Migrant Remittances: An Untapped Resource for International Development?

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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 have long debated the potential for migrant remittances to incite community development. In this article I rekindle this debate by comparing the development effects of household remittances with investments made through the remittance-led development program *3x1 para migrantes* in Guanajuato, Mexico. Regression analysis demonstrates that while household remittances repress development outcomes across Guanajuato's 46 municipalities, investments made through the 3x1 program have a positive effect on indicators of municipal wellbeing. The results of this research have meaningful implications for policy makers in both Mexico and other regions of the world currently experiencing high levels of migration.

Keywords: Remittance-led development, migration, remittances and return-migrants.

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, healthcare and income—on the ground. Even less is known about the effectiveness of government programs that channel remittances towards specific community development initiatives. Given the relative size of remittance flows in developing countries, a better understanding of the impact of remittances on development outcomes has the potential to considerably improve development throughout the southern hemisphere.

Do migrant remittances contribute to long-term community development in regions currently experiencing high levels of migration? Furthermore, how does the impact of cash transfers to individual families compare to the effect of collective remittances channeled towards 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 *3x1 para migrants* in the state of Guanajuato, Mexico. The empirical analysis outlined in this study indicates that remittances alone do not appear to drive long-term development. Specifically, regression results indicate that household remittances have an overall negative effect on development outcomes across 46 municipalities in the state of Guanajuato. In turn, regression

coefficients reveal a positive relationship between the remittance-led development (RLD) program 3x1 para migrantes and measures human development. Based on 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. My study indicates that the program 3x1 para migrantes has the potential to underpin this type of relationship.

Remittance-led Development

According to Mahbub ul Haq, who founded 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" (ul Haq 1990). In other words, by improving community access to education, healthcare 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 innovate solutions for tomorrow's problems; support healthcare 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, the majority of 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 unable to sustain long, healthy and fulfilling lives.

Not surprisingly, 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. As Table 1 reveals, migrant 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 dollar mark in 2010. Similarly, over the last ten years Mexican diaspora communities have sent back an average of 20 billion dollars per year.[i] During this same period total remittances around the world have averaged 400 billion dollars per year. Despite this, the effect of remittances on local development outcomes is not well understood. Related to this, we know relatively little about the effectiveness of initiatives that purposefully channel remittances towards communal development.

[Table 1 about here]

Traditionally, migration 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; Staurt and Kearney 1981; Wiest 1979). This line of research reasoned that the more educated and financially better off where among the first to leave communities; after all, migration is a relatively expensive endeavor and thus only a select few are able to leave. Moreover, it was reasoned, migrant remittances are a personal transfer in which individuals who have left selectively send cash to those members of the community that they most care for. It is for this reason that research regarding the

effects of remittances in local communities has found that migrant transfers have the potential to exasperate communal inequalities, especially at the beginning of the migrant cycle (Milanovic 1987; Adams 1989; Barham and Boucher 1998; Adams, Cuecuecha and Page 2008). Following this line of thought, it was argued that migrants deepen local inequalities and deprived 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 and income (Adelman, Taylor and Vogel 1988; Durand, Parrado and Massey 1996; Calderón 2008). Regarding inequality, Stark, Taylor and Yitzhaki (1986) document evidence supporting what they have labeled the "migration diffusion theory," which argues that migration follows a Kuznet curve-like trend, in which pecuniary differences within communities first rise as individuals begin to migrant 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 latter line of research illustrated the emerging potential for a migrant "voice" in communal development and refuted notions suggesting that "exit" necessarily mean that migrants irretrievably lose positive influence within their hometown communities.[ii]

One of the earliest studies to reveal the potential of RLD in hometown communities was Adelman, Taylor and Vogel's article (1988) titled, "Life in a Mexican Village: A SAM Perspective." In their article the authors employ a Social Accounting Matrix (SAM) to analyze the structural makeup of a migrant sending community in central Mexico. The authors' findings highlighted the emerging role of international migrant remittances in driving growth patterns in rural economies throughout central Mexico (1988). Several years later, in a review of extant research, Durand and Massey (1992) found that on average less than 50% of migrant remittances are spent on production but that there is a great deal of variance in remittance spending patterns across communities. This latter finding led

the authors to conclude that, "it is more appropriate to ask why productive investment occurs in some communities and not in others" (Durand and Massey 1992: 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 hamper the possibility for sustained multiplier effects (Taylor et al 1996: 402). As the authors note, deficiencies in either of these two categories means that the migrants and their families assume the full load of turning savings into production (Durand and Massey 1992, Taylor et al 1996 and Grindle 1988; Quinn 2005). As George (1990) 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" (quoted in Taylor et al 1996: 402; George 1990: 170). This point is reaffirmed by Calderón and colleagues (2008) who find that "…remittances are more effective in raising investment and enhancing growth in countries with higher levels of human capital, strong institutions, and good policy environments" (Calderón, Fajnzylber and López 2008: 366).

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 incite 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 in which cash transfers were channeled towards specific development ends. Until recently it would not have been possible to empirically test this hypothesis. However, the program 3x1 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 3x1 para Migrantes

Over the course of the last decade different levels of the Mexican government have supported community-wide investments initiated by migrant organizations located in the U.S., also known as Homtetown 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 3x1 para migrantes, that RLD was officially incorporated into the state's economic platform. The 3x1 program clearly illustrates the intersection of migration and development in modern Mexico. The program was spearheaded by ex-President Vicente Fox (PAN, 2000-2006) and expanded significantly under ex-President Felipe Calderón (PAN, 2006-2012). Furthermore, current President Enrique Peña Nieto (PRI, 2012-2018) has indicated that the program will continue to receive strong federal support from his government. According to the Ministry of Social Development (SEDESOL), which administers the program throughout Mexico, the 3x1 program is designed to:

> …aid the initiatives of Mexicans that live in the exterior and to provide them with the opportunity to channel resources to Mexico in the form of projects with social impact that directly benefit migrant hometowns. The program is funded by contributions from migrant clubs or federations operating in the exterior, the federal government via SEDESOL, and state and municipal governments. For each peso that the migrants contribute, the federal, state and municipal branches of government contribute 3 pesos and for that reason, the program is called 3x1. (SEDESOL 2011)

More specifically, the 3x1 program was designed by state officials to channel remittances towards community development projects, including: bridges, roads, electricity grids, drainage systems, community centers and occasionally, businesses. State and municipal representatives promote the program at the local level and consulate officials promote it among diaspora communities abroad. The 3x1 program is structured such that each respective branch of government matches migrant contributions towards community development projects, *peso por peso*.

Today, a typical 3x1 project begins when a migrant leader takes a trip home and reaches out to local officials about the potential of working together on a development project in his or her

hometown. The first step authorities take is to register the migrants as a HTA with the Mexican consulate. Subsequently, the HTA establishes a connection with municipal authorities in order to propose a particular project. At this point, local representatives or delegates take on a crucial role. Delegates serve as a liaison between communities and municipal governments. These representatives are elected or appointed every three years ensuing municipal elections.[iii] Delegates frequently relay information between communities and the municipal government. Concerning the 3x1 program, delegates play a particularly crucial role due to the fact that HTA leaders reside in the exterior and therefore are often not well versed in the burdensome bureaucratic requirements of programs like 3x1.

Once a project is proposed the municipal government submits 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 viable and is in accordance with the rules of operation stipulated by the 3x1 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 approved, funds are allocated for the following fiscal year and all parties involved are given a green light to move forward with the project. If, on the other hand, a project does not receive a majority vote, it is returned to the *municipio*, and in most cases, the municipal government re-submits the project the following year (Aparicio and Meseguer 2011:7).[iv]

The 3x1 program reflects Mexico's effort in recent decades to court migrants as transnational citizens and vanguards of local development. The program is also a clear outgrowth of the nation's desire to create focused social programs geared at improving the lot of Mexico's most marginalized communities. Related to this, an important element of the 3x1 program is the strong

synergy forged between migrants, their communities and government officials. Through the 3x1 program migrants are allowed to directly partake in the planning and implementation of development projects across the country. Moreover, government officials are brought closer to the stark realities of underdevelopment evident throughout rural Mexico. Given this level of cooperation, and the relatively sophisticated nature of project planning, one might hypothesize that 3x1 investments would be more effective in underpinning long-term community development than household remittances alone.

In resent years academic researchers have subjected the 3x1 program to empirical scrutiny (Aparicio and Messeguer 2009, 2011; Fernández de Castro 2006; Menocal 2008). Still, the focus of these investigations has centered on the unique political economy of 3x1 projects. Specifically, researchers have revealed that local and regional political ambitions (Aparicio and Messeguer 2009, 2011) play a role in determining the redistribution of 3x1 funds. Duquette-Rury (2012) and Author (DATE), for example, demonstrates that the ebb and flow of 3x1 investment patterns fluctuates with local election cycles, such that investments peak in pre-election years and decline in post-election years. Together, this nascent literature documents the role that political motives play in underpinning investment cycles within the 3x1 program. Less attention, however, has been dedicated to measuring the actual impact 3x1 investments have on community wellbeing. Specifically, no author, to my knowledge, has studied whether or not state-sponsored RLD programs, like the 3x1 program, improve development outcomes in comparison to traditional household remittances. Despite the politicized nature of 3x1 investments, it may very well be that 3x1 investments still have a favorable effect on local development outcomes. Related to this, at present, there is little empirical evidence to corroborate the claim made by Mexican officials that 3x1 investments improve development outcomes relative to household remittances. On the flipside, there is no evidence to demonstrate that they do not.

In the space that follows I address the aforementioned empirical gaps via a systematic analysis of RLD in the state of Guanajuato, Mexico. Guanajuato represents an ideal location for this study due to the state's combination of high remittance flows and consistent participation in the 3x1 program. In terms of remittances, during the period 2002-2011 Guanajuato was second only to Michoacán in terms of total remittances flows (Banco de Mexico). Regarding the program 3x1 para migrantes, during the program's first ten years in operation Guanajuato was among the top four funded states each year, rivaling 3x1 investment trends in Zacatecas, Jalisco and Michoacán (SEDESOL). Finally, the 3x1 program is historically linked to Guanajuato by ex-President Vicente Fox; who, while serving as Governor of Guanajuato (1995-1999), spearheaded a state-sponsored remittance-matching program that later served as a prototype for the 3x1 program that was institutionalized at the federal level in 2002. Taken together, the 3 x 1 program in Guanajuato presents a particularly fruitful opportunity to evaluate the impact of household remittances and 3x1 investments, respectively, on development outcomes at the municipal level in modern Mexico.

Data and Methodology

Table 1 illustrates the panel data used in this study. As the far right column indicates, data was collected from a variety of sources. The principle 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 municipios. The HDI, which is designed by the United Nations Development Programme (UNDP), is composed of development patterns logged by the *Instituto Nacional de Estadística y Geografía* (INEGI). The HDI measures healthcare, education and income and ranges from 0 to 1, where 1 is highly developed and 0 is completely undeveloped. In Guanajuato, highly developed municipios approach .9, whereas largely

underdeveloped municipios are closer to .5. (For additional information on the HDI index please see Annex 1.)

[Figure 1 about here]

For the period 2002 to 2011, the mean *HDI* across the state's municipios was .77. Concerning health, *Infant Mortality Rate* is employed as an indicator of wellbeing. Across Guanajuato, from 2002-2011 there was an average of 21.9 deaths per 1,000 live births. This figure reduced substantially over the time period in question, falling to 14.9 deaths per 1,000 live births by 2010 (INEGI). Still, for the sake of comparison, in 2010 Mexico's national infant mortality rate was 14.4 deaths per 1,000 live births. In the U.S., in turn, there were only 4.29 deaths per 1,000 live births (Mathews et al. 2012:1).

Regarding 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, school attendance rates in Guanajuato were 65 percent for children ages 6 to 24. Concerning illiteracy rates, from 2002 to 2011 about 13.6 percent of Guanajuato's population was unable to read or write. In comparison, in 2010 in the U.S. less than 1 percent of children age 15 and over was 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 it lags far behind levels evident in highly developed nations.

Finally, in regard to living standards, municipal GDP per capita is used as an indicator of economic wellbeing. 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). In the U.S., on the other hand, GDP per capita for the same year was estimated at $48,500 (CIA Factbook 2010). These stark

contrasts, considered in conjunction with indicators of health care and education, help clarify why many residents from Guanajuato migrant to stronger regional economies in search of work, and occasionally, to the U.S.

Concerning independent variables, the variable *3x1 per capita* is calculated as the total amount of 3x1 investments made in each respective municipio divided by the municipio's population. Similar to GDP per capita, 3x1 per capita provides a more accurate means of comparing 3x1 investments across municipios. The variable *% Homes with Remittances* represents the percentage of homes in a given municipio that receive migrant remittances. In turn, the variable *% of Homes with Return Migrants* measures the percentage of homes that had a migrant that returned to Mexico during the previous census and stayed. Data for these variables was collected from the National Population Council (CONAPO) and INEGI. In turn, in order 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.[v] These variables permit for 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 municipios have to support investments in public infrastructure. In Guanajuato, for example, Ramo 26 and Ramo 33 accounted for more than 80 percent of public works projects during the period 2002-2011. Finally, the variable *Rural-Urban* is generated in order to control for population differences across municipios. A municipio was marked as "rural" if the total population is less than 50,000 inhabitants and "urban" if the population is greater than 50,000. The continuous variable *Population (log)* is also included. This particular variable is logged and records a mean of 10.9. (The actual mean municipal population for the time period for question was 114,158.) Data for these variables comes from the National System of Municipal Information (SNIM) and INEGI.

[Table 2 about here]

Regression Analysis of RLD in Guanajuato, Mexico

Similar to the rest of Mexico, HDI levels in Guanajuato have improved a great deal in recent decades. Graph 1 plots human development from 2000 through 2011 in Guanajuato's 46 municipios. As the reader will note, HDI has clearly improved in Guanajuato over the last decade. In 2000 very few of Guanajuato's municipios surpassed .8 on the HDI scale. In turn, by 2010 more than nine of the state's municipios had exceeded the .8 and all municipios registered HDI levels above the .6 level. Furthermore, by 2010 several municipios approached the .9 level, with one municipality, Celaya, surpassing .9. Moreover, as the reader will note, inequality between municipios in terms of HDI has decreased over the last 10 years. This trend is evidenced by the reduced distance between the most developed and least developed municipios in Guanajuato. The goal of the ensuing analysis is to determine the degree to which remittances and 3x1 investments, respectively, have contributed to these advances over the time period 2002-2011.

[Graph 1 about here]

In the space that follows I evaluate the relationship between remittances and human development in Guanajuato via multiple regression analysis. Specifically, I run fixed-effects estimations as a means of determining the effect of independent variables on human development outcomes. Table 3 presents the results of this analysis. $\chi 2$ tests show that regressions are significant across all four models. The model can be specified as:

$$HDI_{it} = \alpha + \boldsymbol{\beta}' \boldsymbol{x_{it}} + v_i + \varepsilon_{i,t}$$

where the dependent variable HDI*it* corresponds to the cross-sectional unit *i* at time *t*; x_{it} is a time-variant matrix of independent variables; the v_i is the *i*th cross-sectional unit effect; and $\varepsilon_{i,t}$ is the standard error term.[vi]

The variable *3x1 per capita*, which is lagged by one year, is significant across all four models, implying that 3x1 investments have a positive effect on human development trends in the ensuing year. The coefficient for 3x1 per capita is small at .00002 but it is important to note that the HDI index runs from 0 to 1 and in general development changes very slowly over time. Thus, despite a relatively small coefficient, this finding is substantially quite significant as it indicates that channeling remittances towards specific projects can potentially lead to positive development outcomes. The independent variable *% Homes with remittances* is significant across all models but the variable reveals a negative relationship between remittances and human development. The coefficient for this variable is relatively large, ranging from -.0019 in Model I to -.0016 in Model IV. This finding indicates that household remittances alone tend to repress human development at the municipal level in Guanajuato. On the other hand, the variable *% Homes with return migrants* shares a strong positive relationship with human development across all models, implying that return migrants may play an important role in underpinning development trends in the state of Guanajuato. Taken together, these initial three variables indicate that remittances have the potential to improve human development outcomes at the municipal level. However, it appears that migrants and their communities are only able to tap into this potential when they work in conjunction with the state in an effort to channel remittances towards particular development projects.

Although remittances are clearly a major source of income for municipios across Guanajuato, they are hardly a replacement for economic production and government taxation. Given this, one would expect that the municipios that capture a larger percentage of municipal

production in the form of taxes would have relatively better development outcomes. The variable *% Municipal Production Taxed* supports this notion, reporting positive and relatively large coefficients across each model. Still, the variable is only statistically significant in Model IV (P<.1). One possible explanation for this outcome is the fact that taxation does not necessarily indicate government investment in social welfare. For this reason, the variables *Ramo 26* and *Ramo 33* may be more meaningful in that, like 3x1 para migrantes investments, these variables measure government allotments towards specific social investments. As Table 3 indicates, each of these variables has a positive impact on human development. This is an important finding due to the fact that both 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 so much 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, *Per Capita Income* shares a positive relationship with HDI, implying that human development improves more in municipios with higher per capita income in the previous year. This finding is related to the relationship between *Rural-Urban* and HDI, which indicates that human development is better in relatively more urban municipios.

[Table 3 about here]

Table 3 highlights a number of interesting findings concerning the relationship between remittances and development in Guanajuato. Nonetheless, it is important to keep in mind that the HDI is composed of four distinct indicators, including: infant mortality rates, literacy rates, school attendance rates and per capita income. Thus, although regression analysis indicates that 3x1

investments improve development outcomes in Guanajuato, it is quite possible that migrant projects affect the individual indicators of human development differently. For that reason, in the space that follows I explore in turn the relationship between 3x1 investments and each of the aforementioned indicators of wellbeing. I begin with infant mortality rates.

Table 4 reports results from the regression of select independent variables on infant mortality rates. $\chi 2$ tests show that regressions are significant across all four models. As in the previous model, I run fixed-effects estimations as a means of determining the effect of independent variables on infant mortality rates in the state of Guanajuato. The model is specified as:

$$Infant\ Mortality\ Rates_{it} = \alpha + \boldsymbol{\beta}' \boldsymbol{x_{it}} + v_i + \varepsilon_{i,t}$$

where *i* indexes the municipio and *t* indexes the year. Thus, *Infant Mortality Rates* is the dependent variable observed for municipio *i* at time *t* and $\boldsymbol{x_{it}}$ is a time-variant matrix of independent variables. The v_i terms are the municipios fixed effects, and $\varepsilon_{i,t}$ is the error term.

The variable *3x1 per capita* is significant in each model. In Model IV, for example, as 3x1 per capita increases 100 pesos infant mortality falls by 6 in the ensuing year, indicating that for every 1,000 births 6 fewer children die before their fifth birthday. The independent variables *% Homes with remittances* is also significant across all four models. The coefficient is positive in each model, indicating that for a 10 percent increase in household remittances infant mortality rates at the municipal level increase by 5. This does not necessarily mean that household remittances do not improve the healthcare of some individuals. In fact, they do. During multiple site visits to communities across Guanajuato I met countless individuals with medical ailments who were able to receive treatment in large part due to the money family members sent back from the U.S. Still, there were many other individuals in these same communities who were not receiving remittances, and as a result, in the case of an emergency, they would be unable to foot the bill at a private clinic or in the

case of a public health care center, they would have had trouble purchasing the medicine prescribed by the physician. Put simply, remittances alone do not appear to be a good substitute for public investments in healthcare. Concerning the variable *% Homes with return migrants*, there is a strong negative relationship between the percentage migrants who return from the U.S. and infant mortality rates. Specifically, as evident in Model IV, for a 10 percent increase in return migrants infant mortality rates fall in the ensuing year by an astounding 14 deaths per 1,000 births. This finding reaffirms the apparent importance of return migrants in defining RLD on the ground in Guanajuato.

Migrants and remittances may indeed play an important role in community development, especially in Guanajuato's rural municipios. Still, as previously demonstrated, remittances are hardly a substitute for public investment in local communities. This point is further evidenced by the variable *% Municipal Production Taxed*, which shares a strong negative relationship with infant mortality rates. In Model IV, for example, for every 1 percent increase in the taxation of municipal production, infant mortality rates fall by 17. This finding clearly demonstrates that the municipal government's ability to improve social conditions is in large part a function of its ability to generate revenue. With this in mind, it is somewhat surprising that neither *Ramo 26* nor *Ramo 33* report significance in the four models outlined in Table 3. If nothing else, this speaks to the relative importance of migrant investments made through the 3x1 para migrants program at the municipal level in Guanajuato. In turn, the variable *Per Capita Income* is significant and implies that as per capita income increases 100 pesos infant mortality rates fall by roughly 1 among every 1,000 births. Finally, the variable *Rural-Urban* is significant and shares a strong positive relationship with the dependent variable. In Model IV, for example, infant mortality rates increase by nearly 8 in rural municipios relative to urban municipios. Given that migrants are predominantly from rural areas, this finding again highlights the importance of 3x1 investments, which predominately occur in Guanajuato's rural municipios.

[Table 4 about here]

Table 5 displays the results from the regression of select independent variables on school attendance rates. $\chi 2$ tests show that regressions are significant across all four models. Again, in this model I run fixed-effects estimations as a means of determining the effect of independent variables on school attendance rates across Guanajuato's municipios. The model is specified as:

$$School\ Attendance\ Rates_{it} = \alpha + \boldsymbol{\beta}' \boldsymbol{x_{it}} + v_i + \varepsilon_{i,t}$$

where *i* indexes the municipio and *t* indexes the year. Thus, *School Attendance Rates* is the dependent variable observed for municipio *i* at time *t* and $\boldsymbol{x_{it}}$ is a time-variant matrix of independent variables. The v_i terms are the municipios fixed effects, and $\varepsilon_{i,t}$ is the error term.

Concerning Table 5, *3x1 per capita* has a positive effect on school attendance. Specifically, as 3x1 per capita increases 100 pesos school attendance increases roughly 6 percent in the following year. The reader may find this result to seem counterintuitive, given the fact that the large majority of 3x1 investments are made in the form of public infrastructure. However, when placed in context, this finding makes more sense. For example, imagine for a moment a rural community with poor roads and limited access to electricity. In this community school attendance rates would be expected to be low due to the fact that students would have a relatively harder time getting to school and once at school the quality of education would be affected by the building's potentially limited access to electricity. If, in this same community 3x1 investments focused on improving the community's roads and expanding the electricity grid, one would expect school attendance rates to improve in subsequent years. One might expect to find a similar correlation between *% Homes with remittances* and school attendance rates; however, as Table 5 indicates, attendance rates actually fall as remittance levels increase. Although the mechanism driving this particular outcome is not entirely self-evident, this finding quite likely relates to the fact that children grow up idolizing migrants in

communities that receive high remittance flows. Migrants, after all, are among the most economically privileged groups in their communities. This is particularly true in rural municipios. As a result, young men (and more recently women) often look not to education as the key to a successful future but rather to the U.S. As many migrants suggested during my interviews, the only way to get ahead in rural Mexico is to go north and "probar suerte" or "try ones luck." Under these circumstances it is hardly surprising that municipios with relatively higher remittance rates have lower school attendance rates. In high migration regions one's rate of return on education is far less than a successful to the U.S. This finding echoes a 2006 research project commissioned by the Inter-American Development Bank which 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). In turn, regarding the relationship between *% Homes with return migrants* and school attendance rates, for every 10 percent increase in return migrants, school attendance rates at the municipal level increase by 11 percent. This finding likely reflects the fact that migrants returning from abroad often place specific importance on education as a result of their experiences in relatively more developed countries.

The variable *% Municipal Production Taxed* indicates that education attendance rates fall by nearly 13 percent for every 1 percent increase in the taxation of municipal production. This finding may seem counterintuitive, however, this trend appears to reflect a tendency that is apparent in other high migration regions in Mexico and around the world. That is, migrants are predominately from relatively rural areas but generally they are not the poorest of the poor. Rather, migrants tend to come from the rural areas that are a little better off than surrounding communities. This results from the fact that in order to migrate one needs enough money to pay for transportation to a more developed region or country. This principle applies to both legal migrants who are faced with

thousands of dollars in fees and transportation costs, and illegal migrants, who are forced to pay *coyotes* or border-crossers hefty fees for their services. In this sense, at least initially, in municipios with high migration rates education attendance goes down as municipal capacity strengthens. This appears to result from the fact that as social conditions begin to improve in extremely poor areas more people begin to migrant, and specifically, more young men and women who would otherwise be in school begin to search out employment opportunities abroad. Related to this, it is also quite likely that in municipios with high migration young men and women look to the U.S. as the only viable option to get ahead in life, and thus, in these communities education takes a back seat to migration. Still, this trend is far less evident in urban municipios, suggesting that there is a point of inflection at which point increased taxation, which itself is a proxy for development, begins to encourage school attendance.

Regarding public investments in infrastructure, the coefficients for *Ramo 26* and *Ramo 33* indicate a positive relationship with the dependent variable; however, neither coefficient is statistically significant. Similarly, *Per Capita Income* does not report significance. Finally, the coefficient for *Rural-Urban* indicates that rural municipios have school attendance rates that are more than 6 percent below the rates recorded in urban municipios.

[Table 5 about here]

Table 6 displays the results from the regression of select independent variables on literacy rates. $\chi 2$ tests show that regressions are significant across all four models. As in the previous models, I run fixed-effects estimations as a means of determining the effect of independent variables on literacy rates across Guanajuato's municipios. The model is specified as:

$$Literacy\ Rates_{it} = \alpha + \boldsymbol{\beta}' \boldsymbol{x_{it}} + v_i + \varepsilon_{i,t}$$

where *i* indexes the municipio and *t* indexes the year. Thus, *Literacy Rates* is the dependent variable observed for municipio *i* at time *t* and $\boldsymbol{x_{it}}$ is a time-variant matrix of independent variables. The v_i terms are the municipios fixed effects, and $\varepsilon_{i,t}$ is the error term.

Table 6 displays the results of regression analysis of the relationship between literacy rates and select independent variables in Guanajuato. The coefficient for *3x1 per capita* is positive but is statistically non-significant across all models. Taken into consideration with the results from Table 5, this finding indicates that while 3x1 investments do improve school attendance rates, they do not appear to affect literacy rates. In this sense, 3x1 investments appear to increase the likelihood of children going to school but they do not appear to influence the outcome of the learning process that takes place once they are there. Intuitively this makes sense when one considers the fact that 3x1 investments focus mainly on public works projects and rarely address issues of human capital, such as instructor capacity within primary and secondary schools. Across all models, the variable *% Homes with remittances* reports a strong negative relationship with literacy rates. Specifically, concerning Model IV, for every 10 percent increase in the percentage of households receiving remittances literacy rates fall by roughly 1.4 percent. This finding echoes the results of Table 5, reemphasizing the fact that municipios with high migration tend to have weaker education outcomes due to the fact that a good number of young men and women drop out of the education system in order to migrate to larger cities in Mexico or to the U.S. In turn, as Table 6 indicates, a 10 percent increase in return migrants leads to a roughly 5 percent increase in literacy rates.

The reader will recall that in Table 5 it was found that municipal taxation shares a strong negative relationship with school attendance rates. However, as Table 6 reveals, across Guanajuato municipal taxation stimulates higher literacy rates. This finding is very promising in so much that it demonstrates that as municipal capacity improves in Guanajuato, local governments respond by

investing in education. Literacy rates are a very basic but meaningful proxy for education quality, especially in marginalized regions that tend to have high illiteracy rates. Thus, the fact that improved taxation at the local level leads to an increase in literacy rates indicates that municipal capacity is a key factor along the road to development.

The variables *Ramo 26* and *Ramo 33* both have a positive effect on literacy rates, indicating that municipalities have the potential to improve human capital outcomes by supporting investments in public infrastructure. This is specifically important in the case of Ramo 26 investments due to the fact that these particular transfers are aimed towards the country's most marginalized municipios. This finding would suggest that the country would be wise to expand these particular transfers, as they appear to not only reach the most excluded citizens, but most importantly, improve their lives. Regarding the variable *Per Capita Income*, Table 6 shows that for every $1,000 dollar increase in per capita incomes literacy rates improve a modest 2 percent. This finding, which is overshadowed by the positive influence of municipal taxation and return migrants on literacy outcomes, underscores the importance of state support and community ties in improving education outcomes. Finally, the variable *Rural-Urban* is not significant; although the direction of the coefficient indicates, as one might expect, that literacy outcomes are worse in rural municipios.

[Table 6 about here]

Table 7 displays the results from the regression of select independent variables on per capita income in Guanajuato. $\chi 2$ tests show that regressions are significant across all four models. I run the model with fixed-effects estimations as a means of highlighting the effects of independent variables on literacy rates across Guanajuato's municipios. The model is specified as:

$$Index\ of\ Per\ Capita\ Income_{it} = \alpha + \boldsymbol{\beta}' \boldsymbol{x_{it}} + v_i + \varepsilon_{i,t}$$

where *i* indexes the municipio and *t* indexes the year. Thus, *Index of Per Capita Income* is the dependent variable observed for municipio *i* at time *t* and x_{it} is a time-variant matrix of independent variables. The v_i terms are the municipios fixed effects, and $\varepsilon_{i,t}$ is the error term.

The variable *3x1 per capita* reports non-significance across all models. This finding implies that 3x1 investments have a negligible effect on per capita income across Guanajuato's municipios. This is to be expected as the 3x1 program addresses issues of basic infrastructure but does not directly aim to generate employment within local communities. Concerning the variable *% Homes with remittances,* it is evident that as household remittances increase at the municipal level per capita income improves. Still, the reader will recall that the results displayed in Table 3 reveal a strong negative relationship between household remittances and overall human development. This finding implies that while income is clearly a necessary factor for economic and social development, it is not sufficient in and of itself. Put differently, raw income is hardly a substitute for a development-minded state that facilitates the channeling of resources to those areas of society in which they are most needed. In turn, across all four models, the percentage of homes with return migrants has a positive effect on per capita income. The mechanism driving this outcome is not directly evident but the strength of this particular relationship merits future research.

The variable *% Municipal Production Taxed* reports insignificance across all four models. In contrast, the variables *Ramo 26* and *Ramo 33* both have a positive influence on per capita income. Again, this is an extremely meaningful finding in so much that it demonstrates that the decentralization of federal funds in Guanajuato over the last ten years has not been in vain. Finally, although not statistically significant, the variable *Rural-Urban* implies that per capita income is relatively lower in rural municipios.

[Table 7 about here]

Conclusions

In this study I have placed specific emphasis on the manner in which household remittances and investments made through the program 3x1 para migrantes, respectively, affect human development outcomes across municipios in the state of Guanajuato, Mexico. Two clear points emerge from my analysis: (1) household remittances reduce development, while (2) 3x1 investments improve development outcomes. Concerning the former, this study cast a cautionary light on research documenting a positive relationship between household remittances and development (Fajnzylber and López 2008). Acosta and colleagues, for example, find "that remittances have a positive and significant impact on growth" (Acosta et al 2008: 128). The present study, in contrast, demonstrates that the actual effect of remittances varies a great deal at the local level, indicating that it may be a mistake 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. Given this, 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 thus, spurious.

Regarding the program 3x1 para migrantes, the findings present here echo the results of the studies outlined in the first section of this study. In particular, as Calderón and colleagues (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" (Calderón, Fajnzylber and López 2008: 366). The empirical findings outlined above bolster these claims,

demonstrating that pro-migrant policies have the potential to improve the development outcomes of remittances. Related to this, the present analysis demonstrates that 3x1 investments improve human development in select municipios across the state of Guanajuato. Still, it is important to point out that 3x1 projects alone are not a replacement for meaningful commitments to development in other areas of society. In this sense, RLD appears capable of supporting economic and social growth but it is hardly a substitute for commitments by local officials and citizens to long-term development.

In closing, there are a number of the limitations to this study that 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. Second, this study focuses on one specific state amongst 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. Finally, future work regarding RLD would benefit from individual level data concerning the motives with which migrants remit money back to Mexico. Specifically, researchers should address the factors that encourage individuals to participate in communal 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, remain an untapped resource for international development.

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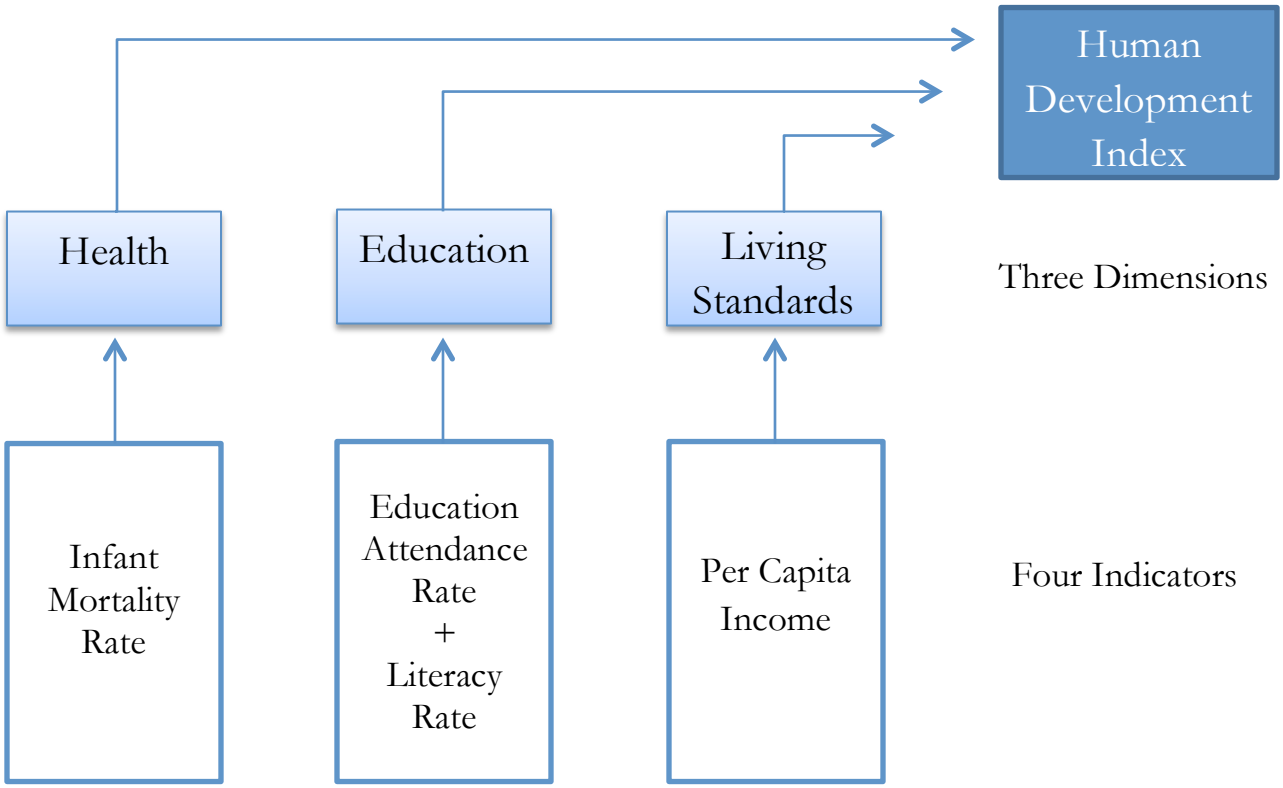
Table 1 Remittance Flows Around The World (In Millions of Dollars)

Rank	Total Remittances (2010e)		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, Development Prospects Group, World Bank, 2011.

Figure 1 Components of the Human Development Index



Source: INEGI; United Nations Development Programme (UNDP).

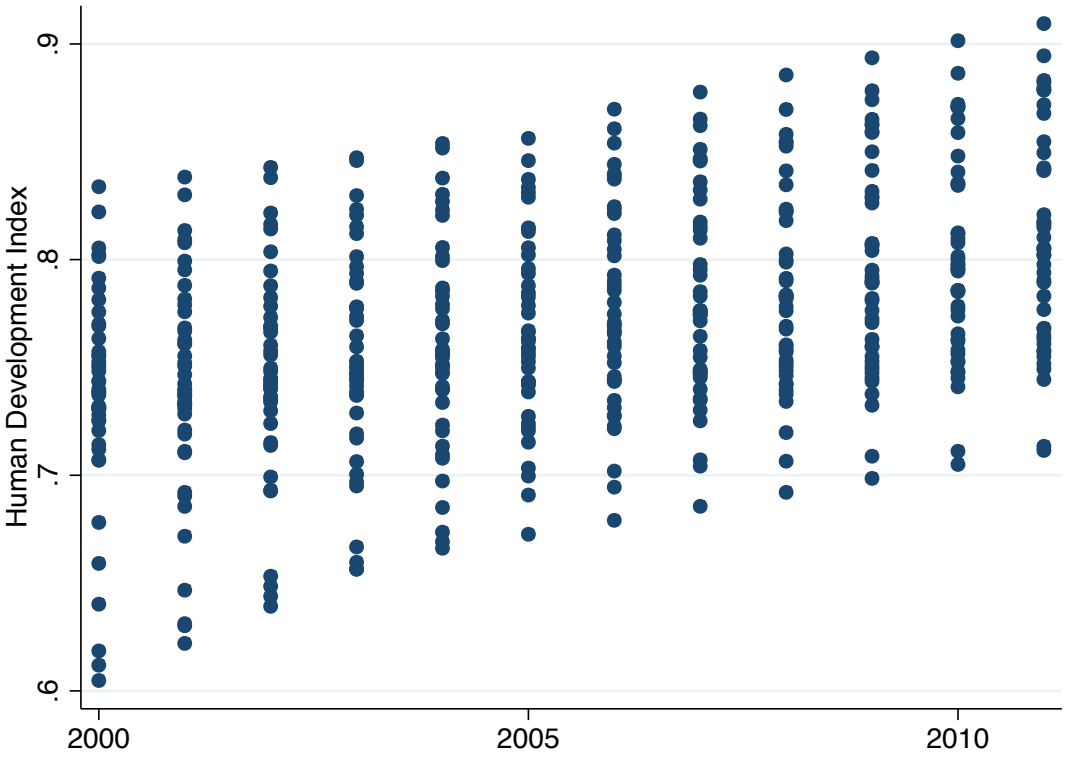
Table 2 Definitions and Description of Variables Included in Regression Analysis

Variable	Mean	S.D.	Data Source
HDI	.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	SEDESHU
% Homes Remittances	13.29	6.69	CONAPO
% Homes Return Migrants	4.67	2.33	CONAPO
Ramo 26 per Capita	464.13	443.91	SNIM
Ramo 33 per Capita	304.78	344.76	SNIM
Municipal Population (rural = 1; urban = 0)	.45	.49	INEGI
Population (log)	10.92	.06	INEGI

Source: UNDP, CONAPO, INEGI, SEDESHU and SNIM.

[1] Figures in Mexican Pesos.

Graph 1 Human Development in Guanajuato 2000-2011



Source: Author; data points calculated by author based on formula provided by United Nations Development Programme (UNDP); raw data from INEGI.

Table 3 Regression Analysis of Human Development in Guanajuato

	Model I	Model II	Model III	Model IV
HDI	Coef.	Coef.	Coef.	Coef.
3x1 per capita (1 year lag)	.00002***	.00002*	.00002*	.00002**
	(.00001)	(.00001)	(.00001)	(.00001)
% Homes with remittances (1 year lag)	-.0019***	-.0019***	-.0017***	-.0017***
	(.0004)	(.00001)	(.0003)	(.0004)
% Homes with return migrants (1 year lag)	.012***	.009***	.009***	.009***
	(.0006)	(.0008)	(.0008)	(.0008)
% Municipal Production Taxed (1 year lag)	.055	.033	.083	.092+
	(.064)	(.063)	(.061)	(.058)
Ramo 26 (1 year lag)	--	.00003***	.00002**	.00002**
	(--)	(.000007)	(.000007)	(.000007)
Ramo 33 (1 year lag)	--	.000005**	.000004**	.000004**
	(--)	(.000002)	(.000002)	(.000002)
Per Capita Income (1 year lag)	--	--	.00005***	.000001***
	(--)	(--)	(.000001)	(.000001)
Municipal Population (rural = 1; urban = 0)	--	--	--	-.029***
	(--)	(--)	(--)	(.009)
Constant	.74***	.74***	.73***	.75***
	(.006)	(.007)	(.006)	(.007)
R^2	.58	.61	.64	.66
Prob. > $\chi 2$	(0.000)	(0.000)	(0.000)	(0.000)
N	388	388	388	388

Note: Unstandardized coefficients reported. Standard Errors in Parentheses.
+p<.1 *p<.05 **p<.01 ***p<.001

Table 4 Regression Analysis of Infant Mortality Rates in Guanajuato

Infant Mortality Rate	Model I	Model II	Model III	Model IV
	Coef.	Coef.	Coef.	Coef.
3x1 per capita (1 year lag)	-.005**	-.005**	-.005**	-.006**
	(.002)	(.002)	(.002)	(.002)
% Homes with remittances (1 year lag)	.58***	.57***	.54***	.53***
	(.075)	(.075)	(.075)	(.073)
% Homes with return migrants (1 year lag)	-1.69***	-1.49***	-1.37***	-1.41***
	(.12)	(.15)	(.15)	(.15)
% Municipal Production Taxed (1 year lag)	-12.66	-11.04	-14.81^{+}	-17.18*
	(11.61)	(11.61)	(11.51)	(11.17)
Ramo 26 (1 year lag)	--	-.002	-.001	-.001
	(--)	(.001)	(.001)	(.001)
Ramo 33 (1 year lag)	--	-.0007	-.0006	-.0008
	(--)	(.0004)	(.0004)	(.0001)
Per Capita Income (1 year lag)	--	--	-.0008***	-.0008***
	(--)	(--)	(.0001)	(.0001)
Municipal Population (rural = 1; urban = 0)	--	--	--	7.84***
	(--)	(--)	(--)	(1.63)
Constant	22.83***	23.02***	23.82***	20.53***
	(1.22)	(1.21)	(1.22)	(1.37)
R^2	.50	.51	.52	.56
Prob. > $\chi 2$	(0.000)	(0.000)	(0.000)	(0.000)
N	388	388	388	388

Note: Unstandardized coefficients reported. Standard Errors in Parentheses.

$^{+}$p<.1 *p<.05 **p<.01 ***p<.001

Table 5 Regression Analysis of School Attendance in Guanajuato

	Model I	Model II	Model III	Model IV
School Attendance Rates	Coef.	Coef.	Coef.	Coef.
3x1 per capita (1 year lag)	.006***	.006***	.005**	.006***
	(.002)	(.002)	(.002)	(.002)
% Homes with remittances (1 year lag)	-.42***	-.42***	-.41***	-.40***
	(.06)	(.06)	(.06)	(.06)
% Homes with return migrants (1 year lag)	1.10***	1.03***	.99***	1.03***
	(.09)	(.12)	(.12)	(.12)
% Municipal Production Taxed (1 year lag)	-12.71+	-13.20*	-16.04*	-14.08+
	(8.85)	(8.89)	(8.98)	(8.67)
Ramo 26 (1 year lag)	--	.0008	.0014	.0012
	(--)	(.001)	(.001)	(.001)
Ramo 33 (1 year lag)	--	.0004	.0004	.0004
	(--)	(.0003)	(.0003)	(.0003)
Per Capita Income (1 year lag)	--	--	.0001	.0009
	(--)	(--)	(.0003)	(.0001)
Municipal Population (rural = 1; urban = 0)	--	--	--	-6.45***
	(--)	(--)	(--)	(1.27)
Constant	63.19	63.09	63.12***	65.83***
			(.95)	(1.06)
R^2	.45	.45	.45	.49
Prob. > $\chi 2$	(0.000)	(0.000)	(0.000)	(0.000)
N	388	388	388	388

Note: Unstandardized coefficients reported. Standard Errors in Parentheses.
+p<.1 *p<.05 **p<.01 ***p<.001

Table 6 Regression Analysis of Literacy Rates in Guanajuato

	Model I	Model II	Model III	Model IV
Literacy Rates	Coef.	Coef.	Coef.	Coef.
3x1 per capita (1 year lag)	.001	.001	.001	.001
	(.001)	(.001)	(.001)	(.001)
% Homes with remittances (1 year lag)	-.15***	-.15***	-.14***	-.14***
	(.032)	(.032)	(.032)	(.032)
% Homes with return migrants (1 year lag)	.68***	.57***	.54***	.55***
	(.05)	(.065)	(.065)	(.065)
% Municipal Production Taxed (1 year lag)	9.80*	8.79**	10.04**	10.32**
	(4.96)	(4.94)	(4.93)	(4.93)
Ramo 26 (1 year lag)	--	.001**	.001*	.001*
	(--)	(.0006)	(.0006)	(.0006)
Ramo 33 (1 year lag)	--	.0003*	.0002+	.0002+
	(--)	(.0002)	(.0002)	(.0002)
Per Capita Income (1 year lag)	--	--	.0003**	.0002**
	(--)	(--)	(.0001)	(.0007)
Municipal Population (rural = 1; urban = 0)	--	--	--	-.93
	(--)	(--)	(--)	(.72)
Constant	84.03***	83.96***	83.74***	84.14***
	(.52)	(.52)	(.52)	(.60)
R^2	.43	.43	.44	.45
Prob. > $\chi 2$	(0.000)	(0.000)	(0.000)	(0.000)
N	388	388	388	388

Note: Unstandardized coefficients reported. Standard Errors in Parentheses.
+p<.1 *p<.05 **p<.01 ***p<.001

Table 7 Regression Analysis of Per Capita Income in Guanajuato

	Model I	Model II	Model III	Model IV
Per Capita Income	Coef.	Coef.	Coef.	Coef.
3x1 per capita (1 year lag)	-.00001	-.000001	-.000001	-.000009
	(.00002)	(.00003)	(.00003)	(.00003)
% Homes with remittances (1 year lag)	.002*	.002*	.002*	.002*
	(.0009)	(.0009)	(.0009)	(.0009)
% Homes with return migrants (1 year lag)	.013***	.012***	.008***	.008***
	(.001)	(.014)	(.002)	(.002)
% Municipal Production Taxed (1 year lag)	.05	.05	.002	.0008
	(.14)	(.14)	(.13)	(.14)
Ramo 26 (1 year lag)	--	--	.00006***	.00006***
	(--)	(--)	(.00001)	(.00001)
Ramo 33 (1 year lag)	--	--	.000009*	.000009*
	(--)	(--)	(.000005)	(.000005)
Municipal Population (rural = 1; urban = 0)	--	--	--	-.007
	(--)	(--)	(--)	(.02)
Constant	.63***	.63***	.63***	.62***
	(.015)	(.015)	(.015)	(.02)
R^2	.24	.27	.27	.28
Prob. > $\chi 2$	(0.000)	(0.000)	(0.000)	(0.000)
N	388	388	388	388

Note: Unstandardized coefficients reported. Standard Errors in Parentheses.
$^{+}$p<.1 *p<.05 **p<.01 ***p<.001

[i]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 remittances flows benefit from the fact that migrants often work within sectors that require high levels of human capital.

[ii]The wording of this particular sentence is influenced by Jonathan Fox's work on community development in migrant communities in rural Oaxaca. In particular, see Fox (2007) and Fox and Bada (2008).

[iii]In Guanajuato delegates are appointed by the municipal government. For more information concerning the role of delegates in the 3x1 program see Aparicio and Meseguer (2011: 6,7). For actual copies of individual state laws of municipal governance see http://www.e-local.gob.mx/.

[iv]*Municipio* is the rough equivalent of "county" in English. Still, throughout this manuscript I use "municipio" in place of the English translation "county" or "municipality." I do this consciously in order to preserve the jurisdictional connotation this particular term carries through the Spanish-speaking world, and in particular, in Mexico.

[v]Ramo 33 provides local governments with funding to invest in areas of local development, including healthcare, 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 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 towards Mexico's most marginalized municipios.

[vi]The fixed-effects model is typically employed in the analysis of non-randomly selected cross-sectional datasets—such as the one assembled by the author for this study—that contain observations on the same cross-sectional units over a short period of time. As Seddighi (2012) explains, "[w]ithin this framework, the intercept term of the regression line varies across the cross-sectional units but remains the same over time, the slope parameters remaining fixed across individuals and time" (257) For more regarding the fixed-effects model see Seddighi (2012:255-263).