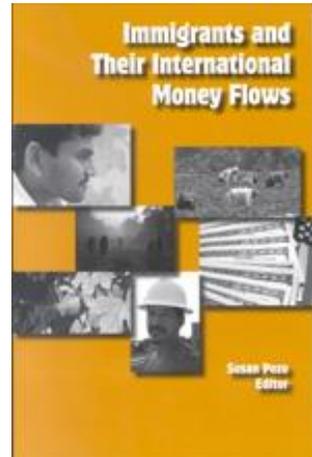

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How Does Migration Affect Local Development?

What Mexico's Experience Tells Us

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Close to 200 million people live in a country other than that of their birth. Driven by large differences among countries in the wage rates paid to workers, the number of migrants worldwide continues to grow by about 3 percent a year. The largest share of these migrants move from developing to developed countries and have low to moderate education levels. A recent World Bank report (2005) estimates that in 2005 migrants returned \$167 billion to their countries of origin.¹ Remittance flows have increased even more rapidly than migrant flows in recent years. According to the World Bank data, remittances more than quintupled between 1990 and 2005, an annual growth rate of 12 percent. The amount of remittances is now comparable to the flow of foreign direct investment and is about twice the size of foreign aid flows (World Bank 2005).

The 10 million Mexican migrants in the United States represent about 5 percent of the world migrant total. The \$20 billion they sent home in 2005 represents more than 10 percent of world remittance transfers. As these measures underscore, the Mexico–United States migration pattern is surely the largest unilateral flow of people (in one direction) and resources (in the other) in the world.² For Mexico, migration to the United States is a significant economic and demographic phenomenon. Around 10 percent of individuals born in Mexico currently reside in the United States. The remittances these migrants send back to Mexico represent only about 2.5 percent of Mexico's national income. However, Mexican migration is geographically concentrated.

In some states, remittances represent more than 10 percent of income, and in some regions within states, a much higher percentage.

Both migration flows from Mexico and remittance flows to Mexico have grown rapidly in the past decade, mirroring international trends. The U.S. Census Bureau (2003) estimates that the Mexican-born population of the United States increased by 4.8 million during the 1990s and has continued to increase by 400,000 to 500,000 annually since. The Bank of Mexico (Banco de México 2007) estimates that remittances totaled \$2.5 billion in 1990, \$5.6 billion in 1998, and \$20 billion in 2005, a 1990–2005 annual growth rate of 15 percent.

In what ways might these growing remittances affect the circumstances of households in sending countries (that is, countries that send migrants abroad)? Given the large sums flowing as remittances, it is easy to forget that remittances are actually large numbers of small flows: a typical recipient household in Mexico receives a few hundred dollars a month. This gives remittances a very different character from other international flows, such as foreign direct investment or international aid. Remittances flow to individuals, usually to those residing in households in the lower part of the income distribution. A growing number of researchers are examining the impact of remittances on household economic outcomes. I will summarize what we have learned from these studies and will also highlight an issue that makes isolating the impact of migration or remittances on the economies of sending countries very difficult.

MEASURING THE IMPACT OF MIGRATION

How can we measure the impact of migration on economic outcomes in sending countries? The simplest way would be to compare households with migrants and households without migrants. But in fact, such a comparison might be very misleading, because of the nature of migrants themselves. Migrants are not (or at least, are seldom) randomly selected from the population. For the most part, individuals, or individual households, choose to migrate, and others choose not to migrate, for a wide variety of reasons. Some characteristics that affect the likelihood of migrating are easy to measure. For instance, the relative returns

to university education in Mexico are greater than in the United States. Thus, we might expect fewer individuals with a university education to migrate. This we can easily measure. But international migration involves risk—the risk of not finding a job and the risk of traveling, primarily. So less risk-averse individuals or households may also be more likely to migrate. However, risk aversion is difficult to measure, and it may affect a variety of other economic decisions and outcomes.

The connection between migrant households and the formation of microenterprises, an important element in the economies of sending nations, suggests the complex interplay of forces to be considered in analyzing the causes and effects of migration. If starting a household business requires capital, and if capital markets function poorly, then money earned abroad might be an important source of capital to start a business. In fact, data from the 2000 Mexican population census indicate that there is a strong connection between migration and the formation of microenterprises. Table 4.1 shows self-employment rates among household heads, both in households with and in households without migrants, as measured by the census.³ In both urban and rural areas, and for both males and females, household heads are more likely to be self-employed in households with migrants.

Might this difference be caused by migration? Is it the result of remittance flows from migrants? Perhaps. But it also is possible that both migration and self-employment are caused by some third factor that is difficult to control for in making the comparison. Those who choose to migrate may have more energy and be more entrepreneurial than those who choose not to migrate. Those people who tend to be more entre-

Table 4.1 Self-Employment Rates in Mexico (%)

	With migrant in family	Without migrant in family
Urban males	36.8	27.4
Rural males	44.9	36.6
Urban females	38.0	26.8
Rural females	44.0	37.0

NOTE: Data are for adults aged 18–65. Sampling weights are used so that the sample represents all urban (population more than 100,000) and all rural (population less than 15,000) areas.

SOURCE: Mexican 2000 census population data.

preneurial may be both more likely to migrate and more likely to enter self-employment.

Untangling cause and effect is the challenge. Ideally, we would observe a group of identical individuals, some of whom migrate and some of whom do not. Differences between the groups would then be attributable to migration. However, except in a few cases where migrants in formal programs are chosen by lottery, this is not likely to be possible. So we have to look for alternative ways of finding appropriate subsets of the population to compare with migrants. In Mexico, I would argue, we can make use of the fact that migrants historically have come disproportionately from a certain region of the country. A key to identifying the impacts of migration on households in Mexico is that, at least historically, a handful of states in central-western Mexico have provided more than half of the migrants to the United States. I will refer to this region as the high-migration region. With some additional assumptions, we can compare outcomes of households in the high-migration region with outcomes of households in other, low-migration regions of Mexico.

Why do we need additional assumptions? Well, migration to another country requires some entrepreneurial initiative and a lot of energy. Sometimes people of a given region have a reputation for being particularly entrepreneurial. Before we compare households in the high-migration region with those in low-migration regions, we need to rule out the possibility that those in the high-migration region are not, collectively, more entrepreneurial or energetic.

There are two steps to eliminating this possibility. First, we need to ascertain that the differences in migration rates across regions are caused by factors other than differences in individual initiative. Here, understanding the origins of migration patterns is critical. Because early migration patterns are interesting and, it turns out, important to identifying the impacts of migration in Mexico, I will discuss them in some detail.

Second, even if differences in migration were caused by factors other than the characteristics of the people in the regions, we need to be sure that migration rates are not correlated by happenstance with characteristics that might lead to favorable economic outcomes.

In the 1990s, fully a third of the migrants to the United States came from one of three states in central-western Mexico: Jalisco, Michoacán, and Guanajuato (Rodríguez Ramírez 2003). Residents of these states

were roughly twice as likely to migrate as the average Mexican. Just 1.5 percent of migrants came from the four states east of the Isthmus of Tehuantepec—Chiapas, Campeche, Yucatán, and Quintana Roo—which are home to 7 percent of the population.

Why did the central-western region of Mexico become such an important source of migrants? The answer turns out to be railroads. The first wave of migration from Mexico to the United States occurred early in the twentieth century. Demand for labor in the United States increased when migration from Europe slowed with the start of World War I. Many Mexican workers were recruited to help build rail lines in the southwestern United States. At the time, northern Mexico was scarcely populated. Thus, labor recruiters from the United States looked to the interior of Mexico. Recruiters chose as their destinations the interior states they could reach most quickly and at the lowest cost. These were the states accessible by rail.⁴

Figure 4.1 shows a map of Mexico with the major north-south rail lines as they existed around 1900. There were three major north-south rail lines in Mexico at that time, each built between 1884 and 1900. The first, the Central Mexican Railroad, went south from what is now Ciudad Juárez to Irapuato in the state of Guanajuato, where it branched east to Mexico City and west through Guadalajara to Colima near the Pacific Coast. In the north, the Central Mexican Railroad connected to the Southern Pacific and Texas Pacific railroads in Texas. A second line, the Mexican International Railroad, ran a shorter distance, from Durango through Chihuahua to Piedras Negras, then connected with the Southern Pacific in Eagle Pass, Texas. A third, the Mexican National Railroad, traveled north from Mexico City through San Luis Potosí and Monterrey, reaching the border at Nuevo Laredo, just across the Rio Grande from the southeastern Texas town of Laredo. This third line was less well connected to rail lines in the United States.

The state of Jalisco and its capital, Guadalajara, represented the closest area with a large population that was directly linked by rail. As a result, Guadalajara became the center of the high-migration region. By one estimate (Foerster 1925), 44 percent of migrants registering in Texas, Arizona, New Mexico, and California came from just three states in Mexico: Jalisco (20 percent), Michoacán (14 percent), and Guanajuato (10 percent). (In 1920, these four U.S. states were home to more than 90 percent of the Mexican-born population in the United

Figure 4.1 Major North-South Rail Lines in Mexico, circa 1900

SOURCE: Author's rendition.

States [Borjas and Katz 2005].) Another source puts the share of migrants to the United States coming from these three Mexican states at 33 percent over the 1926–1932 period (Durand, Massey, and Zenteno 2001). Foerster's 1924 data suggest that almost no migrants came from the states east of the isthmus of Tehuantepec; the present-day states of Chiapas, Campeche, Yucatán, and Quintana Roo were not connected by rail to the rest of Mexico and collectively accounted for less than 1 percent of the migrants in 1924.

Early migration was very highly correlated with distance to the railroad. The state-level correlation between distance to the rail lines and migration rates in the 1920s is 0.78. Of course, now few migrants travel to the United States by rail. Do the early rail lines remain an important factor in explaining the states of origin of migrants? The answer is yes. Early migrants provided information to others in their communities about opportunities for work in the United States. During the 1990s—long after railroads stopped being the main means of transportation north—the states of Jalisco, Michoacán, and Guanajuato remained the

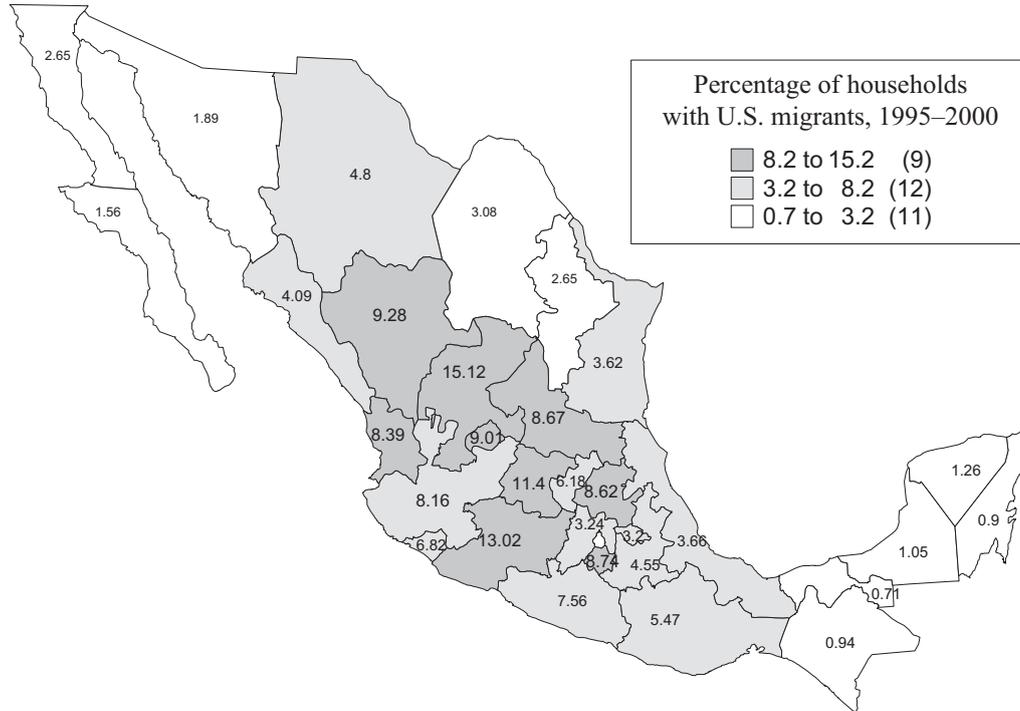
three states with the largest number of migrants going to the United States. Each accounted for about 11 percent of the national total, and collectively they accounted for 33.3 percent—almost exactly the same as the 33 percent share that Durand, Massey and Zenteno (2001) cite for the 1926–1932 period.⁵ Overall, the state-level correlation between migration in the 1920s and migration in the second half of the 1990s is 0.43; the correlation between migration during the second half of the 1950s and the second half of the 1990s is 0.71. The early migrants established networks, which reproduced themselves.

Both the data and the historical accounts suggest that the early rail lines caused the central-western states in Mexico to become the most important source of migrants. This resulting pattern, consistent over decades, opens the possibility that comparing outcomes in high- and low-migration states might provide insights into the impact of migration on local development. But we don't quite yet have a convincing story. We must first address concerns that present-day differences between people in high- and low-migration regions may stem from factors other than migration. Perhaps people from the high-migration region are different merely by chance, and the differences themselves did not cause the migration. Or perhaps the rail lines caused differences in outcomes, not just in the migration that they facilitated. Researchers who have relied on differences in historical migration rates to identify the impacts of migration in Mexico have concluded that neither of these is the case. I leave the details of their evidence to later in the chapter, where I discuss their results. For now, I will say only that the data indicate that the high-migration states were, on average, poorer than low-migration states during the first half of the twentieth century. Hence, premigration measures of health, education, and income are lower in the high-migration regions. A finding that households in high-migration regions now have better outcomes implies that they have overcome this initial disadvantage. If anything, it appears that using historical migration regions as a laboratory to observe migration's economic effects is likely to provide a conservative estimate of the impacts of migration.

Remittances and Migration

The 2000 Mexico population census asks whether any member of the household has migrated outside of Mexico during the past five

Figure 4.2 Mexican Migration Rates by State, 1995–2000



NOTE: The rate for the Federal District is 2.05 percent.

SOURCE: Author's calculations using Mexican 2000 census population data.

years. Slightly less than 5 percent of households report having at least one migrant to the United States. Figure 4.2 shows a map of Mexico's 32 states, labeled with the percentage of households in the state that had migrants during the years between 1995 and 2000. The first column of Table 4.2 shows the same data. As noted above, there is significant variation in migration rates across states. Most of the high-migration states are located in central-western Mexico, with the highest rates being found in the states of Zacatecas (which has migration from 15.1 percent of households), Michoacán (13.0 percent), and Guanajuato (11.4 percent). States in southeastern Mexico have the lowest rates: Tabasco, Campeche, Yucatán, and Quintana Roo all have rates below 1.3 percent.

The census survey also asks whether members of the household have received money from family members living in another country. Just over 3 percent of households report that one or more members receive remittances. The percentage of individuals in each state receiving remittances is shown in column 2 of Table 4.2. At the state level, the correlation between migration and remittance rates in the 2000 census (columns 1 and 2 of Table 4.2) is 0.95.

What are the characteristics of households receiving remittances? Several patterns are apparent in the data. First, rural households are much more likely to receive remittances than urban households. Just under 5 percent of households in localities with fewer than 5,000 inhabitants report that they receive remittances, compared to just under 2 percent of households in urban areas with more than 100,000 inhabitants. By education level, the general pattern is that the lower the education level of the household head, the more likely the household is to receive remittances. Among households whose heads have five or fewer years of schooling, 5.3 percent report receiving remittances. Among those with six years of schooling, 3.1 percent say they receive remittances, and among those with 12 or more years of schooling, 1.2 percent report receiving remittances. The pattern in education is consistent with the fact that schooling attainment is lower in rural areas. At each schooling level, rural households are about twice as likely to receive remittances as are urban households.

Since there is a strong correlation between the schooling level of the household head and household income, we can say in sum that rural and lower-income households are more likely to receive remittances

Table 4.2 State-Level Data on Households with Migrants and on Households Receiving Remittances (%)

	Households w/ international migrants, 1995–2000	Households receiving remittances in 2000
Aguascalientes	9.01	4.90
Baja California	2.65	3.00
Baja California Sur	1.56	0.70
Campeche	1.05	0.70
Chiapas	0.94	0.50
Chihuahua	4.80	3.40
Coahuila	3.08	2.50
Colima	6.82	5.10
Distrito Federal	2.05	1.10
Durango	9.28	7.80
Guanajuato	11.40	6.90
Guerrero	7.56	5.80
Hidalgo	8.62	3.80
Jalisco	8.16	5.70
Mexico State	3.24	1.40
Michoacán	13.02	8.50
Morelos	8.74	4.60
Nayarit	8.39	6.80
Nuevo León	2.65	1.70
Oaxaca	5.47	3.00
Puebla	4.55	2.50
Querétaro	6.18	2.70
Quintana Roo	0.90	0.60
San Luis Potosí	8.67	6.30
Sinaloa	4.09	3.30
Sonora	1.89	2.20
Tabasco	0.71	0.40
Tamaulipas	3.62	2.70
Tlaxcala	3.20	1.60
Veracruz	3.66	2.00
Yucatán	1.26	1.00
Zacatecas	15.12	10.40

NOTE: Correlation of the percentage of households with migrants and the percentage of households with remittances is 0.953. All averages are calculated using the factor weights provided in the census to reproduce the population of each state.

SOURCE: Mexican 2000 census population data.

than are urban and higher-income households. Because rural and lower-income households are those most affected by infant mortality and early dropout rates, we might expect remittances to have an effect on these outcomes. And because self-employment in Mexico is strongly negatively correlated with schooling attainment, we might also expect remittances to affect the rate of self-employment. And, finally, if remittances raise household income, then the direct effect of remittances should tend to reduce income inequality.

Remittances or Migration?

Using the historical migration networks to identify an appropriate group of households to compare with migrant households helps to resolve the problem of endogeneity arising from missing information. But we should be careful about which effects we seek to identify through the historical migration networks. Briefly put, the historical networks allow us to identify the long-run impacts of migration on local development. By themselves, the historical migration networks don't allow us to separate the impact of remittances from other impacts related to migration. For example, migrants living abroad may gain knowledge or formal education that will affect their behavior when they return to their home country. This appears to be a part of the story where health outcomes are concerned.

Of course, remittances are likely to be the most important channel through which migration affects development. But they may not be the only channel. Even though the historical migration patterns are highly correlated with current remittance flows, when we use the historical migration in a two-stage least squares setup, we will identify only this long-run historical component. Identifying the impact of remittances per se will require a different instrument. For instance, short-run rainfall shocks might be expected to correlate with remittance flows; however, the rainfall shocks are likely to affect most of the other outcomes we are interested in measuring.

USING HISTORICAL MIGRATION NETWORKS TO IDENTIFY THE IMPACTS OF MIGRATION

Several researchers have used Mexico's historical migration networks to identify the impacts of migration on many different outcomes. I will focus the discussion here on three outcomes: capital for microenterprises, health, and education. With one exception, the authors I refer to claim to be identifying the impact of migration over the long term rather than the short term.

As the data in Table 4.1 indicate, self-employment is very common in Mexico. In urban areas, close to a quarter of the labor force is self-employed. The majority (about 60 percent) of these workers have no employees. The remaining 40 percent are split almost equally between those who "hire" only unpaid family workers and those who hire at least one paid-wage worker. The raw data in Table 4.1 appear to suggest that migration is associated with entry into self-employment, since percentages of those who are self-employed range from 7 to 11 percent higher in the four demographic categories if they have a migrant in the family.

Woodruff and Zenteno (2007) examine the impact of migration on microenterprises. Migration may affect either the supply of capital available to invest in microenterprises or the demand for products produced by microenterprises. (Massey and Parrado [1994] coined the term "migradollars" to describe the latter phenomenon.) Remittances flowing into a community increase the spending power of its residents. When asked how they spend remittances, respondents of most surveys indicate that 90 percent or more of the money is spent on current consumption (immediate needs). This spending increases demand for goods sold by local stores. Since about a third of microenterprises are involved in retail trade, migradollars may have a significant impact on the sales—and hence on the capital investments—of microenterprises.

In order to separate the demand-side and supply-side impacts of remittances on microenterprise investments, Woodruff and Zenteno (2007) focus on a group they refer to as internal migrants—the subset of individuals who reside in a Mexican state other than their state of birth. They argue that migration networks survive not only across time but across space as well. Using 2000 population census data, they show that

people living in the same state are more likely to receive remittances if they were born in high-migration states rather than in low-migration states.

In other words, consider two households living in Mexico City, one whose head was born in Michoacán (high migration) and one whose head was born in Yucatán (low migration). The former is significantly more likely to receive remittances. Since these two individuals live in the same city, they face similar demand-side impacts from migradollars flowing into that city. But as the result of migration networks, they have different access to capital. Thus, by focusing on internal migrants, Woodruff and Zenteno (2007) are able to isolate the impact of migration on the supply of capital to microenterprises.

Examining first the effect of migration on the decision to be self-employed, Woodruff and Zenteno (2007) find no significant correlation between migration and entry into self-employment, instrumenting for migration with either the historical migration rates or with the distance of the state to the railroad network circa 1910. This suggests that the correlation found in Table 4.1 more likely reflects the fact that households that are more entrepreneurial are both more likely to have migrants and more likely to start an enterprise, and that migration has no causal effect on the formation of microenterprises in urban areas in Mexico.

However, Woodruff and Zenteno (2007) do find a clear and robust association between migration and the amount of capital invested in household enterprises. By their estimate, migration is causally associated with about one-quarter of all capital invested in microenterprises located in urban areas in Mexico. Table 4.3 shows the results they report on the impact of migration on investment in each of five investment categories. The largest effect is on vehicles. Since the authors are unable to separate returned migrants from those investing remittances sent by others, it is likely that part of this effect reflects the frequency with which migrants return to Mexico with a vehicle purchased in the United States. But investments in inventories and (more marginally) in tools and equipment are also significantly associated with migration.

The basic results provide support for the importance of remittances as a source of capital in microenterprises. But what effect does that capital have on the sales and earnings of the enterprises? Here the answer appears to differ according to the capital intensity of the sector. In high-capital sectors, migration is associated with higher investment,

Table 4.3 Log of Replacement Cost of Invested Capital by Type of Investment

	Real estate	Tools and equipment	Vehicles	Inventories	Other investments
Migration rate, state of birth	3.04 (0.85)	4.70 (1.69)	9.35 (2.38)	6.38 (2.00)	3.44 (1.01)
State fixed effects	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes
Number of observations	1,675	1,675	1,675	1,675	1,675
<i>R</i> -squared	0.13	0.42	0.34	0.41	0.34

NOTE: *t*-values in parentheses. Standard errors are corrected for clustering at the state level for the state of birth. Sample limited to owners 18–65 years of age working at least 35 hours per week. The migration rate is instrumented with the distance from the north-south railway lines, as described in the text. In addition to the variables shown, all regressions include seven variables indicating the sector of activity. Other controls included in the regression are years of schooling of the owner, the estimated labor market experience (age minus years of schooling minus 6), the age of the firm in years, the square of each of these variables, a dummy indicating that the owner reports data for two enterprises, and the income per capita in the owner's state of birth.

SOURCE: Woodruff and Zenteno (2007).

higher sales, and higher profits. In low-capital sectors, there is a much smaller positive impact on investment and profits, and no impact on sales. These results suggest that remittances from migration relieve capital constraints where they are more likely to bind—in high-capital sectors. But enterprises in low-capital sectors might be viewed as a place to stash the liquidity coming from migration, without generating such dramatic effects on the operation of the enterprise.

Hildebrandt and McKenzie (2005) are interested in the impact of migration on child health outcomes in Mexico. Here, the methodological problem they encounter is that healthier families may be more likely to migrate, hence a positive correlation between healthy children and migration may be the result of causation in either direction. To avoid this problem, the authors use state-level historical migration data as an instrument for current migration. Yet they still must address the concern that historical migration is associated either positively or negatively with contemporaneous health conditions. However, they find that migration rates in 1924 are not significantly correlated with child mortality rates in 1930, the earliest date for which such data are available.

They also find that historical migration rates are largely uncorrelated with measures of health services in 1996.

Hildebrandt and McKenzie find that migration has a large and significant impact on the well-being of children in Mexico. They use data from the 1997 Mexican demographic survey of households known as ENADID, which includes information on whether anyone from the household has ever migrated.⁶ Because they are interested in the impact of migration on children after the act of migration, they define migrant households as those households with at least one migrant going to the United States before the beginning of 1994, and nonmigrant households as those with no migrants or later migrants. Hildebrandt and McKenzie report positive effects of migration on the health of children in Mexico once the endogeneity of migration is taken into account. The effects are large. Migration is associated with about a 3.0-percentage-point reduction in the probability of a baby dying in the first year of life, and an increase in birth weight of 350 grams, or around 0.8 pounds. The authors' OLS results suggest no significant correlation between migration and health. The lack of significance in the OLS regressions combined with the significant positive outcomes found in the instrumental variable regressions together suggest that the positive health outcomes themselves make migration less likely. Not all of the impacts of migration on children's health are positive, however. Children born in migrant households are less likely to be vaccinated or to see doctors during the first year of their lives. Hildebrandt and McKenzie attribute this to greater time demands on the parent because of migration from the household.

The findings of Hildebrandt and McKenzie are corroborated by López Córdoba (2005), who uses *municipio* (county) level data from the 2000 Mexican population census to examine the impact of migration and remittances on health and education. López Córdoba attempts to separate the impact of migration from the impact of remittances by using historical migration to control for migration and by using current remittance flows to measure remittances.⁷ Because historical migration rates are available only at the state level, López Córdoba proxies for historical migration by measuring the distance from each *municipio* to the nearest rail line existing in the 1920s, plus the distance from that point to the border. Since most migrants—and labor recruiters—traveled by rail at that time, the distance proxies for the cost of migration. López Córdoba also includes a measure of the percentage of house-

holds in each municipio that reported receiving remittances in 2000. His claim is, then, that the distance variable accounts for long-run impacts of migration and allows for the isolation of the impact of current remittance flows, through the remittance variable. López Córdoba finds that infant mortality is decreasing in the share of households receiving remittances and increasing in the historical cost of migration. The latter implies again that migration is negatively associated with infant mortality rates, since migration itself falls as migration costs rise. López Córdoba focuses his discussion on the magnitude of the effect of remittances, which appears to be about a third of the magnitude of the effect reported by Hildebrandt and McKenzie.

There is slightly more disagreement with respect to migration's effect on educational attainment, but a general picture emerges from several studies addressing this issue. Several issues make understanding the impact of migration on education particularly difficult. For one thing, most databases organize individuals by households. As early as age 16, children begin to split off to form their own households, or, more frequently, join the household of a relative in another city. Tracking the individual to the remittance behavior of the household then becomes impossible. Also, in urban areas, at earlier ages the children's schooling attainment and attendance do not vary much, because primary schooling is universal in urban Mexico and lower secondary schooling is nearly so.

With this in mind, Hanson and Woodruff (2003) study educational attainment in rural areas in Mexico among children 10–14 years of age. An issue for the analysis of dynamics in rural regions is that households seldom move from rural areas in one state to rural areas in another state. Thus, the strategy Woodruff and Zenteno (forthcoming) use to separate high-migration households and high-migration states is not available to Hanson and Woodruff. Instead, Hanson and Woodruff juxtapose the historical migration rates with household characteristics that are associated with migration, such as age and education of the mother. They find that migration has a positive effect on schooling in households in which the female head has two or fewer years of schooling. About a third of households in rural areas have female heads with two or fewer years of schooling. Among the two-thirds of the rural households in which the female head has higher levels of schooling, Hanson and Woodruff find a significant effect only among 10- to 12-year-old boys.

McKenzie and Rapoport (2006) use the ENADID 1997 survey in Mexico to examine the impact of migration on schooling outcomes among 12- to 18-year-olds in localities with populations below 50,000. They find that migration has a negative effect on schooling for both boys and girls 16–18 years of age, and a negative effect among boys aged 12–15. Hanson and Woodruff also find a negative effect among boys aged 13–15 whose mothers have three or more years of schooling. Among girls of the same age, Hanson and Woodruff find a positive, significant effect where mothers have low schooling and a negative, insignificant effect where mothers have three or more years of schooling. McKenzie and Rapoport attribute the negative effects of migration on schooling among 16- to 18-year-olds to a low return on education (since education obtained in Mexico has a low value in labor markets in the United States) and to higher opportunity costs caused by missing household members. However, it may also be the case that continuing on to high school requires moving out of the household to a city, since high schools are not common in rural areas. The question then is whether those who have stayed in school and left the household are reported as regular members of the household. If they are, then the results suggest a strong negative impact of migration on educational attainment at higher levels.

Finally, McKenzie and Rapoport (2004) examine the broader impacts of migration on income inequality in Mexico, again using historical migration as a means of identifying the impacts. They reach the interesting conclusion that migration initially increases inequality, because the cost of migration means that the poorest households do not migrate. However, once migration networks are established in a community, the costs of migrating fall. Members of poorer households then migrate with more frequency, and inequality is reduced.

Most of the issues addressed in the research on impacts of migration—health, education, and capital for household enterprises—are particularly acute problems among the lower-income households in Mexico. With the exception of the suggestion that migration may have a negative impact on high school education, the research indicates that migration has a positive impact on economic outcomes in each of these areas. Since, as was noted earlier, remittances flow to lower-income (as measured by the schooling attainment of the head) and rural house-

holds, this suggests that over the longer term, we should expect remittances to reduce income inequality in Mexico.

CONCLUSION

I have focused on the impacts of migration from a single country, Mexico. Households with members who migrate abroad are likely to differ in systematic ways from households without migrants. The difficulty in measuring all of the ways in which these two groups of households differ presents a challenge for those attempting to identify the impacts of migration on sending countries. Is an observed difference the result of migration, or is it the cause of migration? Absent a strategy for identifying an appropriate comparison group, this is a difficult question to answer. For much of the past half-century, development economists have been primarily concerned with the negative impacts of migration on sending countries, such as brain drain. But an increasing number of studies examining diverse outcomes in Mexico are showing that migration has positive impacts there. Taken together, the studies also suggest that migration's effects are complex. In Mexico, it appears that educational attainment increases for younger children but decreases for older children. Child mortality appears to decrease with migration, but so do visits to doctors and vaccinations. Self-employment rates in urban areas remain unchanged, but the level of capital investment in enterprises and the earnings derived from those enterprises increase.

Whether migration has similar effects in other sending countries is unclear. What is clear is that the best strategies for untangling these effects will vary from country to country and will take advantage of circumstances that allow for new insights into the phenomenon of remittances. The key is not the specific instrument used to separate cause and effect, but the identification of an appropriate instrument for a given region or country. In Mexico, historical migration patterns are useful vehicles for comparison. In other countries, researchers have devised other novel strategies. One example of this is provided by Yang's (2004) work measuring the impact of remittances in the Philippines. Yang uses the devaluation of Asian currencies in 1997–1998 to identify the impacts of remittances on economic outcomes. This strategy is specific

to the Philippines, whose migrants are dispersed around the globe. The devaluation of many Asian currencies in the 1997–1998 period provided a nice natural shock to remittance flows into the Philippines: the Philippine peso value of remittances from migrants to the United States, or to Middle Eastern countries paying wages in dollars, increased when the Philippine currency was devalued. But since the Korean, Thai, and other Asian currencies were devalued at the same time, the remittances of workers in those countries did not similarly increase.

It is not possible to exploit this kind of variation in Mexico or Central America, where the vast majority of migrants go to a single country, the United States. However, isolation of the impacts of migration in Mexico, an important sending country, is possible because patterns of historical migration allow us to identify an appropriate comparison group against which to measure the progress of migrant households.

Most of the issues addressed in the research on impacts of migration—health, education, and capital for household enterprises—are particularly acute problems among the lower-income households in Mexico. With the exception of the suggestion that migration may have a negative impact on high school education, the research indicates that migration has a positive impact on economic outcomes. Since remittances flow to lower-income (as measured by the schooling attainment of the head) and rural households, this suggests that over the long term we should expect remittances to contribute to a reduction of income inequality in Mexico.

Notes

1. Remittance flows are sometimes divided into three categories: compensation for workers, remittances, and migrant transfers. The first two are differentiated by the length of time the worker is resident in the destination country and whether he or she is considered a resident there. Both of these are captured as current flows in the balance of payments. The third category is captured on the capital account side of balance of payments. Since governments often have a difficult time identifying current flows with precision, the sum of the three categories is likely to be more accurate than the individual categories. Even so, we should recognize that remittance flows are difficult to track and that the data provided are only estimates.
2. As of 2000, only Russia (12.2 million) had more emigrants than Mexico (10.1 million), according to estimates (Parsons et al. 2005). About 95 percent of mi-

- grants from Mexico live in the United States, while the Russian diaspora is more dispersed geographically.
3. The census distinguishes between households with and households without migrants by asking whether anyone in the household has migrated during the past five years—that is, between 1995 and 2000.
 4. Railroads were the only practical means for traveling long distances over land in Mexico in the early 1900s. According to Coatsworth (1972, pp. 86–93), stage-coach travel in 1910 was three times as costly and was only one-fifth as fast.
 5. Estimates by state vary slightly, but one reasonable estimate based on Mexican census data suggests that during the 1990s 11.1 percent came from Guanajuato, 11.2 percent from Jalisco, and 11.0 percent from Michoacán (Rodríguez Ramírez 2003).
 6. The survey is conducted at five-year intervals. ENADID stands for Encuesta Nacional de la Dinámica Demográfica, or National Survey on Demographic Dynamics.
 7. López Córdoba uses the coefficient of variation in historical monthly rainfall as an instrument for current remittance receipts. He argues that higher variation in rainfall within the year gives rise to a greater need for consumption-smoothing strategies, including remittances.

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