(0.194)	(0.014)	(0.021)	(0.243)	(0.363)
Control for initial entrepreneurship	X	X	X	X	X	X	X	X
Mean of dep. var.	0.060	0.080	-6.010	-5.880	0.079	0.098	-5.812	-5.593
No. of observations	5,341	2,752	5,341	2,752	10,778	5,161	9,453	4,486
R-squared	0.041	0.040	0.040	0.053	0.015	0.026	0.032	0.051
Female								
Any migration	0.0467***	0.0649***	0.412**	0.938***	0.0281*	0.0281	0.494*	1.049*
	(0.011)	(0.023)	(0.175)	(0.332)	(0.016)	(0.031)	(0.285)	(0.539)
Control for initial entrepreneurship	X	X	X	X	X	X	X	X
Mean of dep. var.	0.051	0.078	-6.030	-5.870	0.070	0.099	-5.920	-5.619
No. of observations	2,937	940	2,937	940	6,454	2,086	5,582	1,787
R-squared	0.045	0.066	0.04	0.067	0.018	0.041	0.037	0.098
Male								
Any migration	0.0423***	0.0370**	0.693***	0.767***	0.0542**	0.0514*	0.536	0.523
	(0.015)	(0.017)	(0.211)	(0.243)	(0.026)	(0.028)	(0.450)	(0.492)
Control for initial entrepreneurship	X	X	X	X	X	X	X	X
Mean of dep. var.	0.071	0.081	-5.980	-5.890	0.093	0.097	-5.656	-5.576
No. of observations	2,404	1,812	2,404	1,812	4,324	3,075	3,871	2,699
R-squared	0.051	0.048	0.049	0.060	0.021	0.031	0.036	0.046

Notes: The sample does not exclude the initial entrepreneurs. The dependent variable for columns (1)-(2) and (5)-(6) is a dummy that equals 1 if the left-behind person borrowed any loan during the last 12 months before the survey interview and 0 otherwise. The dependent variable for columns (3)-(4) and (7)-(8) is the log transformation of the amount borrowed, unconditional on having any loan or not. Original coefficients and standard deviations reported are estimated using the LPM in columns (1)-(4) and the FE approach in columns (5)-(8). See the narrative and Table 3 for the details of the control variables. * indicates p<0.10, ** p<0.05, and *** p<0.01.

Table 9. Migration Effect on Being an Employer

	(1)	(2)	(3)	(4)
	LPM	FE	IV	LPM with financial constraints
Pooled				
Any migration	0.007	0.021***	0.025	0.000
	(0.006)	(0.007)	(0.021)	(0.006)
Financial constraint				-0.006
				(0.007)
Migrant × constraint				0.0389***
				(0.015)
Control for initial entrepreneurship	X	X	X	X
F-statistic in first stage			487.5	
Mean of dep. var.	0.031	0.027	0.031	0.031
No. of observations	5,884	15,433	5,884	5,884
R-squared	0.046	0.007	0.045	0.047
Female				
Any migration	0.015**	0.024***	0.031	0.0133*
	(0.006)	(0.008)	(0.024)	(0.007)
Financial constraint				-0.001
				(0.008)
Migrant × constraint				0.007
				(0.016)
Control for initial entrepreneurship	X	X	X	X
F-statistic in first stage			269.7	
Mean of dep. var.	0.023	0.020	0.023	0.023
No. of observations	3,364	8,371	3,364	3,364
R-squared	0.042	0.011	0.040	0.041
Male				
Any migration	-0.006	0.019	0.014	-0.0203*
	(0.011)	(0.014)	(0.037)	(0.012)
Financial constraint				-0.013
				(0.012)
Migrant × constraint				0.0888***
				(0.028)
Control for initial entrepreneurship	X	X	X	X
F-statistic in first stage			216.8	
Mean of dep. var.	0.042	0.035	0.042	0.042
No. of observations	2,520	7,062	2,520	2,520
R-squared	0.053	0.012	0.052	0.057

Notes: The sample does not exclude the initial entrepreneurs. The dependent variable is a dummy for the status of being an employer. See Tables 3-7 for other notes. * indicates p<0.10, ** p<0.05, and *** p<0.01.

Table 10. Multinomial Logistic Regression Analysis of Self-Employment Transition

	(1)	(2)	(3)	(4)	(5)	(6)
	Female			Male		
	Exit	Remaining	Entry	Exit	Remaining	Entry
Any migration	1.126	1.348	1.977***	0.976	1.143	1.155
	(0.172)	(0.306)	(0.335)	(0.163)	(0.178)	(0.220)
Age	1.042***	1.067***	1.022***	1.031***	1.086***	1.036***
	(0.007)	(0.012)	(0.008)	(0.005)	(0.007)	(0.007)
Years of schooling	0.994	1.045	1.016	0.971	0.973	0.965
	(0.022)	(0.035)	(0.026)	(0.020)	(0.019)	(0.024)
Raven's score	1.127	1.425	0.855	0.949	1.189	0.939
	(0.162)	(0.316)	(0.150)	(0.133)	(0.160)	(0.155)
Household assets, q1	0.819	0.463**	0.820	0.420***	0.294***	0.829
	(0.180)	(0.169)	(0.203)	(0.093)	(0.069)	(0.221)
Household assets, q2	0.972	0.523*	1.027	0.474***	0.371***	0.957
	(0.203)	(0.192)	(0.246)	(0.096)	(0.080)	(0.236)
Household assets, q3	0.780	1.216	0.914	0.736	0.570***	0.953
	(0.168)	(0.364)	(0.220)	(0.139)	(0.117)	(0.240)
Household assets, q4	1.024	1.011	0.652*	0.409***	0.723*	1.018
	(0.198)	(0.283)	(0.160)	(0.084)	(0.137)	(0.242)
# household members	0.980	1.038	0.980	1.103*	1.203***	1.078
	(0.055)	(0.093)	(0.066)	(0.060)	(0.069)	(0.071)
# adult members	1.051	0.877	0.961	0.917	0.791***	0.923
	(0.077)	(0.102)	(0.084)	(0.067)	(0.061)	(0.082)
# young children	1.041	0.942	0.890	0.909	0.912	0.994
	(0.123)	(0.186)	(0.130)	(0.108)	(0.111)	(0.139)
Border	1.178	0.369*	0.610	1.306	0.229***	3.336*
	(0.472)	(0.217)	(0.294)	(0.521)	(0.091)	(2.311)
North	0.921	0.470	0.613	0.900	0.504*	5.443**
	(0.369)	(0.272)	(0.302)	(0.363)	(0.192)	(3.722)
South	2.284*	1.858	1.640	1.584	1.838	5.947**
	(1.018)	(1.200)	(0.869)	(0.740)	(0.789)	(4.371)
Center	1.632	1.446	1.194	1.568	0.934	6.406***
	(0.633)	(0.771)	(0.545)	(0.615)	(0.339)	(4.332)
Capital	2.505**	1.938	1.627	1.692	0.606	6.834***
	(1.167)	(1.273)	(0.866)	(0.785)	(0.268)	(4.970)
Rural areas	0.729*	0.412***	1.302	1.204	1.562**	1.340
	(0.135)	(0.127)	(0.306)	(0.226)	(0.300)	(0.307)
Death	1.045	1.003	0.613	0.942	0.727	0.639
	(0.254)	(0.367)	(0.210)	(0.231)	(0.197)	(0.212)
Illness	1.163	1.601*	1.459*	0.929	1.061	1.181
	(0.232)	(0.427)	(0.308)	(0.197)	(0.214)	(0.279)
Unemployment	1.010	0.689	1.177	0.863	0.952	1.215
	(0.258)	(0.266)	(0.300)	(0.225)	(0.248)	(0.344)

Natural disaster	0.741	1.223	0.735	2.197**	1.746*	4.726***
	(0.265)	(0.554)	(0.310)	(0.677)	(0.562)	(1.541)
Agriculture	1.192	0.757	0.660*	1.172	0.579**	0.624*
	(0.259)	(0.249)	(0.162)	(0.254)	(0.128)	(0.159)
Cattle/forestry/hunting	1.548**	2.269***	1.200	0.923	0.825	1.688**
	(0.280)	(0.663)	(0.245)	(0.157)	(0.140)	(0.367)
Metallurgy	2.147**	1.935	1.011	2.299**	1.848	1.390
	(0.781)	(1.040)	(0.404)	(0.936)	(0.694)	(0.814)
Mining	0.860	0.332*	1.397	1.715	2.418***	1.965
	(0.284)	(0.197)	(0.487)	(0.573)	(0.803)	(0.841)
Manufacturing	1.173	1.980**	1.244	1.224	0.638**	1.229
	(0.230)	(0.622)	(0.284)	(0.228)	(0.130)	(0.285)
Assembly	1.003	1.190	1.219	0.779	1.075	1.065
	(0.240)	(0.416)	(0.327)	(0.176)	(0.266)	(0.284)
Power	1.253	0.602	0.864	0.748	1.168	0.352**
	(0.407)	(0.292)	(0.308)	(0.265)	(0.385)	(0.181)
Construction	1.175	1.550	1.986***	1.171	1.601***	0.974
	(0.223)	(0.467)	(0.422)	(0.222)	(0.289)	(0.209)
Wholesale and retail	0.666**	0.606*	0.784	0.792	0.738*	1.137
	(0.111)	(0.170)	(0.156)	(0.127)	(0.121)	(0.216)
Transportation/storage	0.656	1.411	0.905	0.541**	0.662	0.615
	(0.181)	(0.521)	(0.253)	(0.152)	(0.185)	(0.196)
Financial services	0.799	0.940	1.044	1.198	0.876	0.911
	(0.230)	(0.372)	(0.319)	(0.336)	(0.253)	(0.310)
Social services	0.635*	0.681	0.788	0.850	1.023	1.572
	(0.157)	(0.225)	(0.204)	(0.207)	(0.246)	(0.437)
Other industry	1.297	3.550***	1.373	1.522**	1.232	1.803***
	(0.233)	(0.902)	(0.284)	(0.265)	(0.228)	(0.378)
Male hourly wage	1.003	0.925	1.026	0.986	0.887**	1.034
	(0.045)	(0.070)	(0.044)	(0.047)	(0.045)	(0.054)
Female hourly wage	1.027	1.022	1.000	1.011	1.104*	0.944
	(0.048)	(0.080)	(0.045)	(0.050)	(0.057)	(0.051)
No. of observations		3,364			2,520	

Notes: Columns (1)-(3) are from one multinomial logit regression using the female sample, and columns (4)-(6) are from another regression using the male sample. The samples do not exclude initial entrepreneurs. The dependent variable is the transition of self-employment status between the two waves of the survey, which contains four outcomes: exit (self-employed in wave 1, not in wave 2), remaining (self-employed in both waves), entry (not in wave 1, self-employed in wave 2), and nonparticipation (not self-employed in either wave). The log odds of the outcomes are modeled as a linear combination of the regressors, and the base category of outcomes is nonparticipation. Relative risk ratios (ratio of the probability of choosing one outcome category over the probability of choosing the base category) and standard errors (in parentheses) are reported. * indicates p<0.10, ** p<0.05, and *** p<0.01.

Table 11. LPM Estimates of Economic Migration Effect on Self-Employment by Sex

	(1)	(2)	(3)	(4)
	All adults	Active workers	All adults	Active workers
Female				
Any migration	0.0314*	0.0948**	0.0334*	0.109**
	(0.017)	(0.048)	(0.020)	(0.051)
Control for initial entrepreneurship			X	X
Mean of dep. var.	0.079	0.244	0.095	0.257
No. of observations	4,156	1,350	3,364	1,237
R-squared	0.050	0.110	0.027	0.062
Male				
Any migration	0.031	0.055	0.032	0.035
	(0.029)	(0.038)	(0.034)	(0.038)
Control for initial entrepreneurship			X	X
Mean of dep. var.	0.192	0.256	0.230	0.269
No. of observations	3,229	2,424	2,520	2,424
R-squared	0.150	0.121	0.038	0.030

Notes: The sample does not exclude the initial entrepreneurs. Migrants who were participating in school at the time of the initial survey are recoded to be non-migrants for economic reasons. All models are estimated using linear probability regression. See Tables 3 and 4 for other notes. * indicates $p<0.10$, ** $p<0.05$, and *** $p<0.01$.

Table A.1. Effect of Lagged Municipal Migration Prevalence on Current Migration, First Stage Estimates

	(1)	(2)	(3)	(4)
	Initial entrepreneurs not excluded		Initial entrepreneurs excluded	
	All adults	Active workers	All adults	Active workers
Municipal migration rate in 1995-1999	1.894***	1.971***	1.914***	2.072***
	(0.111)	(0.148)	(0.123)	(0.172)
Self-employed in 2002	-0.004	0.000		
	(0.013)	(0.016)		
Male	-0.031***	-0.041***	-0.026**	-0.031**
	(0.010)	(0.014)	(0.011)	(0.015)
Age	0.0053***	0.0053***	0.0054***	0.0052***
	(0.000)	(0.001)	(0.000)	(0.001)
Years of schooling	-0.005***	-0.006***	-0.004**	-0.003
	(0.002)	(0.002)	(0.002)	(0.002)
Raven's score	0.0243**	0.0256*	0.0224*	0.023
	(0.011)	(0.015)	(0.012)	(0.017)
Household assets, q1	-0.0286*	-0.016	-0.024	-0.003
	(0.017)	(0.022)	(0.019)	(0.025)
Household assets, q2	-0.018	-0.014	-0.019	-0.016
	(0.016)	(0.021)	(0.018)	(0.024)
Household assets, q3	0.024	0.017	0.022	0.020
	(0.016)	(0.021)	(0.018)	(0.024)
Household assets, q4	0.002	0.002	-0.002	0.009
	(0.015)	(0.020)	(0.017)	(0.022)
# household members	0.000	-0.006	0.001	-0.006
	(0.004)	(0.006)	(0.005)	(0.006)
# adult members	-0.003	0.004	-0.005	0.003
	(0.006)	(0.007)	(0.006)	(0.008)
# young children	-0.005	-0.008	-0.011	-0.020
	(0.009)	(0.012)	(0.010)	(0.013)
Border	0.0778**	0.0876**	0.0765**	0.0853*
	(0.033)	(0.042)	(0.036)	(0.047)
North	0.130***	0.0892**	0.120***	0.052
	(0.033)	(0.043)	(0.037)	(0.049)
South	0.0950**	0.127***	0.105**	0.166***
	(0.038)	(0.048)	(0.043)	(0.058)
Center	0.0848***	0.0687*	0.0881**	0.064
	(0.032)	(0.041)	(0.035)	(0.047)
Capital	0.0811**	0.0843*	0.0802*	0.077
	(0.038)	(0.048)	(0.042)	(0.055)
Rural areas	-0.018	-0.028	-0.020	-0.032
	(0.015)	(0.019)	(0.016)	(0.021)

Death	-0.016	-0.004	-0.014	0.008
	(0.019)	(0.025)	(0.021)	(0.028)
Illness	0.0302*	0.008	0.028	0.002
	(0.016)	(0.020)	(0.017)	(0.023)
Unemployment	-0.001	-0.001	-0.007	-0.003
	(0.019)	(0.025)	(0.021)	(0.027)
Natural disaster	0.0529**	0.036	0.0500*	0.038
	(0.026)	(0.033)	(0.030)	(0.039)
Agriculture	-0.007	-0.011	0.002	0.006
	(0.017)	(0.022)	(0.018)	(0.024)
Cattle/forestry/hunting	0.0309**	0.030	0.0294**	0.025
	(0.014)	(0.018)	(0.015)	(0.021)
Metallurgy	0.0648**	0.057	0.0562*	0.029
	(0.030)	(0.039)	(0.033)	(0.043)
Mining	-0.069**	-0.056	-0.083***	-0.082**
	(0.027)	(0.035)	(0.030)	(0.040)
Manufacturing	-0.0316**	-0.032	-0.024	-0.014
	(0.015)	(0.020)	(0.016)	(0.022)
Assembly	0.019	0.008	0.009	-0.018
	(0.017)	(0.023)	(0.019)	(0.025)
Power	0.000	0.014	-0.006	0.006
	(0.026)	(0.033)	(0.028)	(0.036)
Construction	0.001	0.007	0.007	0.013
	(0.015)	(0.019)	(0.016)	(0.022)
Wholesale and retail	0.008	-0.004	0.006	-0.005
	(0.013)	(0.017)	(0.014)	(0.019)
Transportation/storage	-0.013	0.016	-0.023	0.012
	(0.020)	(0.027)	(0.022)	(0.030)
Financial services	0.032	0.022	0.0541**	0.0572*
	(0.022)	(0.028)	(0.024)	(0.032)
Social services	-0.025	-0.030	-0.035	-0.0567*
	(0.020)	(0.025)	(0.022)	(0.029)
Other industry	0.0588***	0.0532***	0.0610***	0.0443**
	(0.015)	(0.019)	(0.017)	(0.022)
Male hourly wage	0.002	0.003	0.001	0.001
	(0.003)	(0.005)	(0.004)	(0.005)
Female hourly wage	-0.001	-0.003	-0.001	-0.001
	(0.004)	(0.005)	(0.004)	(0.005)
Municipal average employment rate in 2000	0.108	0.223*	0.145	0.405**
	(0.102)	(0.135)	(0.116)	(0.164)
Municipal average literacy rate in 2000	-0.116	0.028	-0.161	-0.092
	(0.210)	(0.272)	(0.244)	(0.332)
Municipal average highest degree in 2000: primary	0.324*	0.142	0.374*	0.241
	(0.172)	(0.219)	(0.203)	(0.269)
Municipal average highest degree in 2000: secondary	-0.478*	-0.398	-0.363	-0.181
	(0.261)	(0.343)	(0.286)	(0.390)

Municipal average highest degree in 2000: university	-0.216	-0.485	-0.346	-0.730
	(0.325)	(0.425)	(0.356)	(0.473)
Constant	-0.216	-0.295	-0.247	-0.380*
	(0.142)	(0.185)	(0.159)	(0.216)
F-statistics	293.38	178.34	243.66	144.81
[p-value]	[0.000]	[0.000]	[0.000]	[0.000]
No. of observations	5,884	3,387	4,787	2,526
R-squared	0.158	0.147	0.158	0.147

Notes: The endogenous variable of having a migrant family member is regressed on the measure of municipal migration prevalence (defined using Mexico Census 2000) and other control variables. Panel A of Table 6 is based on this set of first stage estimates. * indicates p<0.10, ** p<0.05, and *** p<0.01.

Table A.2. Summary Statistics of Household Level Variables

Variable	Obs.	Mean	SD	Min	Max
Family business owner in MxFLS-2	2,083	0.142	0.349	0	1
Family business owner in MxFLS-1	2,083	0.169	0.374	0	1
Any migration	2,083	0.243	0.429	0	1
Household assets, 1st quintile	2,083	0.179	0.383	0	1
Household assets, 2nd quintile	2,083	0.202	0.402	0	1
Household assets, 3rd quintile	2,083	0.198	0.399	0	1
Household assets, 4th quintile	2,083	0.20	0.40	0	1
Number of household members	2,083	6.156	2.383	3	20
Number of adult members	2,083	4.395	1.496	1	12
Number of children younger than 6	2,083	0.460	0.740	0	4
Border	2,083	0.223	0.416	0	1
North	2,083	0.199	0.399	0	1
South	2,083	0.066	0.248	0	1
Center	2,083	0.369	0.483	0	1
Capital	2,083	0.099	0.299	0	1
Rural areas	2,083	0.461	0.499	0	1
Head, age	2,083	44.58	7.369	23	65
Head, female	2,083	0.013	0.113	0	1
Head, elementary	2,083	0.544	0.498	0	1
Head, secondary	2,083	0.186	0.389	0	1
Head, high school	2,083	0.084	0.278	0	1
Head, college	2,083	0.082	0.274	0	1
Head, Raven's score	2,083	1.030	0.554	0	3
Death of household member	2,083	0.068	0.251	0	1
Sickness of household member	2,083	0.114	0.318	0	1
Unemployment of household member	2,083	0.074	0.262	0	1
Natural disaster	2,083	0.041	0.198	0	1
Community leading enterprise: Agriculture	2,083	0.819	0.385	0	1
Community leading enterprise: Cattle/forestry/hunting	2,083	0.574	0.495	0	1
Community leading enterprise: Metallurgy	2,083	0.062	0.241	0	1
Community leading enterprise: Mining	2,083	0.050	0.219	0	1
Community leading enterprise: Manufacturing	2,083	0.361	0.481	0	1
Community leading enterprise: Assembly	2,083	0.237	0.425	0	1
Community leading enterprise: Power	2,083	0.089	0.285	0	1
Community leading enterprise: Construction	2,083	0.358	0.479	0	1
Community leading enterprise: Wholesale and retail	2,083	0.574	0.495	0	1
Community leading enterprise: Transportation/storage	2,083	0.199	0.399	0	1
Community leading enterprise: Financial services	2,083	0.163	0.369	0	1
Community leading enterprise: Social services	2,083	0.207	0.405	0	1
Community leading enterprise: Other	2,083	0.256	0.436	0	1
Community hourly wage of men (log)	2,083	-2.38	5.658	-6.91	6
Community hourly wage of women (log)	2,083	-2.65	5.570	-6.91	6

Notes: The sample includes 2,083 households with at least two members aged 15-59 at the time of the initial survey.

Table A.3. Migration Effect on Household Non-Agricultural Business Ownership

	(1)	(2)	(3)	(4)	(5)
	LPM	LPM	FE	IV	LPM with financial constraints
Any migration	0.014	0.015	0.022	0.010	0.024
	(0.018)	(0.017)	(0.019)	(0.057)	(0.018)
Financial constraint					-0.009
					(0.022)
Migrant × constraint					-0.068
					(0.046)
Control for initial entrepreneurship		X	X	X	X
F-statistic in first stage				199.09	
Mean of dep. var.	0.142	0.142	0.156	0.142	0.142
No. of observations	2,083	2,083	5,328	2,083	2,083
R-squared	0.063	0.174	0.024	0.174	0.169

Notes: The dependent variable is a dummy for the status of household non-agricultural business ownership. See Tables 3-7 for other notes. * indicates p<0.10, ** p<0.05, and *** p<0.01.

Table A.4. Motivation of Loan Request

	(1)	(2)	(3)	(4)	(5)	(6)
	Reason of asking for a loan					
	Any	Shock	Health	Consumption	Education	Production
Pooled						
Any migration	0.0338***	0.006	0.007*	0.0163**	0.0001	0.001
	(0.010)	(0.005)	(0.004)	(0.007)	(0.003)	(0.003)
Mean of dep. var.	0.097	0.023	0.012	0.043	0.008	0.008
No. of observations	6,936	6,936	6,936	6,936	6,936	6,936
R-squared	0.027	0.010	0.014	0.013	0.006	0.010
Female						
Any migration	0.0372***	0.0009	0.0108**	0.0162**	0.0029	0.0055*
	(0.012)	(0.007)	(0.005)	(0.008)	(0.004)	(0.003)
Mean of dep. var.	0.085	0.024	0.013	0.034	0.008	0.005
No. of observations	3,773	3,773	3,773	3,773	3,773	3,773
R-squared	0.024	0.010	0.018	0.012	0.011	0.009
Male						
Any migration	0.0335**	0.011	0.0017	0.0193*	-0.0033	-0.0033
	(0.016)	(0.007)	(0.005)	(0.011)	(0.004)	(0.006)
Mean of dep. var.	0.112	0.021	0.010	0.052	0.007	0.013
No. of observations	3,163	3,163	3,163	3,163	3,163	3,163
R-squared	0.036	0.022	0.015	0.019	0.012	0.018

Notes: The sample includes all nonmigrant females and males in the first wave survey. The top panel pools females and males, the middle includes females only, and the bottom includes males only. The dependent variables are binary, indicating that the member borrows loans for (1) any purpose, (2) economic shocks, (3) health condition, (4) consumption, (5) education, and (6) production investment. Original coefficients and standard deviations reported are estimated using the LPM. See the narrative for details of the control variables included in regressions. * indicates p<0.10, ** p<0.05, and *** p<0.01.