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Migrant Remittances

An Untapped Resource for International Development?

ABSTRACT Untapped resources are hard to come by in the realm of international development. Migrant remittances, however, represent a relatively unexploited resource bank for developing countries. Still, researchers often debate the degree to which migrant remittances actually incite community development in practice. I rekindle the this theoretical discussion by comparing the development effects of household remittances with investments made through the remittance-channeling program 3×1 para migrantes in Guanajuato, Mexico. Regression analysis demonstrates that household remittances repress development outcomes across Guanajuato's 46 municipalities, while remittances invested through the 3×1 program have a positive effect on indicators of municipal wellbeing, including healthcare, education, and income. To my knowledge, this is the first attempt to systematically compare the development effects of household remittances with the development outcomes of remittances transferred through a government-supported program like 3×1 para migrantes. This research has meaningful implications for policy makers in migrant-sending regions around the world as well as agents of international development such as the International Monetary Fund and the World Bank.

INTRODUCTION

Remittances, or cash transfers sent from loved ones and family members living abroad, currently constitute a significant portion of capital flows for developing countries throughout the world. These transfers reflect the fact that individuals see migration not only as a means through which to directly improve their own lot in life but also as a way of contributing to the betterment of those that they leave behind. Still, relatively little is known about how remittances affect levels of human development—as measured in terms of access to education, health care, and income. Even less is known about the effectiveness of government programs that channel remittances toward specific community development initiatives.

Available research demonstrates that household remittances may indeed have both positive and negative influences on recipient communities. Early research, for example, highlights the potential negative effect of remittances on measures of equality (Reichert 1981; Stuart and Kearney 1981; Wiest 1973). Recent research adds to this literature by revealing that remittances are especially likely to exacerbate inequality at the beginning of migrant cycles (Adams, Cuecuecha, and Page 2008; Barham and Boucher 1998). Researchers also find, however, that remittances have multiplier effects within local economies, thus spurring employment and entrepreneurial opportunities by improving access to financial capital and credit (Adida and Girod 2011; Calderón, Fajnzylber, and López 2008; Durand et al. 1996). In addition, policy makers have long lauded the development potential of remittances.

A 1990 report titled *Unauthorized Migration: An Economic Development Response*, which was commissioned by the U.S. Congress following the Immigration Reform and Control Act of 1986, concluded that "there are no short-term solutions to the problem of undocumented migration" (U.S. Commission 1990:4). It did note, however, that remittances had the potential to alleviate the types of conditions that push people to emigrate in the first place. In fact, in recent years remittances have frequently outpaced international aid in developing countries. By 2012 remittance flows around the world were three times as high as foreign aid and nearly double foreign direct investment (World Bank 2014).

Governments and nongovernmental organizations around the world have taken note of the aforementioned trends. In a recent U.S. State Department communiqué titled "The Awesome Potential of Remittances," a U.S. diplomat stationed in Mexico City wrote, "Remittances can provide the poor with capital and a credit history, and they can be part of the impetus to improve socioeconomic conditions." The author also noted, however, that while "the use of remittances fascinates international organizations, governments, and development agencies . . . there is little accord on the proper channeling of remittances" (U.S. Embassy 2010). Thus, while remittances have emerged as the development mantra du jour, we have a relatively poor understanding of the degree to which they actually promote economic and social well-being within migrant-sending communities.

Our understanding of the potential of remittances to spur development is clouded by a lack of information on the longitudinal effects of different types of remittances on development outcomes in areas experiencing high emigration. No study to date, for example, has systematically compared the development effects of household remittances with the development outcomes of remittances transferred through remittance-matching programs such as the Mexican program 3×1 para Migrantes. This intellectual lacuna is particularly surprising given the fanfare accorded remittances within international development circles as well as the increased popularity of remittance-led development initiatives in countries like Colombia, El Salvador, Haiti, Mali, Peru, the Philippines, and Somalia. Given the relative size of remittance flows in developing countries, a better understanding of their impact on development outcomes across time has the potential to inform policy approaches designed to leverage mass emigration for the benefit of local development.

Do migrant remittances contribute to long-term community development in regions experiencing high levels of emigration? Furthermore, how does the impact of cash transfers to individual families compare to the effect of collective remittances channeled toward specific development programs? In this essay I provide initial insight into these queries by comparing the development effects of household remittances with investments made through the state-sponsored program 3×1 para Migrantes in the state of Guanajuato, Mexico.

The empirical analysis outlined in this study indicates that remittances alone do not drive long-term development. Regression results show that high levels of household remittances have an overall negative effect on development outcomes across 46 municipalities in the state of Guanajuato. In turn, my results reveal a positive relationship between the remittance-led development (RLD) program 3×1 para Migrantes and select measures of human development. On the basis of these results, I argue that, over the long run, meaningful RLD—measured by gains in health care, education, and access to income—requires a deep

and authentic partnership between economic actors, members of civic society, and local government. The regression results of my study, which are also informed by extensive qualitative data from central Mexico, indicate that under the right conditions the program 3×1 para Migrantes has the potential to underpin this type of relationship.

Remittance-led Development in Context

According to Mahbub ul Haq (1990:1, quoted as cited in United Nations Development Programme, n.d.), who established the Human Development Report in 1990, development is the process through which individuals gain access to "an enabling environment" that allows them "to enjoy long, healthy, and creative lives." In other words, by improving community access to education, health care, and income, development provides individuals with additional leverage over the factors that condition their lives. The basic formula for development is fairly simple: construct bridges and roads so that goods can get to market, students can go to class, and employees can consistently make it to work; build schools and pay teachers competitive salaries so that the next generation can cultivate their human capital today and go on to create innovative solutions for tomorrow's problems; support health care facilities so that citizens are able to live long, healthy lives; and finally, encourage local employment so that individuals are able to generate income and establish purpose in their lives. In short, the goal of development is to facilitate long, healthy, fulfilling, and sustainable lives for all individuals in society. Still, despite the relatively straightforward nature of development as a concept, in practice many countries around the world lack the necessary funding to support development initiatives with lasting impact. As a result, many people around the world—if not the majority—are condemned to live short, unhealthy, and difficult lives.

Unfortunately, resources for development initiatives are hard to come by in the realm of international development. As of 2006 developed countries dedicated a mere 0.44 percent of their respective GDPs to international aid, far short of the United Nations' goal of 0.7 percent set during the UN's 1970 General Assembly (UN Millennium Project 2006). Amid the dearth of funding for international development, untapped resources are increasingly valuable. With this in mind, migrant remittances represent a relatively unexploited resource bank for developing countries. As table 1 reveals, remittances make up less than 1 percent of world GDP. However, in developing countries—where the majority of the world's population resides—cash transfers from abroad contribute a much more significant percentage of capital flows. In Tajikistan, for example, remittances account for an astounding 35 percent of GDP. In middle-income countries, such as India, China, and Mexico, remittances form a much smaller percentage of GDP, but annual remittance flows in these countries reach well into the billions. In both India and China remittances topped the $50 billion mark in 2010. Similarly, over the last ten years Mexican diaspora communities have sent back an average of $20 billion per year.[1] During this same period total remittances around the world have averaged roughly $400 billion per year. Despite this, the effect of remittances on local development outcomes is not well understood. Further, we know relatively little about the effect of initiatives that purposefully channel remittances toward communal development.

TABLE 1. Remittance Flows around the World (in Millions of Dollars)

Rank	Total Remittances, $Millions (2010)		Rank	As a Percentage of GDP (2009)	
1	India	53,131	1	Tajikistan	35.1%
2	China	51,300	2	Tonga	30.3%
3	Mexico	21,997	3	Samoa	26.5%
4	Philippines	21,373	4	Lesotho	26.2%
5	Bangladesh	10,804	5	Nepal	23.8%
6	Nigeria	10,045	6	Moldova	22.4%
7	Pakistan	9,683	7	Lebanon	21.9%
8	Lebanon	8,409	8	Kyrgyz Republic	21.7%
9	Vietnam	8,000	9	Haiti	21.2%
10	Egypt, Arab Rep.	7,725	10	Honduras	17.6%
11	Indonesia	7,250	11	El Salvador	16.5%
12	Morocco	6,452	12	Jamaica	15.8%
13	Ukraine	5,595	13	Jordan	14.3%
14	Russian Federation	5,477	14	Guyana	13.7%
15	Serbia	4,896	15	Serbia	12.6%
	World	440,077		World	0.7%

Source: Remittances data, World Bank (2014).

Traditionally, emigration was viewed as an irrevocable form of exit that trapped migrants in a vicious cycle of dependency in which migrants and their families wasted away precious savings on superfluous consumption in hometowns and nearby urban centers (Reichert 1981; Stuart and Kearney 1981; Wiest 1973). This line of research noted that the more educated and financially better off are among the first to leave communities; after all, migration is a relatively expensive endeavor, and thus only a select few are able to benefit from trips abroad. Moreover, it was reasoned, migrant remittances are a personal transfer in which individuals who have left selectively send cash and material goods to those members of the community that they most care for. For this reason research regarding the effects of remittances in local communities has found that migrant transfers have the potential to exacerbate communal inequalities, especially at the beginning of the migrant cycle (Adams 1989; Adams, Cuecuecha, and Page 2008; Barham and Boucher 1998; Milanovic 1987). Following this line of thought, it was argued that migrants deepen local inequalities and deprive communities of much-needed human and financial capital and consequently do little to contribute to the long-term development of their hometown communities. Subsequent research challenged these early findings, arguing that remittances have multiplier effects within local economies, thus directly and indirectly stimulating employment, investment in public infrastructure, and income (Adelman, Taylor, and Vogel 1988; Adida and Girod 2011; Calderón et al. 2008; Durand et al. 1996). Regarding inequality, Stark, Taylor, and Yitzhaki (1986) document evidence supporting what they have labeled the "migration diffusion theory." On the basis of research in central Mexico, they argue that migration

follows a Kuznets curve-like trend, in which pecuniary differences within communities first rise as individuals begin to migrate but in time fall as more individuals leave and begin to send back a portion of their income (Stark et al. 1986; Taylor 1992; Taylor et al. 2008). Together, this line of research illustrates the emerging potential for a migrant "voice" in communal development and refutes the assumption that "exit" necessarily means migrants' irretrievable loss of positive influence within their hometown communities.[2]

One of the earliest studies to reveal the potential for remittances to incite local development in hometown communities was Adelman, Taylor, and Vogel's "Life in a Mexican Village: A SAM Perspective" (1988). The authors employed a Social Accounting Matrix (SAM) to analyze the structural makeup of a migrant-sending community in central Mexico. Their findings highlighted the emerging role of international migrant remittances in driving growth patterns in rural Mexican economies. Several years later, in a review of extant research, Durand and Massey (1992) found that on average less than 50 percent of migrant remittances was spent on production but that there was a great deal of variance in remittance spending patterns across communities. This latter finding led the authors to conclude, "It is more appropriate to ask why productive investment occurs in some communities and not in others" (p. 27).

Taylor et al. (1996) recognize two factors that stand in the way of effective RLD: (1) inadequate public services and infrastructure; and (2) the absence of factor markets, namely rural credit markets, which represses potential multiplier effects within local economies (p. 402). As the authors note, deficiencies in either of these two categories mean that the migrants and their families assume the full load of turning savings into production (Durand and Massey 1992; Quinn 2005; Taylor et al. 1996). As Georges (1990:170, quoted as cited in Taylor et al. 1996:402) explains, individuals migrate "because of the lack of meaningful development in the first place. In the absence of policies designed to channel migrants' savings into productive investment, it is naive to expect migrants to behave very differently."

Further complicating matters, while remittances clearly contribute to the well-being of select individuals in the short run, they appear to inhibit the types of policy environments that would improve the well-being of all individuals over the long run. Research by Adida and Girod (2011), for example, demonstrates that access to clean water and drainage improves in Mexican municipalities that receive relatively higher levels of remittances (p. 19). The same authors, however, find that local governments reduce their support for communities as financial transfers from abroad increase. In a panel study of 18 countries in Latin America, Doyle (2013) comes to a similar conclusion, contending that "the repeated receipt of remittances will bolster income, and economic security of recipients and therefore reduce the income risk. Over time, this will alter the preferences of recipients for welfare transfers. . . . [In time] this will translate into reduced support for political parties who advocate redistribution. The upshot is a reduction in government spending on welfare and social security" (p. 24). Goodman and Hiskey (2008) summarize this line of research by arguing that "[while remittances are] perhaps a constructive solution to the development failings of the state in the short term, at some point the transnational community will reach its limits in terms of what it can provide citizens, thus forcing those individuals to turn back toward a state that may have already left them behind" (p. 185).

RLD therefore appears to be a question of degree, in that the degree to which remittances stimulate development depends on local and regional factors that have the potential to either foster or inhibit the multiplier effects of remittances in local communities. As a result, one might expect that remittances would have a more lasting impact on overall development outcomes in those regions where cash transfers were channeled toward specific development ends. Until recently it would not have been possible to empirically test this hypothesis. However, the program 3×1 para Migrantes, which has been operating for just over a decade in states across Mexico, allows for a systematic comparison of the manner in which different forms of remittances affect development over time.

The Program 3×1 para Migrantes

Over the last decade different levels of the Mexican government have supported community-wide investments initiated by migrant organizations located in the United States, also known as Hometown Associations (HTAs). The state began courting migrants and their remittances as early as the late 1980s, but it was not until 2002, through the program 3×1 para Migrantes, that RLD was officially incorporated into the government's economic platform. The 3×1 program clearly illustrates the intersection of migration and development in modern Mexico. The program was spearheaded by President Vicente Fox (PAN, 2000–2006) and was expanded significantly under President Felipe Calderón (PAN, 2006–12). Furthermore, current president Enrique Peña Nieto (PRI, 2012–18) has indicated that the program will continue to receive strong federal support from his government.

The 3×1 program, which is housed in the Ministry of Social Development (SEDESOL), was designed to channel remittances toward community development projects, including bridges, roads, electricity grids, drainage systems, community centers, and occasionally, small business ventures. State and municipal representatives promote the program at the local level, and consulate officials promote it among diaspora communities abroad. The 3×1 program is structured so that each respective branch of government—federal, state, and municipal—matches migrant contributions toward community development projects, *peso por peso*.

Once migrants propose a 3×1 project to the municipal government, local officials submit it for state approval. All project applications include a technical evaluation, which outlines the project's viability and includes copies of any necessary permits and budget estimates. If a project is deemed feasible, and is in accordance with the rules of operation stipulated by the 3×1 program, the file is submitted for final evaluation to the Committee of Validation and Attention to Migrants (COVAM). Each state has its own COVAM, which consists of twelve representatives: three migrants, three municipal officials, three state officials, and three federal officials. Each year the COVAM votes on which projects to approve for funding. If a project is accepted, funds are allocated for the following fiscal year, and all parties involved are given a green light to move forward. If, on the other hand, a project does not receive a majority vote, it is returned to the municipality, and in most cases the government resubmits the project the following year (Aparicio and Meseguer 2011:7).

Taken together, the 3×1 program clearly reflects Mexico's effort in recent decades to court migrants as transnational citizens and vanguards of local development. The program is also a product of the nation's desire to create focused social programs geared toward

improving the lot of Mexico's most marginalized communities. Related to this, an important element of the 3×1 program is the potential synergy forged between migrants, their communities, and government officials. Migrants are often already involved in philanthropic projects within their hometowns; still, in many cases they lack the human capital, the time, and the funds necessary to carry out the types of investments that would be expected to have a lasting impact on their hometowns. For this reason, in theory, the 3×1 program represents a "win-win" in that the state benefits from the influx of extra development funds and migrants benefit from the state's capacity to oversee development projects. In this sense, through the 3×1 program migrants directly participate in the planning and implementation of development projects across the country, and government officials are brought closer to the stark realities of underdevelopment evident throughout much of rural Mexico. Given this level of cooperation, and the relatively sophisticated nature of project planning, one might hypothesize that 3×1 investments would be more effective in underpinning long-term community development than household remittances alone.

Still, to date we know very little about the actual development effects of the 3×1 program. In recent years researchers have begun to subject the 3×1 program to empirical scrutiny (Aparicio and Meseguer 2009, 2011; De Castro, Zamora, and Freyer 2006; Menocal 2008). Nonetheless, the focus of these investigations has centered on the manner in which local political cultures influence the distribution of funds within the 3×1 program. For example, Aparicio and Meseguer (2009, 2011) discover that political ambitions often play a role in determining the allocation of 3×1 funds. In turn, Simpser et al. (2014) and Waddell (2015) find that 3×1 investment patterns fluctuate with local election cycles, with such investments peaking in preelection years and declining in postelection years. Together, this nascent literature demonstrates that political motives play a role in underpinning investment cycles within the 3×1 program.

Despite the politicized nature of 3×1 projects, 3×1 investments may well have a favorable effect on local development outcomes when compared to traditional household remittances.[3] After all, most—if not all—development projects are "politicized" to one degree or another. However, despite the widespread exposure of the 3×1 program, including its marketing abroad as a "model" to follow, no author, to my knowledge, has researched the degree to which 3×1 investments actually affect development outcomes in practice. In the space that follows I address this empirical gap through a systematic analysis of RLD in the state of Guanajuato, Mexico.

CASE SELECTION

Guanajuato was deliberately selected for this project for several reasons. First, the state has a unique combination of high remittance flows and consistent participation in the 3×1 program. During the period 2002–11 Guanajuato was second only to Michoacán in terms of total remittances flows (Banco de Mexico 2003–12). And during the 3×1 para Migrantes program's first ten years in operation Guanajuato was among the top four funded states each year, rivaling 3×1 investment trends in Zacatecas, Jalisco, and Michoacán.[4] Second, the 3×1 program in Guanajuato lends itself to longitudinal evaluation. Although the program now operates across the country, it is historically linked to Guanajuato by former president

Vicente Fox; who, while serving as governor of Guanajuato (1995–99), spearheaded a state-sponsored remittance-matching program that later served as a prototype for the 3×1 program institutionalized at the federal level in 2002. As a result, in Guanajuato local and state officials are known to be proactive in the promotion of the 3×1 program. As Anselmo Meza, who is currently the codirector of the nongovernmental organization Migration and Development, explained to me in a field interview in the summer of 2012, "If the 3×1 program were to have any effect on development in Mexico, you should expect to find it in the state of Guanajuato. We have worked with migrants on development projects throughout central Mexico, and few states have participated as consistently in the program since its inaugural year in 2002, and no states have been as proactive in promoting 3×1 projects as state officials in Guanajuato. And unlike in other states, where the program is a mere bureaucratic formality, in Guanajuato state officials work very closely with migrants and so projects are often more in line with local development needs." Finally, there has been a great deal of variation in development trends across Guanajuato's 46 municipalities over the last decade. As a result, Guanajuato lends itself to statistical inquiry in a way that other states that participate in the 3×1 program do not.

QUALITATIVE EVIDENCE FROM THE FIELD

Although this project is largely quantitative in nature, my interpretation of the statistical results in the sections that follow would not have been possible without the aid of in-depth fieldwork carried out on the ground in Guanajuato, Mexico. With that in mind, prior to presenting the quantitative data used in this project, I briefly introduce the reader to my case study with a few snapshots from the field.

While conducting interviews in Guanajuato during the summer of 2011 I spoke with dozens of community leaders who had participated in the 3×1 program. In my conversations with these migrants I discussed the nature of 3×1 projects in great detail, and although it is beyond the scope of this article to review these exchanges in their entirety, the case of Jorge Martinez helps contextualize the process through which 3×1 projects get under way.

Jorge lives and works in Albuquerque, New Mexico. He has been employed at the same family-owned restaurant since 1991, and over the years he has maintained a strong relationship with his hometown. Each year he returns to Ojo de Agua (Jerécuaro, Guanajuato) during the months of July and December to visit family, and since the beginning he has sent remittances to his loved ones to help cover their costs of living. He also owns a small *tortilleria* or tortilla factory, financed by money sent home over the years, which his brother runs in his absence. Occasionally, like other migrants, he pitches in to help pay for the village's largest celebration, La Fiesta de la Santa Cruz, and he and his brothers played an instrumental role in the reconstruction of the town's temple. Then, in 2008 while on vacation in Ojo de Agua, he and a cousin began discussing different ways in which they could help their community progress. Together they decided that their first undertaking would be to repair the village's main road, which connects the town to the municipality's main city, Jerécuaro. When they returned to the United States they began calling up community members living in other states, and though many *paisanos* questioned the pair's good intentions, slowly but surely they put together a modest $10,000. The next time they returned to Ojo de Agua,

with no previous experience in road construction, they rounded up a group of men, loaded up Jorge's truck with gravel at the local supplies store, and set out to repair the town's road. They had just begun working when the town delegate, Salvador Rodriguez, stopped by to ask what they were doing.[5] After listening to their story, he informed them that the government had recently started supporting migrant-led community projects through a program called 3×1 para Migrantes. Jorge and his cousin thanked the representative. However, because of a lack of trust in local officials, neither of them ever looked into the program. Sometime later, after Jorge had returned to the United States, Mr. Rodriguez called him and told him that if he visited his local Mexican consulate in Albuquerque they would help him register an HTA with the Mexican government. A registered HTA, Mr. Rodriguez explained, would make his group eligible to receive $3 for every $1 they were able to raise for public work projects in Ojo de Agua, including roads. In the fall of 2008 Jorge registered his group with the Mexican consulate located in Albuquerque, and since then he has helped complete the construction of three roads in Ojo de Agua. The new roads have allowed for improved public transportation between the town and nearby Jerécuaro, which in turn has permitted its inhabitants to access better education and more reliable health care. To the developed world these improvements may seem minuscule. However, as anyone who takes the time to visit the small town and talk to its residents will quickly find out, for the inhabitants of Ojo de Agua the recent changes are nothing short of monumental. As one middle-aged male resident interviewed during a site visit in June of 2011 put it, "Everything you see here, the houses, the roads, the water system, the soccer field, all of it, it's all thanks to them [the migrants]. Without *los paisanos,* who knows if Ojo de Agua would even exist anymore!"

As the case of Ojo de Agua reveals, migrant remittances clearly influence daily life in areas currently experiencing high levels of emigration. Still, despite the ostensible role of remittances in spurring local development, it is unclear to what degree remittances actually leverage progress in the areas of health care, education, and income. With this in mind, in the sections that follow I empirically evaluate the impact of the 3×1 program and household remittances, respectively, on development outcomes at the municipal level in Guanajuato, Mexico.

Data

Table 2 illustrates the panel data used in this study. The panel includes 460 observations gathered across 46 municipalities in the state of Guanajuato, Mexico, during the period 2002–11. The municipality is the unit of analysis in this study. Examining the effects of RLD at the local level—within cities, villas, *poblados*, and ranchos—would limit our understanding of how money remitted from abroad affects development in municipalities that make consistently large investments in the 3×1 program. After all, human development is a collective project in which a new bridge, road, or electricity grid in one community may very well affect the well-being of community members in neighboring towns. In this sense, analyzing RLD at the municipal level helps us shed light on the effects of 3×1 investments and remittances across a given region. In addition, it provides a necessary link between macroanalyses of RLD (e.g., Acosta et al. 2008) and microanalyses of RLD (e.g., Adelman et al. 1988).

Variables Included in Regression Analysis

Variable	Mean	S.D.	Data Source
Human Development Index	.77	.05	INEGI
Infant mortality rate	21.9	8.01	INEGI
Education attendance rate	61.84	4.06	INEGI
% Pop illiterate	13.67	4.75	INEGI
GDP per capita*	7057.92	2372.76	INEGI
3x1 per capita*	42.68	74	SEDESOL
% Homes remittances	13.29	6.69	SNIM
% Homes return migrants	4.67	2.33	SNIM
Municipal revenue per capita*	2158.84	1433.42	SNIM
Ramo 26 per capita*	464.13	443.91	SNIM
Ramo 33 per capita*	304.78	344.76	SNIM
Municipal population (log)	10.92	.06	INEGI

Sources: Data from INEGI (2012), SEDESOL (solicited through the Institute of Transparency, Access to Information, and Protection of Personal Data [INAI 2012]), and SNIM (2012).

* Figures in Mexican pesos.

As the far right column indicates, data were collected from a variety of sources. The principal dependent variable in this analysis is the Human Development Index (HDI). Figure 1 outlines the three dimensions and corresponding indicators used to calculate the HDI for Guanajuato's 46 municipalities. The HDI, which is designed by the United Nations Development Programme (UNDP), is composed of development patterns logged by the National Institute of Statistics and Geography (INEGI). The HDI measures health care, education, and income and ranges from 0 ("completely undeveloped") to 1 ("highly developed"). In Guanajuato, highly developed municipalities approach .9, whereas the most underdeveloped municipalities are closer to .5.

Figure 2 plots human development from 2000 through 2010 across Guanajuato's 46 municipalities. As the reader will note, HDI levels improved a great deal during this time period. In 2000 very few of Guanajuato's municipalities surpassed .8 on the HDI scale. In turn, by 2010 more than nine of the state's municipalities exceeded .8 and all municipalities registered HDI levels above the .6 level. Furthermore, by 2010 several municipalities approached the .9 level, with one municipality, Celaya, surpassing it. Moreover, inequality between municipalities in terms of HDI has decreased over the last 10 years, as revealed by the reduced distance between the most developed and least developed municipalities in Guanajuato.

Regarding the HDI's individual measures, *infant mortality rate* is employed as an indicator of well-being. Across Guanajuato, from 2002 to 2011 there was an average of 21.9 deaths per 1,000 live births. This figure declined substantially over the time period in question, falling to 14.9 deaths per 1,000 live births by 2010 (INEGI 2012). Still, for the sake of comparison, in 2010 Mexico's national infant mortality rate was 14.4 deaths per 1,000 live births.
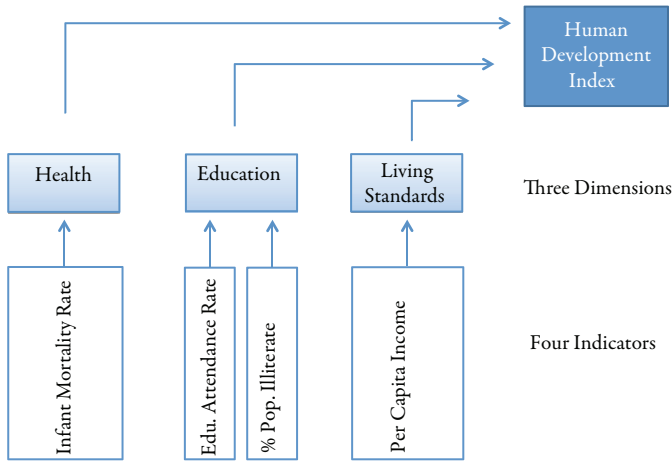
FIGURE 1. Components of the Human Development Index.
Sources: Data from INEGI; HDI indicators based on those of the United Nations
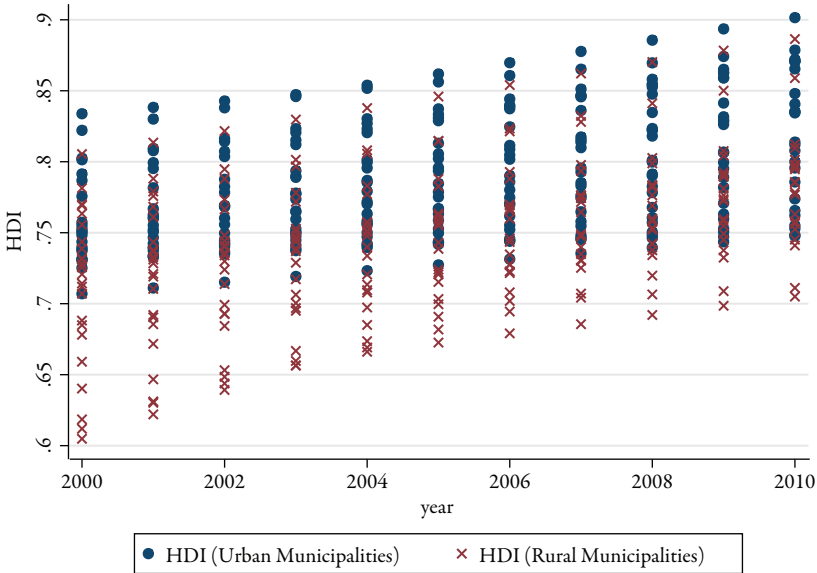Development Programme (UNDP).

FIGURE 2. Human Development in Guanajuato, 2000–2010.
Source: Author; data points calculated in STATA by author based on formula provided by United Nations
Development Programme (UNDP); raw data generated by INEGI, solicited through the Institute of
Transparency, Access to Information, and Protection of Personal Data (INAI 2012).

In the United States, in turn, there were only 4.29 deaths per 1,000 live births (Mathews
and McDorman 2012:1).

Concerning education, the variables *education attendance rate* and *% pop illiterate* are
used as indicators of education levels. From 2002 to 2011 nearly 62 percent of children and
young adults ages 6 to 24 were attending school. By 2010, the school attendance rate in
Guanajuato was 65 percent for children ages 6 to 24. Concerning illiteracy rates, from

2002 to 2011 about 13.6 percent of Guanajuato's population were unable to read or write. In comparison, in 2010 in the United States fewer than 1 percent of children age 15 and over were unable to read and write. Taken together, these variables indicate that, while education levels in Guanajuato improved during the time period in question, basic education is far from universal and lags behind levels recorded in highly developed nations.

Finally, with regard to living standards, the variable *GDP per capita* is used as an indicator of economic well-being. Over the ten-year period included in this study, GDP per capita averaged slightly over $7,000. By 2010 GDP per capita in Guanajuato was calculated at $8,834. However, at the national level GDP per capita was estimated at $14,400 in 2010 (INEGI 2012). In the United States, on the other hand, GDP per capita for the same year was estimated at $48,500 (CIA 2010). These stark contrasts, considered in conjunction with indicators of health care and education, help clarify why many residents from Guanajuato emigrate to stronger regional economies in search of work, and occasionally, to the United States.

Concerning independent variables, the variable *3×1 per capita* is calculated as the total amount of 3×1 investments made in each respective municipality divided by the municipality's population. Similar to *GDP per capita*, *3×1 per capita* provides a more accurate means of comparing 3×1 investments across municipalities. Since the 3×1 program specifically targets infrastructure projects in relatively marginalized communities, it is expected that 3×1 investments will contribute to significant improvements in overall development outcomes during the period 2002–11. It is anticipated, however, that 3×1 investments will have a substantially lower impact on income because the program generally provides little funding for small businesses.

The variable *% homes with remittances* represents the percentage of homes in a given municipality that receive migrant remittances. It could be argued that the total amount of remittances a given municipality receives would be a better measure. However, I favor the percentage of homes receiving remittances because in the state of Guanajuato family members frequently withdraw remittances in neighboring *muncipios*, and as a result, the location where remittances are withdrawn does not necessarily correspond to the location in which one might expect remittances to have an impact. The percentage of homes receiving remittances thus provides a better measure of potential remittance impact. Though some recent findings document a positive relationship between remittances and economic growth (Fajnzylber and López 2008), I expect that remittances will have a negative effect on municipal development outcomes. This expectation is grounded in the fact that most remittances are not invested in entrepreneurial projects or public infrastructure but rather are used for conspicuous consumption in and around migrant hometowns (Durand and Massey 1992; Reichert 1981; Stuart and Kearney 1981; Wiest 1973;). Moreover, a recent survey conducted in Guanajuato found that remittances reduce local incentives to invest in education, which is one of the main pillars of human development (Vargas 2007:85–87). Given this, I anticipate a potential negative relationship between the percentage of homes receiving remittances in Guanajuato and measures of human development.

The variable *% of homes with return migrants* measures the percentage of homes with a migrant who had returned to Mexico during the previous 5 years and had stayed.[6] Data for

this variable were collected from the National Population Council (CONAPO) and INEGI. In recent years return migration to Mexico has nearly doubled. In fact, in 2010 return migrants composed 31.5 percent of all migrants, whereas in 2000 they made up only 17.4 percent. Return migration, like traditional migration, is predominately masculine. In Mexico, 7 out of every 10 return migrants are working-age males between the ages of 15 and 49. With regard to trip duration, on average return migrants spent 19.5 months in another country, up from 14.2 months in 2000 (INEGI 2012:12).

It is important to keep in mind that this particular measure focuses on return migrants who relocate to Mexico for a relatively permanent period of time. To be sure, many migrants may return home for shorter periods of time, only to make their way back to the United States. Still, the transiency of so-called "circular" migrants makes it difficult to track their movements over time. Thus for the purpose of this study I am most interested in controlling for the effects of those migrants who choose to return for extended periods of time. I anticipate a positive relationship between development outcomes and return migrants. This expectation is grounded in recent findings that suggest that return migrants may bring back new, and often progressive, ways of thinking about politics and community development (Batista and Vicente 2011; Chauvet and Mercier 2011; Levitt and Lamba-Nieves 2011; Pérez-Armendáriz and Crow 2010; Pfutze 2012; Rother 2009).

To control for municipal spending on public works projects, the variables *Ramo 26 per capita* and *Ramo 33 per capita* are included. Ramo 26 and 33 represent federal transfers for municipal development.[7] These variables permit an evaluation of the relationship between municipal investment in public works projects and overall municipal development levels. While these funds are not necessarily exclusively used on public works projects, they do represent the most important source municipalities have to support investments in public infrastructure and local development projects. In Guanajuato, for example, Ramo 26 and Ramo 33 accounted for more than 80 percent of public works projects during the period 2002–11. Investments made through these funds mainly target infrastructure, so it is expected that they will predominantly contribute to improvements in way of health care and education.

The variable *municipal revenue per capita* is included as a means of controlling for municipal revenue. Although municipalities in Mexico do not collect taxes per se, they do collect *predial* or property taxes, as well as fees for things such as business licenses, building permits, and automobile registration. Municipalities that generate more revenue naturally have more money to reinvest in local development initiatives. Given this, I expect that municipalities with higher revenues will have more favorable development outcomes compared to municipalities with lower revenues.

Finally, the variable *municipal population* is included to control for population differences across municipalities. Previous studies have demonstrated that migrants from rural areas are more prone to go to the United States, whereas their counterparts from relatively urban areas are more likely to migrate to larger regional cities (Massey et al. 1987). Moreover, in my own review of development data made available by the United Nations it became evident that municipal capacity, measured in terms of the human capital of municipal workers, and municipal transparency, measured in terms of government transparency and accountability,

both increase dramatically in more urban municipalities across Guanajuato (Waddell 2013). My qualitative research on the ground in Guanajuato reaffirms this notion. Given this, I expect that relatively more populated municipalities will experience greater gains in development relative to less inhabited municipalities. Data for this variable come from the National System of Municipal Information (SNIM) and INEGI.

METHODOLOGY AND EMPIRICAL SPECIFICATIONS

I begin my analysis by evaluating the relationship between HDI and a matrix of independent variables. I initially run both fixed-effects and random-effects models and implement Hausman's (1978) specification test as a means of determining whether the unobservable individual effects are distributed independently of the regressors. The null hypothesis is not rejected, indicating that random-effects estimators are unbiased and consistent (Seddighi 2012:265). Consider the basic estimation equation:

$$HDI_{i,t} = \gamma Rem_{i,t-1} + \beta' X_{i,t-1} + \alpha_i + u_{i,t} \tag{1}$$

where subscripts correspond to municipality i at time t; $\gamma Rem_{i,t-1}$ represents the percentage of homes receiving household remittances; $X_{i,t-1}$ denotes the matrix of control variables that are outlined in table 2, including investments made through the program 3×1 para Migrantes; α_i is a random variable denoting unobserved individual effects; and $u_{i,t}$ is the standard error.

Given the longitudinal nature of this data set, one can be fairly certain that the individual constant terms are randomly distributed over cross-sectional units (Greene 2000:567). Nonetheless, because of the unique nature of the 3×1 program, model (1) presents a potential selection issue. For example, municipalities that participate more frequently in the program may receive more remittances than those that participate less often. Or municipalities that participate more often in the 3×1 program may have relatively larger populations of return migrants. To control for possible selection bias, I run a two-step Heckman correction model, which is designed to correct for nonrandomly selected samples (Heckman 1976, 1979).

All municipalities in Guanajuato have the opportunity to participate in the 3×1 program, and during the period under analysis all 46 municipalities did participate regularly in the program. Still, the rate at which municipalities participated in the program varied a great deal. For this reason, for the purpose of this analysis I create a dummy variable for 3×1 participation. As table 2 illustrates, mean 3×1 per capita in Guanajuato was 43 pesos per inhabitant between 2002 and 2011. On this basis, I split municipalities into two groups, "high" participation municipalities (3×1 per capita > 43 = 1) and "low" participation municipalities (3×1 per capita < 43 = 0). My analysis assumes the following regression model:

$$3{\times}1_i = \gamma_i Rem_{t-1} + u_{1i,t}, \text{ regression equation}$$

The first-step results are displayed in table 3. As the reader will note, municipalities in which households receive relatively less remittances are more likely to have high measures of 3×1 per capita. This probably reflects the fact that 3×1 projects are more common in communities that are well advanced in the migration cycle. That is, when migrants first begin to leave

TABLE 3. First-Step Results of Heckman Correction Model (Regression Model)

	3×1 per Capita (1 = > 43; 0 = < 43)
	Coeff.
% Homes remittances	−.02***
	(.002)
% Homes return migrants	.07***
	(.004)
N	460

Note: Unstandardized coefficients reported. Standard errors in parentheses.
+p < .1; *p < .05; **p < .01; ***p < .001.

a community their main concern is improving the well-being of their immediate family. Then, in time, once migrants gain financial stability abroad, it becomes more likely that diaspora communities will invest in communal projects in their hometowns. By this time, however, the percentage of houses receiving remittances is probably declining, which explains the negative relationship reported in table 3 between 3×1 per capita and the percentage of households receiving remittances.[8] In contrast, municipalities with high levels of 3×1 per capita are predicted by increases in the percentage of return migrants. This finding foreshadows the full regression results outlined in the next section, which demonstrate a negative relationship between remittances and development juxtaposed with a positive association between return migrants and development outcomes.

Regarding the second-step results, the 3×1 program is observed only in those municipalities, i, in which

$$Zi, t\gamma + U_{2i} > 0, \text{selection equation}$$

where

$$U_1 \sim N(0, \sigma)$$
$$U_2 \sim N(0, 1)$$
$$\text{corr}(U_1, U_2) = \rho$$
$$\rho\sigma = \lambda$$

If $\lambda \neq 0$, estimating equation (1) will yield biased results. Thus, to test for selection bias, I run the following model:

$$HDI_{i,t} = \gamma Rem_{i,t-1} + \beta' X_{i,t-1} + \alpha_i + u_{i,t} \tag{2}$$

where subscripts correspond to municipality i at time t; $\gamma Rem_{i,t-1}$ represents the percentage of homes receiving household remittances; $X_{i,t-1}$ denotes the matrix of control variables, including the independent variable λ; α_i is a random variable denoting unobserved individual effects; and $u_{i,t}$ is the standard error.

Results from model (2) indicate that the unobservable factors in the regression equation are unrelated to the unobservable factors in the selection equation. That is, results from

model (2) reveal that $\lambda = 0$, and thus it is unlikely that selection bias is systematically affecting estimation model (1).

Given the aforementioned results, a random-effects approach would generally be sufficient to control for unobserved effects within the estimating model. However, initial regression results suggest that the model may be biased in the way of the OLS estimators. This may relate to the fact that the panel is relatively short across time (10 years) and has a moderately large municipal dimension (N = 46).

I address these concerns by running the Arellano-Bond (1991) Generalized Method of Moments (GMM) difference estimator, based on Holtz-Eakin, Newey, and Rosen (1988). The Arellano-Bond model is specifically designed to analyze wide panels with short time frames, and it addresses potential endogeneity issues by lagging the endogenous explanatory variables (Mileva 2007).[9] It also overcomes the panel-level effects by using first-differences to transform equation (1) into

$$\Delta HDI_{i,t} = \alpha \Delta HDI_{i,t-1} + \gamma \Delta Rem_{i,t-1} + \Delta X_{i,t-1}^{'} \beta + \Delta u_{i,t} \qquad (3)$$

Transforming the regressors via first-differences also removes the time-invariant municipal characteristics. That is:

$$\Delta u_{i,t} = \Delta v_i + \Delta e_{i,t} = \Delta e_{i,t},$$

since $\Delta v_i = 0$.

Results from estimating equation (3) are reported in tables 4, 5, and 6. Each table reports unstandardized coefficients as well as standardized coefficients (betas).[10]

Regression Results

All other things being equal, model (3) estimates the degree to which remittances and 3×1 investments, respectively, contribute to human development outcomes across Guanajuato's 46 municipalities during the period 2002–11. As the first column in table 4 illustrates, the variable *3×1 per capita* has a significant effect on overall human development. The unstandardized coefficient for *3×1 per capita* is relatively small at .00004. Moreover, the standardized coefficient reveals that, compared to other predictors within the model, 3×1 per capita has a small impact on overall human development (beta = .049; p < .05). In fact, the positive effect of the 3×1 program on HDI is nearly five times weaker than the negative effect of the percentage of homes receiving remittances. Still, in interpreting this effect it is important to note that values on the HDI run from 0 to 1. Thus even a small increase should be interpreted as noteworthy, as it indicates that channeling remittances toward specific projects significantly improves development outcomes relative to the effect of raw remittances.

Tables 5 and 6 report regression results for each individual indicator of the HDI. As the reader will note, 3×1 investments contribute to reductions in infant mortality rates, increases in school attendance rates, and improvements in per capita income. As the standardized coefficients in table 5 illustrate, 3×1 per capita has a particularly strong positive impact on school attendance rates (beta = .13), which contrasts remarkably with the even stronger

TABLE 4. Regression Analysis of Individual Measures of Human Development Index in Guanajuato

	Human Development Index (HDI)	
	Coefficient	Coefficient (Beta)
3×1 per capita (1-yr. lag)	.00004*	.049*
	(.00008)	
% Homes with remittances (1-yr. lag)	−.0009***	−.26***
	(.0002)	
% Homes with return migrants (1-yr. lag)	.004***	.18***
	(0004)	
Municipal revenue per capita (1-yr. lag)	.003***	.40***
	(.0002)	
Ramo 26 (1-yr. lag)	.00003***	.23***
	(.00004)	
Ramo 33 (1-yr. lag)	.000005[+]	.04[+]
	(.00003)	
Municipal population (log)	.02***	.24***
	(.02)	
Constant	.49***	—
	(.022)	(—)
R^2	.31	
Prob. > $\chi 2$	(0.000)	
Durbin-Watson	2	
N	460	

Note: Unstandardized coefficients and standardized coefficients (beta) reported. Standard errors in parentheses.
[+]p<.1 *p<.05 **p<.01 ***p<.001

negative impact of household remittances on school attendance rates (beta = −.45). In turn, 3×1 per capita does not appear to have an effect on literacy rates, which makes sense in that 3×1 projects tend to address deficiencies in infrastructure but not shortcomings in the realm of human capital. One might expect, nonetheless, that in time improved facilities will help attract and retain qualified teachers, as well as improve student morale, all of which would be expected to contribute to improved literacy rates.

The aforementioned results indicate that 3×1 investments underwrite improvements in human development; still, important questions remain regarding the specific causes of this outcome. My fieldwork in the state of Guanajuato suggests that the 3×1 program's positive influence on development is an effect of both the actual monetary investments and the networks formed by migrants and hometown communities. That is, investments in roads, schools, medical clinics, electricity grids, drainage systems, community centers, computer labs, and small factories all play a clear role in spurring positive development outcomes. Still, my qualitative data also indicate that infrastructure alone, while clearly necessary for human

TABLE 5. Regression Analysis of Individual Measures of the Human Development Index in Guanajuato (I)

| | Human Development Indicators | | | |
| | School Attendance | | Literacy Rates | |
	Coef.	Coef. (Beta)	Coef.	Coef. (Beta)
3x1 per capita (1-yr. lag)	.0007**	.13**	.00004	.00009
	(.0004)		(.0002)	
% Homes with remittances (1-yr. lag)	−.26***	−.45***	−.105***	−.17***
	(.03)		(.02)	
% Homes with return migrants (1-yr. lag)	1.02***	.05***	.32***	.21***
	(.06)		(.04)	
Municipal revenue per capita (1-yr. lag)	.021***	.38***	.003*	.16*
	(.003)		(.001)	
Ramo 26 (1-yr. lag)	.007***	.29***	.0005*	.36***
	(.0004)		(.0002)	
Ramo 33 (1-yr. lag)	.00004	.10	.00002	.12
	(.00004)		(.00002)	
Municipal population (log)	1.57***	.03***	2.58***	.37***
	(.37)		(.25)	
Constant	40.52***	—	57.62***	—
	(3.87)	(—)	(2.59)	(—)
R^2	.26		.18	
Prob. > $\chi 2$	(0.000)		(0.000)	
Durbin-Watson	2		2	
N	460		460	

Note: Unstandardized coefficients and standardized coefficients (beta) reported. Standard errors in parentheses.
[+]$p < .1$; *$p < .05$; **$p < .01$; ***$p < .001$.

development, is not sufficient. Rather, where the 3×1 program is most successful, strong social networks appear to emerge as a key component. For example, while conducting interviews with migrant leaders in the municipalities of Abosolo and Huanímaro, I found myself speaking with confident leaders who had the support of their communities. Their migrant clubs were extremely organized. In the United States their groups sponsored monthly fundraisers, and community members back in Mexico met regularly to discuss future projects. The 3×1 program sponsored most of the projects in these communities, including a community center equipped with a state-of-the-art computer lab. In addition, the community had a long history of working with diaspora groups in the United States on local development projects, many of which were not funded through the 3×1 program. This history clearly influenced the nature of the town's development projects. For instance, when attending public events in Mexico the club members all wear matching T-shirts, and for the

TABLE 6. Regression Analysis of Individual Measures of the Human Development Index in Guanajuato (II)

	Human Development Indicators			
	Infant Mortality Rates		GDP per Capita	
	Coef.	Coef. (Beta)	Coef.	Coef. (Beta)
3x1 per capita (1-yr. lag)	−.0003*	−.08*	.45*	.002*
	(.00006)		(.18)	
% Homes with remittances (1-yr. lag)	.21***	.12***	−19.55**	−.11**
	(.04)		(8.14)	
% Homes with return migrants (1-yr. lag)	−1.04***	−.06***	50.45**	−.07**
	(.08)		(17.52)	
Municipal revenue per capita (1-yr. lag)	−.05***	−.46***	5.23***	.35***
	(.004)		(.81)	
Ramo 26 (1-yr. lag)	−.007***	−.20***	3.16***	.54***
	(.0005)		(.12)	
Ramo 33 (1-yr. lag)	−.00008[+]	−.06[+]	.05**	.05**
	(.00006)		(.016)	
Municipal population (log)	−3.25***	−.17***	378.66**	.57**
	(.47)		(87.52)	
Constant	60.98***	—	4441.51***	—
	(4.91)	(—)	(924.16)	(—)
R^2	.17		.17	
Prob. > $\chi2$	(0.000)		(0.000)	
Durbin-Watson	2		2	
N	460		460	

Note: Unstandardized coefficients and standardized coefficients (beta) reported. Standard errors in parentheses.
[+]$p < .1$; *$p < .05$; **$p < .01$; *** $p < .001$.

inauguration of projects community members turn out in droves. In fact, local schoolchildren are generally allowed to attend the events as well. As one local community member mentioned while I was visiting a small town on the Abosolo-Huanímaro border, "*Los paisanos* [the migrants] give us a reason to believe in a better future. They sacrifice so much by leaving, and when they return they help us imagine a different way of life. They are an inspiration to the whole community." In this sense, in addition to investments of raw capital, 3×1 projects appear to foster the growth of social, cultural, and political capital within migrant hometowns. In the long run, as work by Robert Putnam (1994) demonstrates, advances in these areas may prove to be just as important as raw capital investments.

In contrast to 3×1 investments, the independent variable *% homes with remittances* reveals a negative relationship between raw remittance transfers and all measures of human development. This finding implies that in the state of Guanajuato remittances by themselves

may not contribute to improved development and that in fact they may impede it. One way to interpret this outcome is to think of remittances as a symptom of poverty rather than a cause. To be sure, migrants tend to leave from relatively marginalized communities, and migrants clearly send remittances with the intention of alleviating poverty. However, as the reader will recall from figure 2, development levels in Guanajuato have improved across all municipalities from 2000 to 2010. Given this, it is particularly noteworthy that remittances do not share a positive relationship with development levels. These results suggest that development levels have improved less in high-remittance municipalities than in low-remittance municipalities.

Although the mechanism driving the negative relationship between remittances and development is not entirely self-evident, it quite likely relates to the fact that individuals who grow up in communities with high remittance flows have very different incentives than those who grow up in communities with low remittance flows. For example, in high-remittance communities children grow up idolizing *los paisanos*. Migrants and their families, after all, are among the most economically privileged groups in their communities. This is particularly true in rural municipalities. As a result, young men (and more and more young women) begin to see migration to the United States as the key to a successful future.[11] As many migrants suggested during my field interviews, the only way to get ahead in rural Mexico is to "*ir al Norte*" (go north) and "*probar suerte*" (try one's luck). In fact, according to a 2003 survey conducted by El Colegio de la Frontera de Norte, 36.4 percent of households in Guanajuato have family members in the United States. This figure jumps to 59.4 percent in communities with fewer than 15,000 inhabitants. Furthermore, across the state, 41 percent of households have family members in the United States and receive remittances from abroad (Vasquez 2007:30–32). Under these circumstances it is hardly surprising that municipalities with relatively higher remittance rates have lower education outcomes. Across Guanajuato, school attendance is higher within households that have no relationship with international migration (Vargas 2007:85–87). This surely relates to the fact that in high-migration regions one's rate of return on education is far less than that for a successful trip to the United States. This finding echoes a 2006 research project commissioned by the Inter-American Development Bank that documented "a significant negative (or disincentive) effect of migration on schooling levels of 16 to 18 years old," which the authors concluded, "is consistent with migration prospects translating into lower expected returns to schooling" (McKenzie and Rapoport 2006:25).

The variable *% homes with return migrants* shares a strong positive relationship with all measures of human development, implying that return migrants may play an important role in underpinning development trends in the state of Guanajuato. This finding echoes previous research demonstrating that when migrants return to their hometowns they bring back with them new and innovative ways of thinking and as a result contribute to community development not only through monetary transfers but also through the effects of opening up communities to alternative ways of seeing the world. During site visits to migrant hometowns I found that return migrants were far more likely to bring up the importance of education. For example, in the small town of El Timbinal, which is located in Yuriría, Guanajuato, migrant leaders took me by the school that they had helped to fund and made

a point of lauding the relatively superior education of this generation compared to their own. In addition, migrant leader Ángel Calderón told me that the town's migrant club frequently sponsored children who were interested in continuing with their education beyond the primary level. As these findings indicate, the "social remittances" that flow into migrant hometowns, although often difficult to capture in regression runs, may be an important key to understanding the conditions under which migrants have a positive impact on local development outcomes.

Although remittances are clearly a major source of income for municipalities across Guanajuato, they are hardly a replacement for local governments. Given this, one would expect that municipalities with relatively larger revenues would have better development outcomes. The variable *municipal revenue per capita* supports this notion, reporting positive and relatively large coefficients across each model. Similarly, both *Ramo 26* and *Ramo 33* have a positive impact on overall human development. This is an important finding because federal transfers through Ramo 26 and Ramo 33 are key components in the government's effort to decentralize funding across Mexico. Thus, at least in the state of Guanajuato, it appears that decentralization efforts have been fruitful in that they have had a positive impact on human development. It is very difficult, of course, to determine the degree to which human development indicators would have improved in the absence of decentralization. Still, given the dearth of local funding prior to the decentralization of funding in 1997, it is very hard to imagine that local development would have progressed as much under the traditional federal-centric system. Finally, *municipal population* shares a positive relationship with HDI, confirming the notion that, relative to rural municipalities, human development levels improve at a faster rate in urban municipalities.

CONCLUSIONS

In this study I have analyzed how household remittances, compared to investments made through the program 3×1 para Migrantes, affect human development outcomes across 46 municipalities in the state of Guanajuato, Mexico. Two clear points emerge from my analysis: (1) household remittances appear to repress development outcomes, and (2) 3×1 investments have a positive and significant impact on human development. Given the state of Guanajuato's strong commitment to the 3×1 program, the latter finding is not particularly surprising. What stands out, however, is the degree to which 3×1 investments improve development outcomes relative to household remittances.

For example, compared to the percentage of homes with remittances (beta = −0.17) the standardized effect of the 3×1 program on literacy rates is small but positive (beta = 0.00009). Similarly, in the case of school attendance, while the percentage of homes with remittances has a resoundingly negative effect (beta = −0.45), investments through the 3×1 program have a decidedly positive effect (beta = 0.13). And although the percentage of homes with remittances has a strong negative effect (beta = 0.12) on infant mortality rates, 3×1 per capita is associated with fewer infant mortalities per 1,000 births (beta = −0.08). Finally, the percentage of homes with remittances has a large negative impact (beta = −0.11) on GDP per capita, whereas the 3×1 program has a small positive effect (beta = 0.002).

These findings echo the results of previous studies. In particular, as Calderón et al. (2008) argue, "Remittances are more effective in raising investment and enhancing growth in countries with higher levels of human capital, strong institutions, and good policy environments" (p. 366). Relatedly, Adida and Girod (2011) find that while remittances empower households, they also appear to provide "disincentives" for governments to deliver public services (p. 20). This may explain why municipalities with large household remittance flows experience negative development outcomes. That is, where remittances are high, government officials are able to abscond from their duties as diaspora communities assume the role of providing for the well-being of those they have left behind. However, where the 3×1 program is active, government officials remain engaged in local communities, working alongside migrants and local citizens. The empirical findings outlined above bolster these claims, demonstrating that promigrant policies have the potential to improve the development outcomes of remittances. Still, it is important to point out that 3×1 projects alone are hardly a replacement for meaningful commitments to development in other areas of society. In other words, while RLD appears capable of supporting economic and social growth, it is clearly not a substitute for commitments by local officials and citizens to long-term development.

The results of this study also suggest one should use caution in interpreting recent research that documents a positive relationship between household remittances and economic well-being (Fajnzylber and López 2008). Acosta et al. (2008), for example, find "that remittances have a positive and significant impact on [economic] growth" (p. 128). However, my findings demonstrate that the actual effect of remittances may in fact vary a great deal at the local level, indicating that it may be misleading to generalize about the nature of RLD at the state or national level without first documenting the nuances of development outcomes at the local level. Future research should reexamine the positive correlations found between household remittances and economic growth at the cross-national level. Although it is beyond the immediate scope of this essay, the findings presented here suggest that such correlations may be the result of ecological fallacies and, potentially, spurious.

In closing, a number of limitations to this study need to be addressed. First, ten years is a relatively short period in which to study human development trends. Given this, future studies should attempt to include more data points as a means of studying RLD over longer periods of time. As the 3×1 program moves into its second decade of existence, longitudinal studies of this nature will be more feasible. Second, this study focuses on one state among a gamut of remittance-receiving states in Mexico. Future work should attempt to study RLD across larger regions. The results of such work would be more generalizable and thus more informative for policy makers. Nonetheless, researchers should proceed cautiously with cross-state research of the 3×1 program, since the political culture driving the program's internal logic tends to vary drastically from state to state. It is nearly impossible to control for the idiosyncrasies of local political culture, and for that reason it is highly recommended that researchers focusing on the 3×1 program continue to include intrastate assessments as they advance into the terrain of interstate analysis. Finally, future work regarding RLD would benefit from individual-level data concerning migrants' motives for remitting money back to Mexico. Specifically, researchers should address the factors that encourage individuals to

participate in communal remittances as opposed to, or in addition to, traditional household remittances. A better understanding of the dynamics driving communal remittances could help policy makers in migrant-sending societies leverage the development potential of remittances, which, by and large, remains an untapped resource for international development. ■

REFERENCES

Acosta, Pablo, Cesar Calderón, Pablo Fajnzylber, and J. Humberto López. 2008. "Do Remittances Lower Poverty Levels in Latin America?" Pp. 87–133 in *Remittances and Development*, edited by Pablo Fajnzylber and J. Humberto López. Washington, DC: World Bank.

Adams, R. H., Jr. 1989. "Worker Remittances and Inequality in Rural Egypt." *Economic Development and Cultural Change* 38:45–71.

Adams, R. H., Jr., A. J. Cuecuecha, and J. Page. 2008. "The Impact of Remittances on Poverty and Inequality in Ghana." Policy Research Working Paper WPS4732, World Bank.

Adelman, Irma, J. Edward Taylor, and Stephen Vogel. 1988. "Life in a Mexican Village: A SAM Perspective." *Journal of Development Studies* 25:5–24.

Adida, Claire L., and Desha M. Girod. 2011. "Do Migrants Improve Their Hometowns? Remittances and Access to Public Services in Mexico, 1995–2000." *Comparative Political Studies* 44(3):3–27.

Aparicio, J., and C. Meseguer. 2009. "The Electoral Determinants of Collective Remittances: The Mexican 3×1 Program for Migrants." Working Paper, Institut Barcelona d'Estudis Internacionals, Barcelona.

Aparicio, J., and C. Meseguer. 2011. "Collective Remittances and the State: The 3×1 Program in Mexican Municipalities." *World Development* 40(1):206–22.

Arellano, M., and S. Bond. 1991. "Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations." *Review of Economic Studies* 58:277–97.

Banco de Mexico. 2003–12. *Informes anuales, 2002–11*. Mexico City: Banco de México.

Barham, B., and S. Boucher. 1998. "Migration, Remittances, and Inequality: Estimating the Net Effects of Migration on Income Distribution." *Journal of Development Economics* 55:307–31.

Batista, Catia, and Pedro C. Vicente. 2011. "Do Migrants Improve Governance at Home? Evidence from a Voting Experiment." *World Bank Economic Review* 25(1):77–104.

Calderón, Cesar, Pablo Fajnzylber, and J. Humberto López. 2008. "Remittances and Growth: The Role of Complementary Policies." Pp. 335–68 in *Remittances and Development*, edited by Pablo Fajnzylber and J. Humberto López. Washington, DC: World Bank.

Central Intelligence Agency (CIA). 2010. The World Factbook. Retrieved (https://www.cia.gov/library/publications/the-world-factbook/).

Chauvet, Lisa, and Marion Mercier. 2011. "Migration and Elections in Mali. Does Migration Promote Democratization in Africa?" Retrieved December 12, 2012 (http://www.csae.ox.ac.uk/conferences/2011-EDiA/papers/758-Mercier.pdf).

Consejo Nacional de Población (CONAPO). 2002. *Proyecciones de la población 2000/2050*. Mexico City: Consejo Nacional de Población.

Donato, Katharine M., and Evelyn Patterson. 2004. "Women and Men on the Move: Undocumented Border Crossing." Chap. 6 in *Crossing the Border: Research from the Mexican Migration Project*, edited by Jorge Durand and Douglas S. Massey. New York: Russell Sage Foundation.

Doyle, David. 2013. "Remittances and Social Spending." Manuscript, Oxford University. Retrieved May 25, 2015 (http://nebula.wsimg.com/f806a014499af3c53362d4bed802b7f6?AccessKeyId=ED2D6EE708C991B3B60B&disposition=0).

Durand, J., W. Kandel, Emilio A. Parrado, and Douglas S. Massey. 1996. "International Migration and Development in Mexican Communities." *Demography* 33(2):249–64.

Durand, J., and Douglas S. Massey. 1992. "Mexican Migration to the United States: A Critical Review." *Latin American Research Review* 27:3–42.

Fajnzylber, Pablo, and J. Humberto López, eds. 2008. *Remittances and Development*. Washington, DC: World Bank.

Fernández de Castro, Rodolfo García Zamora, and Ana Vila Freyer, eds. 2006. *El Programa 3 x 1 para Migrantes: Primera política transnacional en México?* Zacatecas, Mexico: Universidad Autonoma de Zacatecas.

Fox, J. 2007. *Accountability Politics: Power and Voice in Rural Mexico*. Oxford: Oxford University Press.

Gelman, Andrew. 2008. "Scaling Regression Inputs by Dividing by Two Standard Deviations." *Statistics in Medicine* 27:2865–73.

Georges, Eugenia. 1990. *The Making of a Transnational Community: Migration, Development, and Cultural Change in the Dominican Republic*. New York: Oxford University Press, quoted as cited in Taylor, J. Edward, J. Arango, Graeme Hugo, Ali Kouaouci, Douglas Massey, and Adela Pellegrino. 1996. "International Migration and Community Development." *Population Index* 62(3):397–418.

Goodman, Gary L., and Jonathan T. Hiskey. 2008. "Exit without Leaving: Political Disengagement in High Migration Municipalities in Mexico." *Comparative Politics* 40(2):169–88.

Greene, William H. 2000. *Econometric Analysis*. 4th ed. Saddle River, NJ: Pearson Education.

Greene, William H. 2012. *Econometric Analysis*. 7th ed. Saddle River, NJ: Pearson Education.

Hausman, J. A. 1978. "Specification Tests in Econometrics." *Econometrica* 46:1251–71.

Heckman, J. 1976. "The Common Structure of Statistical Models of Truncation, Sample Selection and Limited Dependent Variables and a Simple Estimator for Such Models." *Annals of Economic and Social Measurement* 5:475–92.

Heckman, J. 1979. "Sample Selection Bias as a Specification Error." *Econometrica* 47:153–61.

Holtz-Eakin, D., W. Newey, and H. S. Rosen. 1988. "Estimating Vector Autoregressions with Panel Data." *Econometrica* 56:1371–95.

INEGI. 2012. "Estadísticas al propósito del Día Internacional del Migrante." Aguascalientes: INEGI.

Instituto Nacional para el Federalismo y el Desarollo Municipal. n.d. "Sistema Nacional de Información Municipal." Retrieved May 25, 2015 (http://www.snim.rami.gob.mx).

Instituto Nacional de Transparencia, Acceso a la Información y Protección de Datos Personales (INAI). 2012. Municipal Development Indicators. Retrieved January 30, 2012 (https://www.infomex.org.mx/gobiernofederal/home.action).

Levitt, P., and D. Lamba-Nieves. 2011. "Social Remittances Revisited." *Journal of Ethnic and Migration Studies* 37(1):1–22.

Massey, Douglas S., Rafael Alarcón, Jorge Durand, and Humberto González. 1987. *Return to Aztlan: The Social Process of International Migration from Western Mexico*. Berkeley: University of California Press.

Massey, Douglas S., Jorge Durand, and Nolan J. Malone. 2002. *Beyond Smoke and Mirrors: Mexican Immigration in an Era of Free Trade*. New York: Russell Sage Foundation.

Mathews, T. J., and Marian F. McDorman. 2012. "Infant Mortality Statistics from the 2008 Period Linked Birth/Infant Death Data Set." *National Vital Statistics Reports* 60(5):1–28.

McKenzie, David, and Hillel Rapoport. 2006. "Migration and Education Inequality in Rural Mexico." INTAL-ITD Working Paper 23, Inter-American Development Bank, Washington, DC.

Menocal, Alina Rocha. 2008. "3×1 para Migrantes." EUROsociAL Programme, Madrid, Spain.

Milanovic, B. 1987. "Remittances and Income Distribution." *Journal of Economic Studies* 14:24–37.

Mileva, Elitza. 2007. "Using Arellano-Bond Dynamic Panel GMM Estimators in Stata: Tutorial with Examples Using Stata 9.0 (xtabond and xtabond2)." Unpublished manuscript, Fordham University. Retrieved May 25, 2015 (http://home.aubg.bg/students/PVS110/ECO311/Panel_GMM/Elitz-UsingArellano–BondGMMEstimators.pdf).

Pérez-Armendáriz, Clarisa, and David Crow. 2010. "Do Migrants Remit Democracy International Migration, Political Beliefs, and Behavior in Mexico." *Comparative Political Studies* 43(1):119–48.

Pfutze, Tobias. 2012. "Does Migration Promote Democratization? Evidence from the Mexican Transition." *Journal of Comparative Economics* 40:159–75.

Putnam, R. D. 1994. "Social Capital and Public Affairs." *Bulletin of the American Academy of Arts and Sciences* 47(8):5–19.

Quinn, M. A. 2005. "Remittances, Savings, and Relative Rates of Return." *Journal of Developing Areas* 38(2):1–23.

Reichert, Joshua S. 1981. "The Migrant Syndrome: Seasonal U.S. Wage Labor and Rural Development in Central Mexico." *Human Organizations* 40:56–66.

Rother, Stefan. 2009. "Changed in Migration? Philippine Return Migrants and (Un)Democratic Remittances." *European Journal of East Asian Studies* 8(2):245–74.

Secretaria de Desarrollo Social (SEDESOL). 2015. "3×1 para Migrantes." Last updated June 1. Retrieved June 16, 2015 (http://www.sedesol.gob.mx/es/SEDESOL/Programa_3×1_para_Migrantes).

Seddighi, Hamid R. 2012. *Introductory Econometrics: A Practical Approach*. New York: Routledge.

Simpser, Alberto, Lauren Duquette-Rury, José Antonio Hernández, and Juan Fernando Ibarra. Forthcoming. "The Political Economy of Social Spending by Local Government: A Study of the 3×1 Program for Migrants in Mexico." *Latin American Research Review*.

Sistema Nacional de Información Municipal (SNIM). 2012. "Municipios en cifras." Retrieved January 1, 2012 (http://www.snim.rami.gob.mx/).

Stark, O., J. E. Taylor, and S. Yitzhaki. 1986. "Remittances and Inequality." *Economic Journal* 96:722–40.

Stuart, James, and Michael Kearney. 1981. *Causes and Effects of Agricultural Labor Migration from the Mixteca of Oaxaca to California*. San Diego: University of California, Program in United States-Mexican Studies.

Taylor, J. Edward. 1992. "Remittance and Inequality Reconsidered: Direct, Indirect and Intertemporal Effects." *Journal of Policy Modeling* 14:187–208.

Taylor, J. Edward, J. Arango, Graeme Hugo, Ali Kouaouci, Douglas Massey, and Adela Pellegrino. 1996. "International Migration and Community Development." *Population Index* 62(3):397–418.

Taylor, J. Edward, Jorge Mora, Richard Adams, and Alejandro Lopez-Feldman. 2008. "Remittances, Inequality and Poverty: Evidence from Rural Mexico." Pp. 191–228 in *Migration and Development within and across Borders: Research and Policy Perspectives on Internal and International Migration*, edited by Josh DeWind and Jennifer Holdaway. New York: Social Science Research Council.

Ul Haq, Mahbub. 1990. *Human Development Report 1990*. New York: United Nations Development Program, quoted as cited in United Nations Development Programme, n.d. "About Human Development." Retrieved June 26, 2012 (http://hdr.undp.org/en/humandev/).

United Nations Development Programme (UNDP). 2009. *Human Development Report 2009: Overcoming Barriers: Human Mobility and Development*. New York: Palgrave Macmillan.

UN Millennium Project. 2006. "The 0.7% Target: An In-depth Look." Retrieved May 25, 2015 (http://www.unmillenniumproject.org/press/07.htm).

U.S. Commission for the Study of International Migration and Cooperative Economic Development. 1990. *Unauthorized Migration: An Economic Development Response*. Washington, DC: The Commission.

U.S. Embassy in Mexico. 2010. "The Awesome Potential of Remittances." Cable to all US Consulates in Mexico, February 22. Wikileaks. Retrieved August 29, 2014 (https://www.wikileaks.org/plusd/cables/10MEXICO634_a.html).

Vargas, María Arcelia Serrano. 2007. "Educación y emigración hacia Estados Unidos." In *Las migraciones Guanajuato-Estados Unidos: Un acercamiento a las distintas dimensiones del fenómeno*, edited by Rodolfo Corona Vazquez, Laura del Refugio Ortega González and Gudelia Rangel Gómez. Guanajuato: Gobierno del Estado de Guanajuato.

Vasquez, Rodolfo Corona. 2007. "Magnitud de la emigración internacional desde Guanajuato." In *Las migraciones Guanajuato-Estados Unidos: Un acercamiento a las distintas dimensiones del fenómeno*,

edited by Rodolfo Corona Vazquez, Laura del Refugio Ortega González, and Gudelia Rangel Gómez. Guanajuato: Gobierno del Estado de Guanajuato.

Waddell, Benjamin J. 2013. "The Political Economy of Remittance-led Development in Guanajuato, Mexico." PhD dissertation, University of New Mexico, Albuquerque.

Waddell, Benjamin J. 2015. "Old Habits Die Hard: Political Patronage and Remittance-led Development in Guanajuato, Mexico." *Latin American Research Review* 50(1):5–28.

Wiest, R. E. 1973. "Wage-Labor Migration and the Household in a Mexican Town." *Journal of Anthropological Research* 29(3):180–209.

World Bank. 2014. World Bank Open Data. Retrieved January 12, 2014 (http://data.worldbank.org).

NOTES

1. It is necessary to keep in mind that remittance levels are affected in large part by differing levels of human capital within diaspora communities. In the case of China and India, for example, overall remittance flows benefit from the fact that a large percentage of migrants from these countries work within sectors that require high levels of human capital.

2. See Jonathan Fox's work on community development in migrant communities in rural Oaxaca, particularly Fox (2007).

3. Despite little empirical evidence, SEDESOL lauds the 3×1 program on its Web page, highlighting "success" stories and illustrating investment trends since the program's inaugural year in 2002 (see SEDESOL 2015).

4. Data from SEDESOL, solicited through the Institute of Transparency, Access to Information, and Protection of Personal Data (INAI 2012); rankings based on my tabulations of the data, organized using STATA.

5. Local representatives or delegates frequently play a crucial role in getting 3×1 projects off the ground. Delegates, like Salvador Rodriguez, serve as a liaison between communities and municipal governments. These representatives are elected or appointed every three years after municipal elections. They often relay information between communities and the municipal government. Concerning the 3×1 program, delegates play a particularly crucial role because HTA leaders reside in the exterior and therefore are generally not well versed in the bureaucratic requirements of programs like 3×1. In the state of Guanajuato the municipal president appoints delegates. For more information concerning the role of delegates in the 3×1 program, see Aparicio and Meseguer (2011:6, 7). For actual copies of individual state laws of municipal governance, see the Enciclopedia de los Municipios y Delegaciones de México (www.inafed.gob.mx/work/enciclopedia/).

6. According to INEGI and CONAPO, households with a return migrant include those "with a family member, born in Mexico, who lived in the United States in the last five years but returned to reside in Mexico, so that, at the moment of the census, the individual was an inhabitant of the national territory" (CONAPO 2002).

7. Ramo 33 provides local governments with funding to invest in areas of local development, including health care, education, and public security. The use of Ramo 33 funds for public infrastructure projects is outlined in Article 33 of the Law of Fiscal Coordination. Ramo 33 funds are used primarily to promote fiscal decentralization and to fund social welfare programs aimed at combating poverty across Mexico. In turn, Ramo 26 operates as a flexible fund through which the federal government directs limited resources toward Mexico's most marginalized municipalities. I maintain each fund as a separate independent variable because they are distributed according to distinct algorithms and thus do not necessarily target the same localities.

8. For more on the life cycle of emigration in Mexico, see Massey, Durand, and Malone (2002).

9. Regression results are reported in table 4 with the Durbin-Watson statistic (d), which is a test used to detect the presence of autocorrelation. The value of d ranges from 0 to 4, where figures

below 2 indicate potential positive serial correlation and figures higher than 2 imply the potential underestimation of statistical significance. For more on autocorrelation, see Greene (2012:922–23).

10. Standardized coefficients rescale regression results by subtracting each observation by the variable's mean and subsequently dividing by the standard deviation of the variable. Standardized coefficients or "betas" do not necessarily resolve issues of causality, but they do contribute to a better understanding of models in which independent variables are measured on widely different scales. In this sense, standardized coefficients, though model specific, give the researcher an idea of the degree to which individual predictors actually affect the dependent variable (Gelman 2008:2871).

11. According to El Colegio de la Frontera de Norte, 88.7 percent of those who emigrate from Guanajuato are male and 11.3 percent are female (Vasquez 2007). But although males continue to make up the majority of migrants, as Donato and Patterson (2004) and Massey et al. (2002) reveal, there has been a distinct "feminization" of migration across Mexico in recent decades.