Migration and Development in Mexican Communities: Evidence from US Labor Demand Shocks

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Abstract

Migration from Mexico to the United States constitutes one of the world's largest labor flows and generates enormous capital flows in the opposite direction. Corresponding to each of these flows is a distinct view of the role migration plays in local economic development. The optimistic view stresses the role of remittances in stimulating demand and relaxing credit constraints, while the pessimistic view emphasizes the departure of the economy's skilled and motivated workers. Using data from the Mexican Migration Project and exploiting stickiness in migrants' choice of U.S. destination, I examine the effects of migrant demand shocks on business ownership and job choice in Mexican communities. I find little evidence to support the pessimistic scenario. All members of the community, including non-migrants, appear to benefit from improved labor market and business investment opportunities when high U.S. demand induces migrants to leave. Demand for local products rather than credit supply effects seems to be responsible for this outcome.

1 Introduction

Since the 1980's, Mexican workers have experienced a rapid expansion in access to the U.S. labor market. By the year 2000, 9.4% of Mexico's total population was living in the United States (Chiquiar & Hanson, 2005), forming one of the world's largest labor flows. Revealed preference

suggests we can assume that this migration is beneficial for the migrants themselves; however, its effects on those who remain in Mexico are ambiguous. On the positive side of the ledger, remittances from U.S. migration constitute roughly 20 billion dollars (Banco de Mexico, 2007), or 2% of Mexican GDP. These remittances may feed demand for non-tradable goods produced locally, or they may ease credit constraints and allow capital accumulation to progress. On the negative side, U.S. migration does not attract a random sample of Mexican workers. Transient migrants in particular tend to be young and male, and they might have a different mix of skills and preferences (like risk tolerance) than the general population as well.[1] If migrant workers provide important inputs that complement non-migrants' skills, then their departure could deprive those left behind of economic opportunities. This ambiguity has been reflected historically in Mexico's migration policies at the local, state and national level: while past President Vicente Fox referred to labor migrants as Mexican "heroes", many Mexican governments earlier in the twentieth century had active, if ineffectual, policies to discourage emigration (Fitzgerald, 2006).

Because most factors that affect emigration will affect origin communities in many other ways, this issue has been difficult to resolve empirically. Broadly, three approaches have been tried. First, academics (predominantly in other social sciences) have conducted detailed qualitative case studies, which usually came to a negative or ambivalent assessment of the migration process (e.g., Mines & de Janvry, 1982; Rubenstein, 1992; Jones, 1995). This literature emphasized the departure of a community's productive members and questioned the likelihood of remittance income being funneled into investments. Secondly, a substantial body of quantitative research has come out of the Mexican Migration Project, the same data set used in this paper (Massey, Goldring & Durand, 1994; Durand *et al.*, 1996; Massey & Parrado, 1998; Durand *et al.*, 2001). While these papers have contributed substantially to our understanding of Mexican labor migration, their aims have been primarily descriptive and not focused on identifying specific causal linkages. Finally, a more recent literature in economics has attacked the issue with large-scale data sets, either through OLS methods (Woodruff & Zenteno, 2001; Unger 2005) or by exploiting historical variation in the strength of migration networks across different regions of Mexico (Hanson & Woodruff, 2003; Hildebrandt & McKenzie, 2003; Hanson, 2005). This last approach has been the most promising,

[1] See Chiquiar & Hanson (2005) and Ibarraran & Lubotsky (2007) for evidence that Mexican migrants are positively selected on education and McKenzie & Rappaport (2006) for an alternative view.

since it is the only one to address identification issues directly. Nevertheless, it is limited by the fact that the available measures of historical networks vary only at very coarse geographical level.[2]

This paper attempts to move the literature forward by employing variation in migration networks at the level of the individual community. The Mexican Migration Project (MMP) collects detailed retrospective data with full migration and employment histories for household heads in selected communities. Previous studies have shown that overall migration rates are sticky within a community, so that communities with many migrants in the past will likely have many migrants today. I show here that communities also display stickiness in their choice of U.S. destination. Once individuals have established networks in a given locale, it is much less costly for them, their family members or their acquaintances to return to the same location on future trips. Despite the diffusion of Mexicans to new U.S. cities during the 1990s (Card & Lewis, 2007), historical destination patterns successfully predict destination choices in subsequent decades. Moreover, it has been much more advantageous to have networks established in some US cities than in others: over 1977-1997, for example, employment grew by only 9% in Cook county (Chicago) but by 82% in San Diego county. Communities with networks in San Diego thus potentially experienced a much larger increase in demand for migrant labor. By constructing an index based on historical networks and growth of U.S. destinations, I am able to analyze the effects of migrant demand on the origin communities.

While I believe that the identification strategy adopted here is a step forward, in one respect this paper is more modest than the rest of the literature. Rather than attempting to estimate the effects of "migration" on Mexican economies and non-migrants,[3] I estimate the reduced-form impact of migration demand. Higher demand for migrant workers from a community not only increases the flow of migrants; it may also raise the wages of existing, inframarginal migrants. Thus the labor outflow effect depends on the elasticity of migration with respect to U.S. demand, but

[2] In both the distant and recent past, labor migration to the United States has been concentrated in the central-western region of Mexico. Interestingly, emigration rates have not been as high along most of the border, probably because this is the most prosperous region of the country.

[3] It is not always clear precisely what thought experiment corresponds to "exogenous" shifts in migration rates. In principle, any factors that affect the benefits or the costs of migration may have effects on inframarginal migrants. (E.g., better migration networks mean that more individuals will migrate, but also that each migrant may find work more easily or work of higher quality.)

the remittance inflow effect depends on the *level* of migration as well. However, the wage premium to migration is far larger than any wage increase that inframarginal migrants will receive,[4] so in practice the bulk of migrant demand effects are likely to operate through the attraction of additional migrant workers.

I focus on two outcome measures: the occupational distribution in the origin community to measure labor market opportunities, and business ownership rates to measure capital investments. I find that increases in demand for migrant workers from a community leads to occupational upgrading among young workers from new cohorts that are entering the labor force. Non-migrants seem to benefit from this upgrading as much as migrants do. Moreover, the effects are substantial: a 10% increase in the size of the available U.S. employment market is estimated to induce an additional 1.3% of men age 16-45 to work in the United States and an occupational shift consistent with 0.67% higher wages among those who do not migrate. I find similar effects for business investment. The same 10% increase in the size of the available U.S. market leads to an increase in the business ownership rate of 0.72% among men age 16-45, and once again non-migrants are no less likely to start businesses than migrants. The bulk of the evidence presented in this paper, then, supports the optimistic view of international migration: not only do migrants benefit from increased access to the U.S. labor market, but their communities and those who stay behind benefit as well. This paper also suggests a particular causal channel through which non-migrant members of the community benefit. Broadly, U.S. remittances can promote development at home either by stimulating demand for local products (Murphy, Shleifer & Vishny, 1989) or by relaxing credit constraints (Stark, 1991). While no one piece is definitive, I present multiple strands of evidence that consistently point to product demand as the dominant explanation.

The remainder of the paper is structured as follows. Section 2 discusses the effects of migrant demand on economic activity in Mexican communities in the context of a simple neoclassical model. Surprisingly, calibration of this model already suggests that the pessimistic scenario will be unlikely to occur. Section 3 introduces the Mexican Migration Project (MMP) and presents some features of migration patterns in the MMP data. Section 4 builds up the estimating equations from a simple model of labor markets in US destinations, showing how the regression estimates are related to structural parameters. Section 5 presents the empirical results, and Section 6 concludes.

[4] I estimate a premium of 274%.

2 The Effects of Migrant Demand on Non-Migrant Workers

2.1 Neoclassical Model

U.S. demand for Mexican workers affects communities through three basic channels: by increasing the supply of capital via remittance inflows, by increasing demand for locally-produced goods via remittance inflows,[5] and by drawing a selected subset of the population away. The first two channels are likely to benefit non-migrant households, while the last may be harmful if migrant and non-migrant labor are complementary. In this subsection, I develop an illustrative neoclassical model that analyzes the net effect of migrant demand shocks on non-migrant wages. Other effects that arise from credit constraints are discussed informally in subsection 3.

Consider an infinite horizon, discrete time economy with two intermediate goods, one final good that can be used for either consumption or investment, and three factors of production. One intermediate good is produced locally at price p_L, while the other is supplied elastically from outside the community at price 1. Production of the local good uses capital and two types of worker, "M-type" (or potential migrant) workers in quantity L_M and "N-type" (or non-migrant) workers in quantity L_N. Each period, the factors of production are combined according to the nested CES production function

$$Y_L = [\alpha K^{\zeta} + (1-\alpha)L^{\zeta}]^{1/\zeta} \quad (1)$$

$$L = [\gamma L_M^{\rho} + (1-\gamma)L_N^{\rho}]^{1/\rho} \quad (2)$$

[5] Emigration could reduce local demand if migrants spent the vast majority of their income in the United States. Empirically, transient migrants seem to have higher consumption level in their home communities than similar non-migrants.

where $\zeta, \rho \leq 1$. Each factor of production is paid the value of its marginal product, so

$$\begin{aligned} r &= \alpha Y^{1-\zeta} K^{\zeta-1} p_L \\ w_M &= (1-\alpha)\gamma Y_L^{1-\zeta} L^{\zeta-\rho} L_M^{1-\rho} p_L \\ w_N &= (1-\alpha)(1-\gamma) Y_L^{1-\zeta} L^{\zeta-\rho} L_N^{1-\rho} p_L \end{aligned} \tag{3}$$

where r is the return to capital, w_M is the local wage of migrant workers, and w_N is the wage of non-migrant workers.[6]

N-type workers face infinite migration costs and will never choose to work in the United States. L_N is thus the total stock of N-type workers. M-types, however, can choose to work in the U.S. at a wage $w^M > w_M$ if they pay an idiosyncratic migration cost c_i, distributed according to the cumulative distribution function $F(c_i)$. Worker i chooses to migrate if and only if $w^M - w_M > c_i$, so that the proportion of M-types in the United States will be $F(w^M - w_M)$. Denote by $\overline{L_M}$ the total stock of non-migrant workers and by M the number who choose to migrate to the U.S.; $\overline{L_M} = L_M + M$.

Once production has taken place and income has been received, worker i combines Y_{Lit} units of the local good and Y_{Fit} units of the imported good to produce the final good according to the Cobb-Douglas production function $Y_{it} = Y_{Lit}^{\lambda} Y_{Fit}^{1-\lambda} - c_i m_{it}$, where m_{it} is an indicator variable for migration to the United States by individual i in period t. This final good is then consumed or saved to maximize the intertemporal utility function

$$U_i = \sum_{t=0}^{\infty} \beta^t \frac{1}{1-\theta} {C_{it}}^{1-\theta}$$

subject to the law of motion for wealth, $W_{it+1} = rW_{it} + w_{it} - p_L C_{Lit} - C_{Fit}$ (assuming that all wealth is invested into capital and that capital depreciates fully in one period). Letting $I = p_L Y_L + w^M M = w_N L_N + w_M L_M + rK + w^M M$ denote aggregate income, this utility function

[6] Time subscripts are suppressed for notational clarity.

implies that aggregate consumption levels in period t are

$$\begin{aligned} C_{Lt} &= \lambda(1-s_t)I_t \\ C_{Ft} &= (1-\lambda)(1-s_t)I_t \end{aligned}$$

where s is the fraction of wealth is saved. The savings rate s_t is chosen such that the consumption path follows the standard formula $\beta r C_{it+1}^{-\theta}/p_{Lt+1}^{\lambda} = C_{it}^{-\theta}/p_{Lt}^{\lambda}$, where p_{Lt}^{λ} is the shadow price of the final good in period t. In steady state, savings–and the capital stock–will set

$$\beta r(K) = \alpha\beta Y_L^{1-\zeta} K^{\zeta-1} p_L = 1 \tag{4}$$

That is, capital will be accumulated until its rate of return equals the rate at which consumers discount the future.

The final equation necessary to close the system is the determination of p_L. The domestic economy exports labor and imports Y_F. In steady state, the local economy must be in financial equilibrium with the outside world, so that inflows of remittances are equal to spending on goods produced outside the community. This means that higher remittance levels will lower the relative price of imported goods, raising the price of (non-tradable) goods produced locally. To capture this relationship in a simple way, I assume that all U.S. income returns as remittances, or that no consumption takes place while working abroad.[7]In that case, the value of local production in period t must equal spending on Y_L in period t, or

$$\begin{aligned} p_{Lt}Y_{Lt} &= \lambda I_t \\ p_{Lt}Y_{Lt} &= \frac{\lambda}{1-\lambda} w_t^M M_t \end{aligned} \tag{5}$$

[7]This assumption is not important for the qualitative conclusions. It can be interpreted to mean that only foreign goods are consumed in the United States, and migrants then "make up" their consumption of local Mexican goods upon their return.

Equations (1)-(5) determine a unique solution to the model's steady state equilibrium. While the solution does not have a closed form representation, the elasticity of N-type wages with respect to U.S. wages does have a closed form. However, because it is complex and provides limited intuition, I leave it to the appendix. A more intuitive expression for the effect of U.S. wages on demand for non-migrants' labor is given by

$$\frac{d\omega_N/\omega_N}{dw^M/w^M} = (1-\lambda)\frac{dp_L/p_L}{dw^M/w^M} + (1-\zeta)\widehat{\alpha}\frac{d(K/L)/(K/L)}{dw^M/w^M} + (1-\rho)\frac{dL/L}{dw^M/w^M} \tag{6}$$

where I define

$$\widehat{\alpha} = \frac{\alpha K^{\zeta}}{\alpha K^{\zeta} + (1-\alpha)L^{\zeta}}$$

as capital's share of domestic income. The change in aggregate labor supply can be distilled into its primitive components; since L_N remains fixed,

$$\begin{aligned}\frac{dL/L}{dw^M/w^M} &= \gamma\left(\frac{L_M}{L}\right)^{\rho}\frac{dL_M/L_M}{dw^M/w^M} \\ &= -\widehat{\gamma}\eta_M\frac{M}{L_M}\end{aligned}$$

where η_M is the elasticity of migration with respect to U.S. wages and $\widehat{\gamma}$ is the share of M-types in the domestic wage bill:

$$\widehat{\gamma} = \frac{\gamma L_M^{\rho}}{\gamma L_M^{\rho} + (1-\gamma)L_N^{\rho}}$$

Equation (6) decomposes the total effect of U.S. demand into its three constituent parts. The first term gives the direct effect of increased demand for the locally-produced good. Holding other factors of production fixed, higher demand for local goods benefits those who work in the domestic sector. The second term is the effect of increased capital intensity, which also raises demand for N-type labor. In this model with complete markets, capital intensity is increasing in w^M solely through the higher price of the local good. Inspection of equation (4) shows that for constant p_L, Y_L/K is fixed, which implies that K/L must be fixed as well. In steady state, the capital-intensity of the local economy and the relative price of local goods must move together; the profitability of investment is a direct function of p_L. The final term captures the labor-draining effect of U.S. demand. Because M-type labor is an imperfect substitute for N-type labor, the exit of additional

migrants depresses non-migrants' share of wages. This effect is always negative, and it is strongest when M-type and N-type labor are very complementary, i.e., $\rho << 0$.

The conditions under which the labor-draining effect dominates are not transparent. However, I show in the appendix that the net effect of U.S. wages on ω_N is negative when

$$\begin{aligned} \rho &< g(\widehat{\alpha}, \widehat{\gamma}, \lambda, \zeta, \eta_M) \\ &= \lambda - h(\widehat{\alpha}, \lambda, \zeta) - \frac{1 + h(\widehat{\alpha}, \lambda, \zeta) - \lambda}{\widehat{\gamma}} \frac{1 + \eta_M}{\eta_M} \frac{L_M}{M} \qquad (7) \\ h(\widehat{\alpha}, \lambda, \zeta) &\equiv \widehat{\alpha} \frac{\lambda - \zeta}{1 - (1 - \widehat{\alpha})\zeta} \end{aligned}$$

The effects of all parameters on the likelihood of a negative non-migrant wage effect therefore depend on the partial derivatives of $g(\cdot)$. It is straightforward to verify that

1. $g(\cdot)$ decreasing in $\widehat{\alpha}$: when capital is more important in the production process, complementarity between labor and capital tends to dominate any potential complementarity between different types of labor. This makes it less likely for U.S. demand to harm non-migrant workers.

2. $g(\cdot)$ is increasing in $\widehat{\gamma}$: when M-type workers are relatively important to the domestic labor force, the labor-draining effect is accentuated.

3. $g(\cdot)$ is increasing in λ: when the local good is relatively more important, the positive direct effects of p_L on real wages are smaller.

4. $g(\cdot)$ is increasing in ζ: when capital and labor are more substitutable, the positive effects of capital accumulation are muted.

5. $g(\cdot)$ is increasing in η_M: more elastic migration responses accentuate the labor-draining effects of U.S. demand but leave the level of increased remittances from inframarginal migrants unaffected.

2.2 Calibration

Many of the parameters in equation (7) can be approximated. In this section, I calibrate the model developed above to plausible parameters to determine whether the net effect of U.S. demand on non-migrant wages is likely to be negative. This exercise suggests that the pessimistic scenario of declining non-migrant wages is unlikely on theoretical grounds.

I make the following parametric assumptions:

1. I set the share of capital in domestic income to $\widehat{\alpha} = \frac{1}{3}$.

2. I set the share of M-type workers in the domestic wage bill to $\widehat{\gamma} = \frac{1}{3}$. The empirical analysis below indicates that past migrants and non-migrants receive similar wages in their home community. In this case, $\widehat{\gamma}$ is approximately equal to L_M/L_N. In the MMP sample, 61.2% of all men age 16-45 have worked in the United States at some point, and 11.0% are in the United States in any given year. If we denote men who have ever been the U.S. as M-types and the others as N-types, then $L_M/L_N \approx \frac{1}{3}$.[8]

3. For the same reasons, I set $L_M/M = 3$.

4. I lack data to estimate λ. For want of a better alternative, I use $\lambda = \frac{2}{3}$ as a reasonable guess and $\lambda = 1$ as a polar case that maximizes $g(\cdot)$.

5. The elasticity of substitution between capital and labor is $1/(1-\zeta)$; I set this equal to 1 (the Cobb-Douglas case) or 2 (a conservative estimate that weakens the effect of capital accumulation on w_N). These choices imply $\zeta = 0$ and $\zeta = 0.5$ respectively.

6. I set $\eta_M = 1$ and $\eta_M = \infty$. The migration estimates in Section 5 suggest that the elasticity of migration with respect to destination employment levels is on the order of unity. This implies that Mexicans' migration elasticity is similar to the internal migration elasticity of U.S. workers (see equation 8). The U.S. labor economics literature lacks firm estimates of this elasticity, but Borjas (2006) finds that the wage response and the American labor supply

[8] Some young men will be M-types who have not yet had a chance to travel to the United States, which suggests that $\widehat{\gamma}$ should be higher. On the other hand, I am omitting all women and older men from the relevant labor force. These groups migrate at much lower rates than young men, so their omission biases $\widehat{\gamma}$ upward (i.e., they contribute relatively more to L_N than to L_M).

response to an immigrant supply shock are of similar magnitudes at the state level, which implies an internal migration elasticity of 1. Internal migration at the metropolitan level is likely more elastic than migration at the state level, however, so the true value of η_M may be above 1. I use $\eta_M = \infty$ as a polar case that maximizes the labor-draining effect.

Many of these assumptions are rough, but I attempt to err toward *overestimating* $g(\cdot)$, i.e., overestimating the likelihood of a negative effect on ω_N. The maximum values of ρ that lead to negative effects on ω_N are displayed in the first two columns of Table 1. Depending on the parameters used, the thresholds range from -9.56 to -1.00. In all cases, the local demand effect dominates the labor-draining effect except for extreme degrees of complementarity between M-type and N-type labor. In part, the explanation lies with two simplifying assumptions of the model developed in subsection 1: that U.S. income is spent on local goods in the same proportion as domestic incomes, and that labor migration is the only source of earnings for acquiring the imported good Y_F. Together, these assumptions imply that p_L (and the capital stock) must react starkly to increases in U.S. earnings in order to maintain a financial equilibrium with the outside world. Indeed, when $1/(1-\zeta) = 1$, $\lambda = \frac{2}{3}$, and $\eta_M = 1$, the model implies that the elasticity of K with respect to w^M is 2,[9] and this figure does not vary substantially with alternative parameter choices.

To relax these assumptions, I modify the model in two ways. First, I allow a fraction τ of U.S. earnings to be spent abroad prior to arrival in Mexico; none of this spending is directed at the good Y_L. Secondly, I allow the community to have a fixed export income X in addition to remittance income.[10] For simplicity, I take this level of income to be exogenous–in particular, it is unrelated to the level of U.S. labor demand. With these two modifications, equation (5) is replaced by

$$p_{Lt}Y_{Lt} = \frac{\lambda}{1-\lambda}[(1-\tau)w_t^M M_t + X] \tag{5'}$$

[9] $\frac{dK/K}{dw^M/w^M} = \frac{1+\eta_M[1+\zeta(1-\widehat{\alpha})\widehat{\gamma}M/L_M}{1-(1-\widehat{\alpha})\zeta}$

[10] "Export" income here refers to goods sold outside of the community. There is no requirement that the goods be sold internationally.

The rest of the model remains the same. The consequence of these changes is to attenuate the effect of U.S. earnings on local demand by a factor

$$\psi = \frac{(1-\tau)w_t^M M_t}{(1-\tau)w_t^M M_t + X}$$

or the share of labor exports in the value of total exports from the community. Now equation (7) is replaced by

$$g(\widehat{\alpha}, \widehat{\gamma}, \lambda, \zeta, \eta_M) = \lambda - h(\widehat{\alpha}, \lambda, \zeta) - \frac{1 + h(\widehat{\alpha}, \lambda, \zeta) - \lambda}{\widehat{\gamma}} \frac{1 + \eta_M}{\eta_M} \frac{L_M}{M} \psi \qquad (7')$$

The remaining columns of Table 1 display the cutoff values of ρ when $\psi = 0.5$ and when $\psi = 0.25$. The thesholds are noticeably larger, ranging from -4.56 to 0.19. Nevertheless, even for the polar parameter values $\lambda = 1$ and $\eta_M = \infty$, they continue to require much more complementarity across M-type and N-type labor than between capital and labor as a whole, a condition that seems unlikely to hold.

2.3 Discussion

According to the model presented above, the welfare consequences of U.S. demand for non-migrants depend on the balance between two forces: the positive effect that arises from the role of remittances in stimulating local demand, and the negative effect that comes from the drain of potentially complementary types of workers. The calibration exercise suggests that the positive effect will dominate if this simple model is accurate. However, two more subtle implications are worth noting. First, capital accumulation is an important mediating variable through which local demand increases non-migrant wages. We can therefore look to business investment as well as to the labor market for evidence on non-migrant welfare. If higher levels of migrant demand lead to substantially greater levels of investment, we should be more confident that non-migrants are in fact better off. This will be an important component of my empirical strategy given the limitations of my measure of labor market outcomes. Secondly, higher wages are entirely driven by local demand for goods in

this model. While the baseline version does not contain an exportable good, the share of exports in local production will rise in the extended model discussed in subsection 2. In other words, high U.S. demand should lead to a shift in the occupational distribution toward non-tradeable sectors like services and construction.

While the model with complete markets can capture the countervailing effects of U.S. demand on local Mexican labor markets, it fails to capture one prominent mechanism discussed both anecdotally and academically: the role of migration in relieving credit constraints. When credit markets are imperfect, higher demand for migrants can relieve constraints both by increasing the incomes of inframarginal migrants and by inducing more individuals to work in the U.S. That is, w^M might affect the supply side of the capital market as well as the demand side. If so, the capital-labor ratio will rise by more than the perfect markets model predicts, reinforcing the positive effects of U.S. demand on non-migrant welfare. However, the "credit push" theory is empirically distinguishable from the "demand pull" theory. Under the former, additional business investments should be concentrated among M-types, since they are the ones who receive the bulk of the financial windfall.[11] Under the latter, all individuals face the same increase in investment profitability, and so there is no reason to expect that non-migrants will invest any less than migrants. Moreover, the credit push theory also suggests a particular pattern to the *gross* flows of business activity: on the assumption that individuals who already own a business are not (or are much less) credit constrained, the effects of U.S. demand should appear as positive effects on business openings with no significant negative effect on business closings. If instead U.S. demand is operating through demand for local goods, we should expect to observe a response along both margins.

I begin the empirical analysis by introducing the data (Section 3) and by presenting an empirical model that explains my measure of migrant demand in terms of structural parameters (Section 4). Section 5.1 confirms that this measure does in fact predict migration rates and discusses selection of migrants in the MMP data. The heart of the welfare analysis comes in Section 5.2, where I construct an index of occupational quality based on each occupation's wage premium. I use this index to examine the effects of migrant demand on occupational upgrading and downgrading among both the population at large and among non-migrants specifically, and I find that higher levels of

[11] Non-migant wages may increase, but any reasonable increase will be trivial compared to the cross-border wage gain of M-types who are induced to migrate.

U.S. demand lead to stronger labor market outcomes for all community members. Section 5.2 also looks at shifts in the occupational distribution across tradeable and non-tradeable sectors and finds some evidence in favor of the demand pull over the credit push hypothesis. Section 5.3 moves on to business activity. I confirm the results of Section 5.2 by showing that higher U.S. demand leads to higher rates of business ownership. I also exploit information on the migrant status of new business operators and on rates of business openings versus business closings to strengthen the case against credit supply as the primary mechanism through which the demand for migrants operates. Section 5.4 suggests that employment rates of secondary workers increase in response to U.S. demand, which I interpret as a final piece of evidence in favor of a robust market for non-migrant labor.

3 Data

3.1 The Mexican Migration Project

The Mexican Migration Project is a collaborative effort between researchers at Princeton University and the University of Guadalajara. Beginning in 1982, the project has selected a small number of locations to sample in December and January of each year, when many migrants return home. As of 2004, 107 communities had been surveyed, ranging from small villages to neighborhoods of large cities and covering most regions within the country. Although the communities are chosen purposefully (i.e., not randomly) to represent a broad cross-section of Mexico, households within each community are chosen at random. The core of the survey is a detailed life history for both the household head and spouse, which covers work, domestic and international migration, business operation, property ownership, land ownership, marriage, fertility, and education in each year up to the survey date. The survey also collects more limited information about first and last migrations and the migratory behavior of other household members.

The MMP is a valuable resource because it provides a pseudo-panel of economic activity within each community. Indeed, to my knowledge it is the only survey that contains information on historical migration destinations at the local level. However, two limitations of these data should be noted. First, the MMP is a quasi-panel of individuals rather than communities, and communities

are surveyed at different points in time. This means that the average age of a community sample in year t will vary with the survey year; many outcomes show strong and non-linear age profiles. Moreover, there is some tendency for the communities surveyed in the 1980's to be focused in high-migration states, while the communities surveyed more recently were chosen to "round out" the sample. Insofar as migrant demand increased differentially over time by survey year, there is a risk of confounding the effects of demand with nonlinearities in age profiles. I address this concern below by estimating all regressions at the individual level with a full set of age dummies. Secondly, the MMP sample is selected endogenously because long-term or permanent migrants are necessarily excluded. The project staff attempt to minimize this bias by conducting surveys in the winter months and returning to households where the respondent was missing.[12] Plausibly, increases in US demand for migrant labor induce households to substitute permanent for temporary migration. If so, the results below will understate the extent to which migration responds to demand. More concerning is the potential for bias in the measures of economic outcomes. Here the direction of bias will depend primarily on whether the individuals with a propensity for permanent migration are more or less upwardly mobile than average. If permanent migrants are drawn from poorer households but have the potential to rapidly climb the economic ladder, then their absence from the sample will bias the estimates to make U.S. demand shocks appear more negative than they are. On the other hand, if permanent migrants are drawn from relatively affluent households but then fail to progress over their lifetime, their absence will bias the estimates in a positive direction.

For the most part, I focus on male household heads who were born and surveyed in Mexico and are 16-75 years old. I further restrict the sample to communities containing at least 20 person-year observations with employment in the US (this is necessary in order to construct a reliable demand measure; see below). This leaves 75 communities. Table 2 lists some descriptive statistics for this sample from 1977 onward, with each person-year weighted equally. Approximately 9.5% of the person-years are spent in the US; migration is much more common among the young, though this is obscured in the data by the fact that the MMP sampled lower-migration communities in later years.[13] Business ownership rates are not trivial at 16.1%, with higher rates among older

[12] Snowball samples of migrants who have settled in the US and originate in the sampled community are collected as well. I exclude these observations on the grounds that it is impossible to determine whether they are representative of all settled migrants.

[13] Communities sampled earlier contribute more person-year observations to the sample of men age 16-45: men

migrants. These businesses are primarily retail–stores and street vending, with a minority of small manufacturing establishments and service providers. Agriculture and manufacturing occupations are the most common both in Mexico and in the US, though the distribution of migrant jobs is noticeably more tilted toward agriculture. On average, heads with migratory experience report that their last trip to the US lasted a full two years, but this reflects a skewed distribution: the median duration is 8 months.

While migrant networks have historically been concentrated in a few US destinations, the MMP data show a long tail. Table A1 orders destinations by their share of pre-1977 person-years with jobs in the US. Los Angeles is by far the most common destination (21.0%), followed by Chicago (8.2%) and Merced (6.6%). At the state level, networks were heavily concentrated in California, with some in Illinois and Texas and very little elsewhere. These networks seem to affect subsequent migration behavior. Table 3 shows the rank correlation between the share of US person-years in each of the top 15 destinations before 1977 and the share of person-years in that destination from 1977 onward. The correlations range from .254 to .741 and are always significant. Moreover, this does not seem to reflect merely the same individuals returning to their old destinations. When I split the sample into "young" and "old" migrants by age in the survey year, the destination choices of the young from 1977 onward remain strongly correlated with the destination choices of the old before 1977, though the relationship is weaker. The finding that networks influence migration behavior is in line with a large body of prior work (Card, 2001; Munshi, 2003) and justifies the empirical strategy of this paper.

3.2 County Business Patterns

I draw data on the size of the top 38 US destinations from the County Business Patterns (CBP) for 1977-2004. The CBP give total employment in each US county in each year. I associate each destination with employment in its "core" county,[14] listed in Table A2; typically the city is the county seat. An alternative would have been to use all counties in the relevant metropolitan area. However, because migrant jobs tend to be concentrated in urban centers rather than suburbs, the

who were older at the time of the survey are still included in the young sample for years prior to their 46th birthday.

[14] In two cases, I use a pair of counties because it is difficult to determine which one is the "core". Riverside county is paired with San Bernardino county, and Solano county is paired with Napa county.

size of the core county economy is likely to provide a more accurate measure of the demand for migrant workers.

4 Empirical Model

In this section, I briefly sketch an empirical model that translates my measure of migrant demand into structural parameters. We can think of each U.S. destination as an economy that combines American labor, Mexican labor and other factors to produce output. Assume that this production technology is homogeneous of degree 1 and that all non-labor factors are perfectly elastic in supply at the local level; in that case we can imagine output as a constant returns to scale function of American and Mexican labor. For illustrative purposes, let this production function be CES:

$$Y_{dt} = A_{dt}(\kappa N_{dt}^{\vartheta} + (1-\kappa)M_{dt}^{\vartheta})^{1/\vartheta}$$

where Y is output, N is native American labor, M is Mexican migrant labor, d indexes US destinations and t indexes the year. Assume factors are paid their marginal products and that each destination receives shocks to A_{dt} over time. These shocks affect the wages of Americans and Mexican migrants, who both respond by adjusting their supply. Let $\eta_N \equiv \partial \ln N_{dt}/\partial \ln w_{dt}^N$ be the elasticity of supply of American labor to a particular destination, and let $\eta_M \equiv \partial \ln M_{dt}/\partial \ln w_{dt}^M$ be the elasticity of Mexican labor. Allowing factor supplies to adjust, the response of migrant wages in d to a productivity shock is

$$\frac{dw_{dt}^M/w_{dt}^M}{dA_{dt}/A_{dt}} = \frac{1+(1-\vartheta)\eta_N}{1+(1-\vartheta)[\nu_{dt}\eta_N + (1-\nu_{dt})\eta_M]}$$

where ν_{dt} is the share of income received by migrants.

Consider the effect of a vector of productivity shocks on the average migrant wage offer within a Mexican community. As an approximation, suppose that the productivity shocks are sufficiently small that they do not alter the distribution of preferred U.S. destinations among the community's

potential migrants. In that case, the effect of d's productivity shock will be proportional to the number of individuals in the community for whom d is the most preferred destination; call the proportion from community c who prefer destination d n_{cdt}. Then the effect of a vector of productivity shocks on the average migrant wage offer for community c is

$$\Delta \ln \overline{w}_{ct}^{M} = \sum_{d} n_{cdt} \frac{dw_{dt}^{M}/w_{dt}^{M}}{dA_{dt}/A_{dt}} \Delta \ln A_{dt}$$

In practice, I do not observe productivity shocks. Instead, I infer them from changes in the size of a destination's labor market, $E_{dt} = M_{dt} + N_{dt}$. Assuming that the proportion of migrants in each destination's labor force is small, we can rewrite the change in the migrant wage offer as

$$\Delta \ln \overline{w}_{ct}^{M} = \frac{1}{\eta_N} \frac{1 + (1-\vartheta)\eta_N}{1 + (1-\vartheta)\eta_M} \sum_{d} n_{cdt} \Delta \ln E_{dt} \tag{8}$$

Because the MMP data do not contain information on w_{dt}^{M} or n_{cdt},[15] my measure of migrant demand D_{ct} is instead

$$D_{ct} = \sum\nolimits_{d} p_{cd} \ln(E_{dt})$$

which differs from equation (8) in two respects. First, I omit the constant that depends on $(\eta_M, \eta_M, \vartheta)$. Thus effects of D_{ct} are proportional to effects of migrant wage offers up to an unknown constant that is is decreasing in the elasticity of both American and Mexican labor supplies. In other words, I estimate a reduced form relationship, where the missing first stage between wage offers and demand shocks is a known function of unknown parameters.[16] Secondly, I substitute p_{cd} for n_{cdt}, where p_{cd} is constructed as follows: I collect all pre-1977 person-years where a (current) Mexican-born male household head was working in one of the 38 most common US destinations; these are the destinations that account for at least 0.25% of pre-1977 person-years spent working

[15] The MMP collects data on migrants' wages during their first and last trip to the US. However, the timing of these trips is very likely to be endoegenous, making selection bias severe.

[16] In principle, it would be possible to estimate migrants' wage changes in each city using US data. However, even the US census samples contain a small number of recent Mexican migrants in each destination, and they are available only once per decade. While noisy, estimates on Census data (not reported) do suggest that destination growth is associated with higher wages for Mexican immigrants in general.

in a known US location. The share of such person-years spent in location d among residents of community c is p_{cd}, which I treat as constant over time.

Intuitively, changes in D_{ct} represent proportional changes in the size a "synthetic destination", comprising each US destination weighted by its share of of pre-1977 migration networks. Note that absolute growth in the number of jobs in a US city has a much stronger effect if that city is small, provided it still accounts for a large share of the historical network. This reflects the presumption that new jobs are more likely to be available to migrants where they account for a larger fraction of the labor force.

For any outcome Y_{ict} , my baseline specification of the relationship between Y_{ict} and demand for migrants D_{ct} is

$$Y_{iact} = \beta D_{ct} + \gamma_c + \delta_t + \zeta_a + \epsilon_{iact} \tag{9}$$

where γ_c is a community fixed effect, δ_t is a year fixed effect, and ζ_a is an age fixed effect. I estimate equation (9) by pooling all person-years where an individual's age fell in the appropriate range (typically 16-45 or 46-75). In some regressions, a household fixed effect replaces the community fixed effect; this excludes effects that operate through outcome changes across cohorts.

To account for correlation across individuals within a community-year and serial correlation over time, I cluster all standard errors at the community level. This procedure may be overly conservative; while serial correlation is surely a factor, it is unlikely to have an unrestricted form over 20 years or more. Clustering at the community level may fail to make use of some of the independence in the data, but I retain it in favor of GLS, which may bias standard errors downward (Bertrand, Duflo & Mullainathan, 2004).

There are at least three potential sources of bias in estimating β. First, the CBP data on total employment measures $E_{dt} = M_{dt} + N_{dt}$; because this measure includes migrant workers it is potentially endogenous. However, the proportion of workers coming from a particular source community is a very small share of the destination labor market, and so this endogeneity is likely to be negligible. It would be a concern only in the presence of a migration supply shock that was

correlated with the distribution of US destinations in each community's network (e.g., a migration supply shock that hits all communities with strong networks in San Diego and not others). Note that unobserved shocks that affect the productivity of a city's economy are *not* a source of bias. There is no presumption that destination employment *per se* affects the demand for migrants, and I interpret total employment as a proxy for factors that affect marginal products at a destination. Secondly, because the MMP captures only a sample of pre-1977 migration, D_{ct} is measured with error, and this error is decreasing in the number of pre-1977 migrations. I attempt to minimize this bias by excluding all communities with fewer than 20 migratory person-years in the pre-period. Finally, it is possible that destination growth is not a random shock but is instead correlated with unobservable and time-varying community characteristics. It is difficult to imagine a concrete story where this is true, but it can never be tested directly. However, I address this concern by testing whether community characteristics are correlated with future demand growth and checking the results for robustness to community-specific time trends.

5 Results

5.1 Migration

I first show that the demand measure D_{ct} does predict changes in migrant activity over time. The first two columns of Table 4 display results from a pooled regression where the dependent variable is a dummy indicating residence in the United States in a given person-year. Migration does respond to changes in destination market size among young men (ages 16-45) but has no clear effect among older men (ages 46-75). This is not because older men fail to migrate in general; the overall rate of US migration is 6.4% among the older men in the sample, less than the 11% for younger men but not trivial. However, migration does appear to be starkly less elastic at higher ages, which may reflect the fact that older men with previous migration experience have established access to US labor markets and are not dependent on the creation of new jobs.

Quantitatively, we see that a 10% increase in destination size is associated with a 1.28% increase in the probability of migration for young men. Given average migration rates in the sample, these figures translate into elasticities of migrant supply with respect to native employment slightly above

1. In other words, young Mexican men are just as responsive as U.S. natives to productivity shocks in American cities. This elastic supply response gives us some reason to believe that U.S. demand shocks will not have large income effects for inframarginal migrants, i.e., U.S. demand increases remittance incomes primarily by increasing the quantity of migration, not by increasing its price.

The estimates in columns (1) and (2) combine the effects of US demand on the attraction of new migrants with its effects on the retention of individuals already working in the United States. The remaining columns of the table attempt to disentangle these two mechanisms. Columns (3) and (4) restrict the sample to person-years where the individual was not in the United States the previous year, while columns (5) and (6) restrict the sample to person-years where the individual *was* in the United States one year prior. These two samples partition the set of person-years, but not the set of individuals: the same individual can appear in both samples in different years. While these estimates are noisy, they suggest that higher migrant demand increases both the likelihood of beginning work in the U.S. (columns 3 and 4) and the likelihood of remaining in the U.S. for those already there (columns 5 and 6). (The point estimates for the sample of $t-1$ migrants are larger by about a factor of 10, but the raw likelihood of working in the United States is approximately 10 times larger for those who worked there in the previous year.) Columns (7) through (10) repeat the same exercise but partition the sample into person-years where the individual either was not (columns 7 and 8) or was (columns 9 and 10) in the United States 10 years prior. Here the results for young men are statistically significant, but more importantly they again confirm that both the migrant attraction and migrant retention mechanisms are operating.

Table 5 presents evidence on migrant selection. The sample covers men age 16-75 who were employed in Mexico at the time of the survey. Some of these men had migrated to the United States in the past, and I regress the MMP's measure of annual earnings in the current domestic job on a dummy for status as a past migrant.[17] Surprisingly, perhaps, past migrants are *negatively* selected in this sample, with average earnings around 4% lower. The migrant wage penalty disappears entirely with controls for years of education; this suggests that it is not explained by a model of selective

[17] More precisely, the MMP collected data on the household head's income or wages for communities 1-52 and data on the wage rate in the head's last formal domestic job for communities 53 onward. All regressions use community fixed effects, which should absorb differences between these two earnings measures. Households also report income or wages at various frequencies; I convert all data to an annual measure assuming 8 hours of work per day, 5 days per week, 4 weeks per month, and 12 months per year.

return migration where migrants who receive new negative information about their skill return to Mexico, while those who receive positive information remain in the United States (and out of the MMP sample). If this kind of selective return migration were occurring, it would likely operate along unobservable dimensions of skill as well as years of schooling. The finding that migrants are negatively selected on education contrasts starkly with Chiquiar & Hanson (2005), who find that immigrants from Mexico are drawn from the upper middle of the educational distribution. Part of the explanation likely lies with the omission of permanent migrants from the MMP. Work in the U.S. agricultural sector is complementary to temporary migration because it tends to be seasonal, and it demands a relatively low level of skill. The difference in time periods may also play a role, since Chiquiar & Hanson focus on the period from 1990 onward while the sample for Table 5 covers a much longer span. In any event, the fact that migrants in the MMP do not seem to be the cream of their communities is consistent with the weak evidence for the labor-draining effect that I find below.

5.2 Occupational Quality

While the MMP does not contain a panel of earnings, it does contain a full life history of each head's occupation by year at the 3-digit level. In this section, I examine the effect of U.S. demand for migrants on the occupational distribution of Mexican communities, measuring occupational quality by log wage occupational premia from a cross-sectional regression. If a group of workers moves into better-paying occupations, we can infer that they likely experienced an expansion of their labor market opportunities.

In order to increase precision, I first group the 3-digit occupations into 31 categories. The categories were selected such that each one contains at least 50 wage observations from the survey year. Table A3 presents the occupational distribution in the survey year for past migrants and non-migrants respectively. Agriculture is by far the most common occupation for both groups, but the remainder is spread broadly across skilled and unskilled manufacturing as well as service occupations. Consistent with their lower average years of schooling, past migrants are overrepresented in agriculture and underrepresented in most "high skill" occupations (like professionals, educators or administrators).

In Table A4, I estimate a regression of log earnings in the survey year on dummies for each of 30 occupations (agriculture is the excluded occupation), with education, age and community fixed effects.[18] Workers in agriculture have *much* lower wages than workers in almost all other occupations, even controlling for education, age and community. An unskilled construction worker, for example, earns about 30% more in the MMP than a similar worker in agriculture.[19]For the most part, the pattern of the other estimates lines up with intuitive expectations: professionals, administrators and retail merchants earn much more than unskilled laborers, domestic workers, or retail workers.

The previous regression excludes workers who are working in the U.S. at the time of the survey. In order to establish a benchmark analysis of the labor market consequences of U.S. demand, including consequences for migrant workers as well as for non-migrants, I estimate the migration earnings premium in a separate regression. The MMP contains information on each migrant's wage in his last U.S. job; for past migrants who are currently employed in Mexico, a domestic Mexican wage is also reported. I therefore construct a sample containing two earnings observations for each past migrant, one in the U.S. and one in Mexico (with U.S. earnings converted to pesos at average exchange rate in the relevant year). By regressing log earnings on age, year and household fixed effects, I obtain an estimated premium of 1.32 log points (or a wage approximately 3.74 times as high) when the same individual is working in the U.S. This is a premium relative to the average migrant's domestic occupation. In order to make it comparable to the 30 occupational premia, I use the distribution of migrant occupations given in Table A3 to obtain an estimated premium of 1.53 log points relative to employment in Mexican agriculture. I treat migration to the United States as a 32nd possible occupation, with a wage premium of 1.53.

I use these occupational premia to construct an index of job quality for each person-year in the MMP sample: job quality of person i in year t is equal to the wage premium associated with person i's occupation in year t, where any job in the U.S. is assigned to the migration occupation. I then regress job quality on migrant demand with community, age and year fixed effects in Table

[18] For this and all subsequent earnings regressions, I windsorize earnings at each community's 5th and 95th percentiles.

[19] This is not simply an artifact of agricultural workers consuming their own production, since the MMP specifically asks for earnings from work for wages. Individuals who do not work for wages are dropped from the regression.

6. Column (1) gives a benchmark estimate for men age 16-45, incorporating all person-years (including person-years spent as a migrant) into the sample. On average, a 10% expansion in destination employment is associated with an occupational premium 2.4% higher at the origin for men age 16-45. This figure measures the overall benefit to Mexican workers when U.S. demand is high, but it is dominated by the mechanical effect of U.S. demand on the number of workers who migrate. Column (2) focuses on non-migrant workers by excluding from the sample any individual who is ever observed to work in the United States up until the survey date (i.e., all person-years are excluded for any person who migrates). While some of these men may migrate in the future, the sample should contain a much higher proportion of "N-types", and none of these men can have benefitted directly from migration thus far. The point estimate falls by more than two thirds relative to column (1), but it remains statistically and economically significant: a 10% increase in destination size is associated with a 0.7% increase in mean occupational wages for all young men who do not migrate. Column (3) adds migrants back to the sample but excludes those person-years actually spent in the United States. It differs from column (2) in two respects. First, the point estimate reflects the domestic job prospects of migrants as well as those of non-migrants. Secondly, it is biased upward, because migrant workers are underrepresented in the community in years when U.S. demand is high and migrants are negatively selected. Despite its upward bias, however, the estimate in column (3) is smaller than the estimate in column (2), which suggests that U.S. demand actually improves the domestic job quality of non-migrants *more* than the domestic job quality of migrants. Column (4) returns to the sample of non-migrants from column (2) but adds household fixed effects to the specification. This effectively reduces the estimate to 0. That is, a given individual does not seem to move into "better" occupations on average when his community experiences a positive migrant demand shock. Instead, the positive effect from column (2) arises from new cohorts of young men who enter higher-paying occupations than they otherwise would have. Nevertheless, there is tentative evidence that U.S. demand does cause some occupational shifting within a particular household. Column (5) repeats the specification from column (4) but excludes all person-years where the individual was working in agriculture. Here we see weak evidence of workers shifting into slightly worse occupations when migrant demand goes up, conditional on neither shifting out nor shifting into agriculture. This result is mirrored in column (1) of Table 7, where we see some evidence of households shifting from agriculture to other occupations. In other words, (non-migrant) workers seem to shift from both the worst-paid occupation (agriculture) and

the best-paid occupations toward middling occupations when migrant demand increases.

Columns 6 and 7 of Table 6 present household fixed effect estimates for two other groups: men age 46-75 and women age 16-45. Neither of these groups seems to be responsive to migrant demand (in the women's case because they migrate at very low rates). The point estimates indicate a modest positive effect on occupational quality for the older men and a substantial negative effect for the young women, but neither is statistically significant.

In Table 7, I divide the occupations into three categories: agriculture, manufacturing and transportation (excluding construction), and services (including construction). I interpret the last category as non-tradeables, the second category as tradeables, and agriculture as a traditional sector. Columns (1) through (3) regress a dummy for each broad occupational category on migrant demand, along with fixed effects for age, year and household, in a sample of non-migrants only. There is tentative evidence that non-migrants move out of agriculture and into either manufacturing or services when U.S. demand is high, but the estimates are not sufficiently precise to draw strong conclusions. Columns (4) through (6) replace household fixed effects with community fixed effects, thereby incorporating cross-cohort shifts in the occupational distribution. Here the results are striking: a 10% increase in destination size reduces the share of agricultural occupations by 2.5% among non-migrants. Moreover, the increase in non-tradeable occupations is more than twice as large as the increase in tradeable occupations.[20] I interpret this finding as support for the demand pull over the credit push mechanism: higher U.S. remittances benefit non-migrants by increasing the demand for non-tradeable services in the local community.

5.3 Business Ownership

In this section, I investigate the relationship between demand for migrants and business ownership. Opening a business represents a capital investment in the local economy; if the model presented in section 2 is correct, higher demand for migrants should increase the profitability of new investments and lead both migrants and non-migrants to make additional investments. Higher demand for migrants may also stimulate investment by slackening credit constraints. The evidence presented in this subsection will help to adjudicate between these two mechanisms.

[20] The baselin frequencies of these two occupational catagories are very similar.

In some cases, opening a business–particularly a small retail business–may be a response to a lack of labor market opportunities rather than an opportunity. That is, some workers may opt to join the informal sector when they cannot find good work in the formal labor market. Table A6 suggests that this is not the explanation for the typical business in the MMP sample. The estimates in this table are analogous to the occupational wage premia in Table A4; they are estimates from a regression of survey year earnings on either a dummy variable for any business ownership (column 1) or a set of 12 dummy variables indicating ownership of each category of business (columns 2 through 13). On average, business owners have higher earnings than similar individuals who do not own a business. For example, conditional on community, age and education, the average business owner has 15.6% higher earnings than the average non-owner. This conclusion generalizes to most types of business, with the notable exceptions of street vending and agriculture. The most common business type ("store") is associated with a modest premium of around 8%.

The premia in Table A6 reflect returns to capital as well as returns to labor. This is not a necessarily a problem: my goal is to demonstrate that business ownership is typically an economic good rather than an indicator for a lack of other opportunities, not to estimate business owners' shadow wage rate. However, these premia would be misleading if business owners had more debt or if non-business owners had greater assets in another form (e.g., real estate). In that case, business owners might appear to have higher earnings, but their consumption level would not be above average. The MMP data on consumption are too crude to test this hypothesis with any precision. The 2002 wave of the Mexican Family Life Survey, on the other hand, has detailed information on consumption and current business ownership. I used this data to construct a measure of annualized log non-food consumption and regressed it on a dummy for business ownership, a quadratic in the household head's age, head education fixed effects and state fixed effects. The estimates indicate a consumption premium of 0.376 log points for business owners (not reported),[21] even higher than the average earnings premium estimated in the MMP.[22] In light of this evidence, the earnings premia

[21] The regression was estimated on a sample of 6494 households with a male head and non-missing data for business ownership and demographics. The standard error, clustered at the community level, is 0.336. The consumption measure was constructed by adding up expenditures reported monthly (times 12), quarterly (times 4) and annually. Expenditures reported weekly–predominantly food, but also tobacco and some forms of transportation–were not included because of their variability. I assigned an expenditure of 0 to any catagory with missing data. Once the total expenditure measure was constructed, I windsorized it at the 5th and 95th percentiles of the sample distribution.

[22] Aside from differences in sample design, there are two reasons why the MFLS estimates would be higher: 1)

in Table A6 likely reflect a real difference in business owners' purchasing power.

Table 8 displays the results from regressions of a business ownership dummy on the migration demand index, conditional on community, age and year fixed effects. Migrants are included in the sample. Columns 1 and 2 show that overall business ownership rates increase substantially when demand for migrants goes up. A 10% increase in demand is associated with a 0.72% increase in business ownership rates for young men, with a similar but imprecise increase for older men. Interestingly, only 5.1% of individuals with migrant experience in the MMP report that they used US savings or remittances to finance a new business; these people cannot account for anywhere near the number of new businesses suggested by the estimates in Table 8. If we take these survey statements at face value, then the relaxation of credit constraints at the household level cannot be the main explanation for the expansion of business activity, and we are left with demand-side explanations.[23]

Columns 3 through 10 break up changes in the total business ownership rate into business openings and business closings. Relaxed credit constraints are likely to operate primarily through additional openings, whereas demand side effects will affect both margins. Columns 3 and 4 limit the sample to person-years where the individual was not a businesses owner the year before; effects on business ownership therefore represent the opening of new businesses. The sample in columns 5 and 6 is the mirror image, person-years where the individual did own a business in the prior year. Unfortunately, business ownership is strongly serially correlated, so the estimates in columns 3 through 6 are too imprecise to be informative. Columns 7 to 10 condition on business ownership status 10 years earlier and are more helpful. Young men who were not business owners one decade earlier are 0.9% more likely to open a business in the interim for every 10% increase in destination size, and young men who already owned a business are 3.2% less likely to close it. The strong effect on business survival is most consistent with an increase in general business profitability caused by higher demand for locally produced goods.

the MFLS variable on business ownership excludes agricultural businesses, one of the less profitable business types according to the MMP, and 2) I measure non-food consumption rather than total consumption in the MFLS, and the demand for food is income inelastic.

[23] It is also possible that respondants are interpreting the survey question very strictly, i.e., to mean that U.S. dollars were *directly* used to purchase business capital, and not that U.S. funds gave the household sufficient total liquidity to make an investment.

The estimates in columns 1 through 10 include migrant workers, so it remains possible that there is no effect on business investment for non-migrants (or a negative effect if they driven out of markets by the new ex-migrant businessmen). Even in that case, the additional investment in capital should benefit non-migrant workers by raising demand for their labor. As it turns out, however, the relationship between migrant demand and business ownership does not weaken at all when I include only individuals who are never observed to migrate during the sample period (columns 11 and 12). Again, this is consistent evidence for a generalized increase in demand and against the household credit constraint story.

Table 9 weights each business type by its associated premium from column 3 of Table A6 and regresses the estimated business premium against the migrant demand index (where the premium is 0 for person-years with no business and the maximum premium for person-years with multiple business types). The estimates are positive but not statistically significant. However, two points are worth noting: 1) The coefficient estimates are approximately equal to the product of the effects on business ownership rates from Table 8 and the average business premium (.1446 log points) from Table A6. In other words, there is little evidence that the new businesses induced by U.S. demand are concentrated in the low-value sectors like street vending or agriculture. Instead, the estimates from Table 9 are simply imprecise.[24] 2) The estimated effect on business premia are actually larger when the sample is restricted to non-migrants. There is no evidence that non-migrants are crowded into the "bad" kinds of business activity when migrant demand increases.

5.4 Employment

A priori, we expect the employment rates of potential migrants to rise in response to an increase in demand. Table 10 explores this hypothesis by regressing a dummy for employment on migrant demand; employment here includes both work in Mexico and work in the United States. Surprisingly,

[24] A related concern would be that the new businesses are all very small and much less efficient than the average. In unreported regression estimates (available upon request), I examine the effect of migrant demand on the size distribution of firms. I find that there is some validity to this worry. The number of businesses with 5-9 employees actually declines in response to migrant demand. However, the growth is concentrated in firms with 2-4 workers, not in single-worker firms. This pattern is puzzling; one natural hypothesis, that family firms are displacing firms hiring non-family workers, is not borne out by the data.

perhaps, there is very little evidence of any substantial net supply response among young men, the group that overwhelmingly responds to migration incentives. The point estimate from column 1 suggests that employment rates of these men increase by 0.02% when destination size increases by 10%. That is, better opportunities in the US labor market induce a substitution of US work for work in Mexico, but no net increase in effort. Of course, the base level of employment is very high for this group (96.1%), and the few who are not working may face relatively rigid constraints.

Employment rates for other demographic groups do seem to increase in response to migrant demand. The evidence is strongest for young women (age 16-45), whose employment rate increases by roughly 1% (on a base of 24.6%) when destination size increases by 10%. The point estimates for older men and women are noisier but similar in magnitude. The most natural interpretation of this result is that secondary workers are responding to increased labor demand with higher participation rates.[25]

5.5 Robustness

I test robustness in two primary ways: 1) by including community-specific trends, and 2) by testing whether future changes in destination size are correlated with current origin characteristics. Note that if changes in migrant demand are strongly serially correlated (and they are) and have effects with long lags, then both of these approaches are "overtests" of identification. The community-specific trends will capture a large part of the effect of smoothly-changing migrant demand, and current levels of outcome variables will reflect past changes in destination size (which may be correlated with future changes).

The results of these strong tests are somewhat mixed. Columns (1) and (2) of Table 11 are very encouraging; they show that the estimated effects of migrant demand on migration rates and business ownership rates are strikingly robust to the inclusion of community-specific trends. Columns (3) and (4) give slightly more cause for concern, since they suggest that the communities that experienced stronger demand growth over 1977-87 may have had higher migration and business

[25] An alternative hypothesis is that secondary workers must enter the labor force in order to sustain the household when labor demand for non-migrant prime-age men collapses. However, the evidence from occupational shifts and business investment both suggest that labor demand for prime-age men does not collapse.

ownership rates at the beginning of that period. However, the estimates are very noisy and far from statistically significant, and their signs are the opposite of what a straightforward mean reversion story would predict.

6 Conclusion

The effects of U.S. demand for migrants on non-migrant workers in Mexico are theoretically ambiguous and empirically difficult to assess. This paper uses variation in the growth of U.S. destinations combined with information on destination-specific migration networks across Mexican communities to trace out the labor market and capital accumulation effects of persistent migrant demand shocks. I find evidence that both migrant workers and non-migrant workers are able to access better work and business opportunities when demand for migrants in the United States is strong. The most parsimonious explanation for these results is that additional remittance income raises demand for locally-produced non-tradable goods, directly increasing demand for labor and the profitability of new capital investments. Multiple pieces of evidence indicate that the effects of higher U.S. demand are not operating through slackened credit constraints among migrant households.

I view this paper as part of vast cost-benefit project analyzing international migration. The potential efficiency gains from freer labor mobility are enormous, and the supply of willing migrants from developing to developed nations is, for the near future, unlimited. But while we know that migrants who move to work in a richer country experience an enormous gain in living standards, there have always been concerns about the effects of large-scale population transfers on other groups. Achieving the efficiency gains of international labor mobility will be easier if institutions can be designed to ensure that as many parties benefit as possible. An important first step is to understand the channels through which those parties are affected. The literature on the labor market effects of immigration in receiving countries is by now becoming mature, if as yet unsettled; the corresponding literature on sending countries is still in its infancy. This paper suggests that workers left in Mexican communities experience broadened labor market opportunities when their neighbors are lured to the United States by higher migrant demand. However, like the rest of the literature, I have focused on traditional "economic" outcomes. Many of the concerns surrounding

migration occur at the junction of economics and sociology. In particular, the role of migration in transmitting cultural norms and values–in both directions–is often emphasized but still poorly understood. While there are serious challenges in addressing such topics with rigorous empirical work, it is an important domain for future research if we are to achieve a theory of the costs and benefits of international labor mobility.

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A Appendix

From equation (3), we can write

$$\frac{d\omega_N/\omega_N}{dw^M/w^M} = \frac{d\ln\omega_N}{d\ln w^M} = (1-\lambda)\frac{d\ln p_L}{d\ln w^M} + (1-\zeta)\frac{d\ln Y_L}{d\ln w^M} + (\zeta-\rho)\frac{d\ln L}{d\ln w^M}$$

Equations (1), (4) and (5) can each be differentiated to give

$$\begin{aligned}
\frac{d\ln Y_L}{d\ln w^M} &= \widehat{\alpha}\frac{d\ln K}{d\ln w^M} + (1-\widehat{\alpha})\frac{d\ln L}{d\ln w^M} \\
\frac{d\ln p_L}{d\ln w^M} &= (1-\zeta)\frac{d\ln K}{d\ln w^M} - (1-\zeta)\frac{d\ln Y_L}{d\ln w^M} \\
\frac{d\ln(w^M M)}{d\ln w^M} &= \frac{d\ln p_L}{d\ln w^M} + \frac{d\ln Y_L}{d\ln w^M}
\end{aligned}$$

Since we know that

$$\begin{aligned}
\frac{d\ln(w^M M)}{d\ln w^M} &= 1+\eta_M \\
\frac{d\ln L}{d\ln w^M} &= -\widehat{\gamma}\eta_M\frac{M}{L_M}
\end{aligned}$$

we can solve for $d(\ln K)/d(\ln w^M)$:

$$\begin{aligned}
\frac{d\ln K}{d\ln w^M} &= \left[\frac{d\ln(w^M M)}{d\ln w^M} - \zeta(1-\widehat{\alpha})\frac{d\ln L}{d\ln w^M}\right]\cdot[1-(1-\widehat{\alpha})\zeta]^{-1} \\
&= \frac{1+\eta_M[1+\zeta(1-\widehat{\alpha})\widehat{\gamma}M/L_M]}{1-(1-\widehat{\alpha})\zeta}
\end{aligned}$$

and now we can rewrite the response of non-migrant wages in terms of the response of K:

$$\begin{aligned}
\frac{d\ln\omega_N}{d\ln w^M} &= (1-\lambda)\frac{d\ln(w^M M)}{d\ln w^M} + [(\lambda-\zeta)(1-\widehat{\alpha}) + (\zeta-\rho)]\frac{d\ln L}{d\ln w^M} + (\lambda-\zeta)\widehat{\alpha}\frac{d\ln K}{d\ln w^M} \\
&= [1 + h(\widehat{\alpha},\lambda,\zeta) - \lambda]\frac{d\ln(w^M M)}{d\ln w^M} + [\lambda - \rho - h(\widehat{\alpha},\lambda,\zeta)]\frac{d\ln L}{d\ln w^M} \\
&= [1 + h(\widehat{\alpha},\lambda,\zeta) - \lambda](1+\eta_M) - [\lambda - \rho - h(\widehat{\alpha},\lambda,\zeta)]\widehat{\gamma}\eta_M\frac{M}{L_M}
\end{aligned}$$

From this point, it is straightforward to isolate ρ and confirm that $d(\ln\omega_N)/d(\ln w^M) < 0$ if and only if

$$\begin{aligned}
\rho &< g(\widehat{\alpha},\widehat{\gamma},\lambda,\zeta,\eta_M) \\
&= \lambda - h(\widehat{\alpha},\lambda,\zeta) - \frac{1 + h(\widehat{\alpha},\lambda,\zeta) - \lambda}{\widehat{\gamma}}\frac{1+\eta_M}{\eta_M}\frac{L_M}{M}
\end{aligned}$$

TABLE 1

Calibration Results: Maximum Values of ρ that Lead to Negative Effects on Non-migrant Wages

		Baseline Model		**Extended Model:** $\psi = 0.5$		**Extended Model:** $\psi = 0.25$	
		$\lambda = 2/3$	$\lambda = 1$	$\lambda = 2/3$	$\lambda = 1$	$\lambda = 2/3$	$\lambda = 1$
$\frac{1}{1-\zeta} = 1$	$\eta_M = 1$	-9.56	-5.33	-4.56	-2.33	-3.39	-0.83
	$\eta_M = \infty$	-4.56	-2.33	-3.39	-0.83	-0.81	-0.08
$\frac{1}{1-\zeta} = 2$	$\eta_M = 1$	-6.92	-3.75	-3.17	-1.00	-1.17	-0.38
	$\eta_M = \infty$	-3.17	-1.00	-1.17	-0.38	-0.35	0.19

All entries are cutoff values of ρ from equation (7) (baseline model) or (7') (extended model). See text for parameter assumptions not listed in the table.

TABLE 2
Descriptive Statistics, Male Household Heads

	Males 16-45		**Males 46-75**		**Males 16-75**	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Age	30.8	8.2	56.3	7.6	39.0	14.3
Years education	6.82	4.59	3.41	3.76	5.73	4.62
In US	.110	.313	.064	.245	.095	.294
New trip to US	.064	.244	.028	.165	.052	.222
Business (in Mexico)	.132	.339	.222	.415	.161	.367
Owns property	.463	.499	.791	.406	.568	.495
Owns land	.094	.292	.258	.438	.147	.354
Married	.709	.454	.892	.311	.768	.422
Child born this year	.167	.373	.024	.153	.121	.326
Children born so far	2.82	2.82	7.00	3.82	4.16	3.72
Employed	.961	.193	.899	.302	.941	.235
Agricultural occupation (Mexico)	.254	.435	.449	.497	.315	.465
Manufacturing occupation (Mexico)	.350	.477	.230	.421	.312	.463
Service occupation (Mexico)	.160	.367	.181	.385	.167	.373
Agricultural occupation (US)	.398	.490	.487	.500	.417	.493
Manufacturing occupation (US)	.398	.490	.334	.472	.385	.487
Service occupation (US)	.164	.370	.146	.353	.160	.367
Migration-years in community pre-1977	110	128	126	144	115	133
Log migrant demand	13.2	.691	13.2	.683	13.2	.689
N	119,273		56,135		175,408	

Statistics exclude female heads, individuals born in the US, and individuals surveyed in the US. Communities with fewer than 20 pre-1977 migration-years are omitted from the sample as well.

TABLE 3
Rank Correlations between Historical and Recent Destination Choices

	All individuals	**Old individuals pre-1977, young post-1976**
Los Angeles, CA	.6206*	.4751*
Chicago, IL	.7406*	.6113*
Merced, CA	.5082*	.3841*
San Diego, CA	.6196*	.5082*
Fresno, CA	.4557*	.3254*
Santa Cruz-Watsonville, CA	.6160*	.4973*
Sacramento, CA	.5097*	.3756*
Riverside-San Bernardino, CA	.5559*	.4139*
Ventura, CA	.5028*	.3327*
Orange County, CA	.4739*	.2979*
San Jose, CA	.5068*	.2345*
Houston, TX	.4900*	.5046*
San Francisco, CA	.4062*	.2626*
El Paso, TX	.5590*	.4953*
McAllen-Edinberg-Mission, TX	.2537*	.1949

Includes all person-years covering men age 16-75 who worked in one of the 38 US destinations listed in Table 3. Figures refer to the rank correlation between the share of such person-years in the listed destination pre-1977 and from 1977 onward, across communities. The second column includes only individuals who were over age 45 in the survey year for the pre-1977 calculation and only individuals age 45 and under in the survey year from the post-1976 calculation. Stars indicate significance at the .05 level.

TABLE 4
Migration to the United States, 1977-2004

	All persons		**Non-migrant in t-1**		**Migrant in t-1**		**Non-migrant in t-10**		**Migrant in t-10**	
	Males 16-45 (1)	Males 46-75 (2)	Males 16-45 (3)	Males 46-75 (4)	Males 16-45 (5)	Males 46-75 (6)	Males 26-45 (7)	Males 56-75 (8)	Males 26-45 (9)	Males 56-75 (10)
Migrant demand	.1277 (.0478)*	-.0114 (.0330)	.0217 (.0141)	-.0001 (.0090)	.2027 (.1251)	-.0129 (.1504)	.0924 (.0330)*	-.0122 (.0316)	.7255 (.2586)*	-.6304 (0.3749)
Age and year fixed effects?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Community fixed effects?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	119,273	56,132	106,529	52,443	12,744	3688	75,941	24,989	7371	1793
R^2	.1198	.0666	.0326	.0105	.0860	.1188	.0787	.0226	.1504	.2836

Standard errors clustered at the community level in parentheses. Dependent variable is a dummy variable indicating residence in the United States in a given person-year. Columns (3) and (4) condition the sample on non-residence in the U.S. in the prior year; columns (5) and (6) condition on residence in the U.S. in the prior year; columns (7) and (8) condition on non-residence in the U.S. 10 years before the observation year; and columns (9) and (10) condition on residence in the U.S. 10 years earlier. Stars indicate significance at the .05 level.

TABLE 5
Log Domestic Earnings Premium for Migrants

	Males 16-75 (1)	**Males 16-75 (2)**	**Males 16-75 (3)**	**Males 16-75 (4)**
Migrant premium	-.0424*	-.0440*	.0027	.0036
	(.0197)	(.0179)	(.0168)	(.0168)
Occupation Fixed Effects	N	N	N	Y
Education Fixed Effects	N	N	Y	Y
Age Fixed Effects	N	Y	Y	Y
Community Fixed Effects	Y	Y	Y	Y
Observations	7828	7828	7828	7828
R^2	.9518	.9541	.9615	.9646

Sample includes men age 16-75 who were employed in Mexico at the time of the survey. Standard errors clustered at the community level in parentheses. Stars indicate significance at the .05 level.

TABLE 6
Effects of Migrant Demand on Mean Occupational Log Earnings

	Males 16-45 All person-years (1)	**Males 16-45 Non-migrants (2)**	**Males 16-45 Non-migrants + Migrants during years in Mexico (3)**	**Males 16-45 Non-migrants HH fixed effects (4)**	**Males 16-45 Non-migrants HH fixed effects No Agriculture (5)**	**Males 46-75 Non-migrants HH fixed effects (6)**	**Females 16-45 Non-migrants HH fixed effects (7)**
Migrant demand	.2369*	.0716*	.0670*	.0059	-.0232	.0247	-.0576
	(.0675)	(.0167)	(.0199)	(.0191)	(.0138)	(.0189)	(.0373)
Age and year fixed effects?	Y	Y	Y	Y	Y	Y	Y
Community fixed effects?	Y	Y	Y	Y	Y	Y	Y
Household fixed effects?	N	N	N	Y	Y	Y	Y
Includes person-years in U.S.?	Y	N	N	N	N	N	N
Includes migrants?	Y	N	Y	N	N	N	N
Observations	113,143	68,730	100,335	68,730	54,757	27,657	20,100
R^2	.0955	.1966	.2313	.8570	.8174	.9514	.9109

Standard errors clustered at the community level in parentheses. Samples vary by column. Mean log earnings by occupation calculated separately for females. Stars indicate significance at the .05 level.

TABLE 7
Effects of Migrant Demand on Occupational Frequencies

	Agriculture HH fixed effects (1)	**Manufacturing and Transportation (excl. Construction) HH fixed effects (2)**	**Services (inc. Construction) HH fixed effects (3)**	**Agriculture (4)**	**Manufacturing and Transportation (excl. Construction) (5)**	**Services (incl. Construction) (6)**
Migrant demand	-.0970	.0418	.0552	-.2502*	.0782	.1720*
	(.0518)	(.0339)	(.0578)	(.0444)	(.0416)	(.0537)
Age and year fixed effects?	Y	Y	Y	Y	Y	Y
Community fixed effects?	Y	Y	Y	Y	Y	Y
Household fixed effects?	Y	Y	Y	N	N	N
Includes person-years in U.S.?	N	N	N	N	N	N
Includes migrants?	N	N	N	N	N	N
Observations	68,729	68,729	68,729	68,729	68,729	68,729
R^2	0.8617	0.8073	0.8226	.2837	.1000	.0914

Standard errors clustered at the community level in parentheses. Sample includes men 16-75 during years when they were employed in Mexico. Stars indicate significance at the .05 level.

TABLE 8
Business Ownership, 1977-2004

	All persons		**Non-business owner in t-1**		**Business owner in t-1**		**Non-business owner in t-10**		**Business owner in t-10**		**Non-migrants**	
	Males 16-45 (1)	Males 46-75 (2)	Males 16-45 (3)	Males 46-75 (4)	Males 16-45 (5)	Males 46-75 (6)	Males 26-45 (7)	Males 56-75 (8)	Males 26-45 (9)	Males 56-75 (10)	Males 16-45 (11)	Males 46-75 (12)
Migrant demand	0.0722 (0.0322)*	0.0583 (0.0767)	.0010 (.0089)	.0045 (.0122)	-.0029 (.0227)	-.0187 (.0253)	.0902* (.0418)	0.1213 (0.0721)	.3225* (.1264)	-0.1321 (0.2808)	.0723 * (.0371)	.0450 (.0564)
Age and year fixed effects?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Community fixed effects?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	119,273	56,135	104,907	44,143	14,366	11,992	77,629	22,179	5683	4616	73,005	31,387
R^2	.0686	.0568	.0074	.0062	0.0207	.0179	.0303	.0360	.1101	.1535	.0738	.0703

Standard errors clustered at the community level in parentheses. Dependent variable is a dummy variable indicating ownership of some business. Columns (4) through (6) condition on non-business ownership in the prior year; columns (7) through (9) condition on business ownership in the prior year. Stars indicate significance at the .05 level.

TABLE 9
Effects of Migrant Demand on Mean Business Earnings Premium

	Males 16-45 All person-years (1)	**Males 16-45 Non-migrants (2)**	**Males 16-45 Non-migrants + Migrants during years in Mexico HH fixed effects (3)**	**Males 16-45 Non-migrants HH fixed effects (4)**	**Males 46-75 Non-migrants HH fixed effects (5)**
Migrant demand	.0085	.0131	.0067	.0097	.0014
	(.0060)	(.0069)	(.0071)	(.0080)	(.0083)
Age and year fixed effects?	Y	Y	Y	Y	Y
Community fixed effects?	Y	Y	Y	Y	Y
Household fixed effects?	N	N	Y	Y	Y
Includes person-years in U.S.?	Y	N	N	N	N
Includes migrants?	Y	N	Y	N	N
Observations	119,273	73,021	119,273	73,021	31,404
R^2	.0506	.0535	.7058	.7142	.8708

Standard errors clustered at the community level in parentheses. Samples vary by column. Business earnings premia are from column (3) of Table 13.

TABLE 10
Employment, 1977-2004

	Males		**Females**	
	Males 16-45	Males 46-75	Females 16-45	Females 46-75
	(1)	(2)	(3)	(4)
Migrant demand	.0017	.0998	.1034	.1689
	(.0267)	(.0549)	(.0479)*	(.0899)
Age and year fixed effects?	Y	Y	Y	Y
Community fixed effects?	Y	Y	Y	Y
Observations	119,273	56,135	86,267	25,472
R^2	.0439	.0730	.0439	.0730

Standard errors clustered at the community level in parentheses. Dependent variables is a dummy variable indicating employment (excluding students and pensioners who work part-time). Stars indicate significance at the .05 level.

TABLE 11
Robustness: Community-specific Trends, 1977-2004
Correlation of 1977 Levels with 1977-87 Changes in Migrant Demand
Males 16-45

	Community-specific trends		**Correlation of Levels with Future Demand Shocks**	
	Migration	Business Ownership	Migration	Business Ownership
	(1)	(2)	(3)	(4)
Migrant demand	.1014	.0951		
	(.0398)*	(.0571)		
Change in migrant demand, 1977-87			.1784	.0656
			(.1609)	(.0644)
Age and year fixed effects?	Y	Y	Y	Y
Community fixed effects?	Y	Y	N	N
Community trends	Y	Y		
Observations	119,273	119,273	6071	6071
R^2	.1267	.0732	.0104	.0338

Columns (1) and (2) add a time trend interacted with each community fixed effect to the specifications of Table 4, column (1) and Table 8, column 1. Columns (3) and (4) report on a cross-sectional regression where the primary explanatory variable is the change in migrant demand over 1977-87 and the dependent variables are migration rates and business ownership rates in 1977. Standard errors clustered at the community level in parentheses. Stars indicate significance at the .05 level.

TABLE A1
Frequency of US Destinations in Migration, pre-1977

Destination	Proportion of migration-years (%)	Destination	Proportion of migration-years (%)
Los Angeles, CA	21.0	Phoenix-Mesa	1.0
Chicago, IL	8.2	Stockton-Lodi, CA	0.9
Merced, CA	6.6	Vallejo-Fairfield-Napa, CA	0.7
San Diego, CA	6.2	Salinas, CA	0.7
Fresno, CA	5.4	Denver, CO	0.6
Santa Cruz-Watsonville, CA	4.9	Philadelphia, PA-NJ	0.6
Sacramento, CA	4.9	Bakersfield, CA	0.5
Riverside-San Bernardino, CA	4.8	Waco, TX	0.4
Ventura, CA	4.8	Kansas City, MO-KS	0.4
Orange County, CA	3.2	New York, NY	0.4
San Jose, CA	3.1	Corpus Christi, TX	0.3
Houston, TX	2.5	Pueblo, CO	0.3
San Francisco, CA	2.3	Fort Worth-Arlington	0.3
El Paso, TX	2.1	Las Vegas, NV-AZ	0.3
McAllen-Edinberg-Mission, TX	2.0	Abilene, TX	0.3
Santa Barbara-Santa Maria-Lompoc, CA	1.8	Visali-Tulare-Porterville, CA	0.3
Brownsville-Harlingen-San Benito, TX	1.8	Reno, NV	0.3
San Antonio, TX	1.6	Modesto, CA	0.3
Dallas, TX	1.4	San Angelo, TX	0.2

Universe includes all person-years that 1) are male, 2) occur prior to 1977, 3) have a known location of the primary job within the United States, and 4) occur in a community with at least 20 person-years satisfying the above criteria.

TABLE A2
Correspondence between Metropolitan Destinations and "Core" Counties

Metro area	Core counties	Metro area	Core counties
Abilene, TX	Taylor, TX	Philadelphia, PA-NJ	Philadelphia, PA
Bakersfield, CA	Kern, CA	Phoenix-Mesa, AZ	Maricopa, AZ
Brownsville-Harlingen-San Benito, TX	Cameron, TX	Pueblo, CO	Pueblo, CO
Chicago, IL	Cook, IL	Reno, NV	Washoe, NV
Corpus Christi, TX	Nueces, TX	Riverside-San Bernardino, CA	Riverside, CA; San Bernardino, CA
Dallas, TX	Dallas, TX	Sacramento, CA	Sacramento, CA
Denver, CO	Denver, CO	Salinas, CA	Monterey, CA
El Paso, TX	El Paso, TX	San Angelo, TX	Tom Green, TX
Fort Worth-Arlington, TX	Tarrant, TX	San Antonio, TX	Bexar, TX
Fresno, CA	Fresno, CA	San Diego, CA	San Diego, CA
Houston, TX	Harris, TX	San Francisco, CA	San Francisco, CA
Kansas City, MO-KS	Jackson, MO; Wyandotte, KS	San Jose, CA	Santa Clara, CA
Las Vegas, NV-AZ	Clark, NV	Santa Barbara-Santa Maria-Lompoc, CA	Santa Barbara, CA
Los Angeles, CA	Los Angeles, CA	Santa Cruz-Watsonville, CA	Santa Cruz, CA
McAllen-Edinberg-Mission, TX	Hidalgo, TX	Stockton-Lodi, CA	San Joaquin, CA
Merced, CA	Merced, CA	Vallejo-Fairfield-Napa, CA	Napa, CA; Solano, CA
Modesto, CA	Stanislaus, CA	Ventura, CA	Ventura, CA
New York, NY	New York, NY	Visalia-Tulare-Porterville, CA	Tulare, CA
Orange County, CA	Orange, CA	Waco, TX	McLennan, TX

TABLE A3
Domestic Occupational Distribution: Migrants and Non-migrants

Occupation	% of Migrants	% of Non-migrants	Occupation	% of Migrants	% of Non-migrants
Professional	0.84	2.62	Unskilled worker (mining)	1.24	1.17
Technical worker	0.45	1.34	Unskilled worker (construction)	1.44	1.49
Professor (higher education)	1.73	3.70	Unskilled worker (other)	8.82	7.40
Other educator	0.74	1.96	Transportation worker	4.95	6.03
Artist, performer, athlete	0.79	0.85	Service and administrative supervisor	0.25	0.78
Administrator or director	0.89	1.80	Administrative and support worker	2.48	4.61
Agriculture	34.67	25.19	Retail establishment merchant	2.67	3.26
Supervisor in manufacturing or repair	0.84	1.10	Retail establishment worker	1.68	2.47
Skilled worker (food, beverage, tobacco)	0.89	0.97	Sales agent	5.40	3.65
Skilled worker (textile, leather)	1.39	2.30	Other sales worker	0.89	1.48
Skilled worker (wood, paper, printing)	0.74	0.65	Ambulatory worker	1.14	1.04
Skilled worker (metal, machinery)	3.52	4.20	Personal service or domestic worker	4.80	3.35
Skilled worker (construction)	3.47	3.06	Security or police officer, firefighter	1.29	1.96
Skilled worker (electrical, electronic)	0.79	0.81	Other protection services worker	0.05	0.29
Skilled worker (other)	9.06	7.93	Other or unknown occupation	0.35	0.75
Heavy equipment operators	1.73	1.78			

Sample includes men age 16-75 who were employed in Mexico at the time of the survey. Migrants are those with a labor history in the United States (sample size 2019); non-migrants are those without a U.S. labor history (sample size 6567).

TABLE A4
Estimated Occupational Log Wage Premium Relative to Agriculture

Occupation	Premium	Occupation	Premium
Professional	.5982*	Unskilled worker (mining)	.2216*
	(.0542)		(.0804)
Technical worker	.5155*	Unskilled worker (construction)	.2654*
	(.0641)		(.0662)
Professor (higher education)	.4735*	Unskilled worker (other)	.1814*
	(.0623)		(.0261)
Other educator	.5099*	Transportation worker	.4286*
	(.0831)		(.0350)
Artist, performer, athlete	.2534*	Service and administrative supervisor	.4165*
	(.0591)		(.0779)
Administrator or director	.6873*	Administrative and support worker	.3676*
	(.0596)		(.0410)
Supervisor in manufacturing or repair	.4481*	Retail establishment merchant	.5216*
	(.0729)		(.0549)
Skilled worker (food, beverage, tobacco)	.2786*	Retail establishment worker	.1793*
	(.0706)		(.0468)
Skilled worker (textile, leather)	.2461*	Sales agent	.4108*
	(.0461)		(.0446)
Skilled worker (wood, paper, printing)	.4340*	Other sales worker	.3698*
	(.0741)		(.0659)
Skilled worker (metal, machinery)	.4498*	Ambulatory worker	.1911*
	(.0409)		(.0749)
Skilled worker (construction)	.3721*	Personal service or domestic worker	.2286*
	(.0315)		(.0449)
Skilled worker (electrical, electronic)	.2782*	Security or police officer, firefighter	.1678*
	(.0711)		(.0416)
Skilled worker (other)	.3206*	Other protection services worker	.4255*
	(.0368)		(.1042)
Heavy equipment operators	.2042*	Other or unknown occupation	.0933
	(.0804)		(.0685)

Estimated from regressions of log annual income/earnings on occupation, education, age and community fixed effects in each community's survey year. Wages winsorized at the 5^{th} and 95^{th} percentiles within each community. Sample covers male household heads age 16-75 who were employed in Mexico at the time of the survey. Standard errors clustered at the community level in parentheses. Stars indicate significance at the .05 level.

TABLE A5
Predictors of Business Ownership

	Any Business (1)	**Store (2)**	**Street Vendor (3)**	**Rest./Bar (4)**	**Workshop (5)**	**Factory (6)**	**Middleman (7)**	**Pers. Service (8)**	**Prof. or Tech. Service (9)**	**Other Service (10)**	**Agric. (11)**	**Cattle Raising (12)**	**Other (13)**
Proportion of Businesses	*100.00%*	*24.51%*	*18.06%*	*3.59%*	*15.40%*	*1.82%*	*6.25%*	*1.80%*	*1.62%*	*1.35%*	*4.97%*	*4.08%*	*16.54%*
Past or current migrant	.0536*	.0240*	.0154*	.0014	.0082	-.0001	.0029	.0004	-.0018	-.0005	.0003	.0014	.0061
	(.0102)	(.0059)	(.0062)	(.0020)	(.0056)	(.0018)	(.0030)	(.0013)	(.0012)	(.0014)	(.0033)	(.0023)	(.0047)
Current migrant	-.1430*	-.0298*	-.0326*	-.0019	-.0409*	-.0001	-.0092*	-.0015	-.0015	-.0013	-.0042*	-.0072	-.0199*
	(.0167)	(.0082)	(.0064)	(.0033)	(.0067)	(.0023)	(.0031)	(.0014)	(.0015)	(.0018)	(.0020)	(.0037)	(.0053)
Age	.0158*	.0036*	.0017	.0015*	.0039*	.0006	.0018*	.0006*	.0005	.0004	-.0001	.0006	.0021*
	(.0018)	(.0010)	(.0011)	(.0004)	(.0007)	(.0002)	(.0005)	(.0003)	(.0003)	(.0003)	(.0005)	(.0005)	(.0009)
$Age^2/100$	-.0107	-.0015	-.0013	-.0013*	-.0037*	-.0005	-.0016*	-.0005	-.0004	-.0003	.0007	-.0001	-.0011
	(.0197)	(.0011)	(.0012)	(.0005)	(.0008)	(.0002)	(.0005)	(.0003)	(.0003)	(.0003)	(.0007)	(.0006)	(.0009)
Years of education	.0326*	.0100*	.0007	.0023*	.0115*	.0008	.0039*	.0008*	-.0008	.0001	.0010	.0027*	.0039*
	(.0032)	(.0018)	(.0016)	(.0007)	(.0014)	(.0005)	(.0010)	(.0004)	(.0006)	(.0004)	(.0008)	(.0008)	(.0014)
Years of $education^2/100$	-.1224*	-.0416*	-.0123	-.0094*	-.0605*	-.0037	-.0116*	-.0029	.0117*	.0007	-.0054	-.0138*	.0062
	(.0183)	(.0102)	(.0077)	(.0037)	(.0082)	(.0027)	(.0057)	(.0025)	(.0046)	(.0024)	(.0043)	(.0041)	(.0092)
Community fixed effects?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	12,849	12,849	12,849	12,849	12,849	12,849	12,849	12,849	12,849	12,849	12,849	12,849	12,849
R^2	.0889	.0311	.0270	.0150	.0603	.0109	.0255	.0195	.0266	.0219	.2037	.0421	.0670

Standard errors clustered at the community level in parentheses. Sample includes employed men age 16-75 in the survey year. Stars indicate significance at the .05 level.

TABLE A6
Earnings Premia to Business Ownership

Business Type	**Proportion of Businesses** **(1)**	**Premium** **(2)**	**Premium** **(3)**
Any	*100.00%*	*.1721**	*.1446**
		(.0231)	*(.0209)*
Store	24.51%	.0873*	.0801*
		(.0342)	(.0296)
Street Vendor	18.06%	-.0281	.0061
		(.0330)	(.0332)
Restaurant or Bar	3.59%	.3427*	.3275*
		(.0731)	(.0818)
Workshop	15.40%	.1997*	.1827*
		(.0352)	(.0330)
Factory	1.82%	.3015*	.3172*
		(.0711)	(.0635)
Middleman	6.25%	.3966*	.2717*
		(.0602)	(.0599)
Personal Service	1.80%	.2430	.1996
		(.1314)	(.1234)
Professional or Technical Service	1.62%	.5412*	.3021*
		(.0829)	(.0781)
Other Service	1.35%	.5480*	.4024*
		(.2037)	(.1747)
Agriculture	4.97%	-.0094	.0519
		(.0719)	(.0683)
Cattle Raising	4.08%	.2114*	.2022*
		(.0906)	(.0836)
Other	16.54%	.2625*	.1720*
		(.0452)	(.0428)
Community Fixed Effects		Y	Y
Age and Education Fixed Effects		N	Y

Standard errors clustered at the community level in parentheses. Sample includes men age 16-75 who were employed in Mexico at the time of the survey. Sample size is 8602. Stars indicate significance at the .05 level.