Title
Collective Remittances and Transnational Coproduction: The 3x1 Program for Migrants and Household Access to Public Goods in Mexico

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Publication Date
2015-10-10

Peer reviewed

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Abstract

Migrant hometown associations (HTAs) are mobilizing collective remittances to improve social welfare in their countries of origin. This paper assesses the effect of transnational coproduction of public goods in migrants' places of origin by studying the 3x1 Program for Migrants. The 3x1 Program is a national social spending program in which the Mexican local, state and federal government matches HTAs' collective remittances to improve public services through cross-border public-private partnerships. The statistical analysis across municipalities that do and do not participate in the 3x1 Program shows that coproduction improves citizens' access to public sanitation, drainage and water, although not electricity. Moreover, a negative and statistically significant interaction term between 3x1 Program expenditures and family remittances reveals a substitution effect: in the presence of transnational coproduction, migrant households are less likely to improve public goods using family remittance resources, but in the absence of 3x1 Program participation they continue to improve their hometowns with family remittances. This research offers a theoretical mechanism and supporting empirical evidence of an important kind of intermediary institution improving social welfare in migrant places of origin.

Keywords: Remittances, 3x1 Program, Coproduction, Public Goods, Mexico

Appears in *Studies in Comparative International Development* (2014) 49:112–139

Introduction

Over the last two decades, non-state actors have become important and increasingly visible providers of social welfare.[1] In countries across the world in which the state is unwilling or incapable of delivering essential public goods and services, non-state actors directly and indirectly facilitate citizens' access to a wide range of social welfare services (Cammett and MacLean, 2011). These non-state actors include non-governmental organizations, ethnic and sectarian organizations, families and other community-based groups. Recent studies highlight the range of non-state actors assuming an important complementary and substitutive role in delivering basic services in non-democracies and new democracies alike.[2] A related literature shows how civil society groups work in conjunction with government actors to coproduce public goods (Ostrom,1997; Evans, 1997). Most often, private citizen groups and public government agencies each contribute resources to supply public works including electricity and potable water.

Migrants represent an under-investigated group of non-state actors providing social welfare and coproducing public goods in their places of origin with important implications for state-society relations and participatory development. Since migration provides immigrants new access to autonomous resources by capitalizing on the wage differences between sending and receiving place, emigration aids households and communities in their places of origin with financial remittances. The transfer of remittances between sending and destination country represents an important kind of migrant activity described in the diaspora channel proposed by Kapur (2010) and

[1] Cammett and MacLean (2011) conceptualize social welfare provision broadly "to include the direct delivery or indirect facilitation of services, programs, and infrastructure, which are aimed at promoting the well-being and security of the population" (Cammett and MacLean 2011: 4).
[2] See the 2011 Special Issue of *Studies in Comparative International Development* on "Political Consequences of Non-State Social Welfare in the Global South", for example.

discussed in the Introduction of this Special Issue. But while the diaspora channel details a critical array of processes occurring across transnational borders, it overlooks a subset of these resource transfers: collective remittances.

Unlike *family remittances* in which immigrants send private funds to individual households for private consumption, migrant hometown associations (HTAs) in the host country pool together *collective remittances* to provide essential public goods to their common places of origin.[3] Migrant HTAs are voluntary civic associations or clubs located in the receiving country based on shared attachment to place of origin. Membership includes migrants from the same village, municipality, state or sending country. Within these associations, migrants pool collective remittances resources and often work in conjunction with government authorities in the sending country to coproduce public works aimed at improving social welfare in their hometowns.

The voluminous literature on the political economy of development has largely disregarded the myriad ways in which international migration produces significant political and economic effects on migrant sending countries with the exception of migrant family remittances. Academic researchers, policymakers and development banks alike are studying family remittances in earnest. Some herald this type of financial remittance as the development mantra du jour, while others argue the development potential of remittances are circumscribed to household consumption expenditures (Durand et al., 1996; Conway and Cohen, 1998; Kapur, 2003; Adams and Page, 2005). Other researchers show how family remittances affect macro-structural outcomes including regime stability (Faisal, 2012) and exchange rates (Singer, 2010). By contrast, others

[3] See Goldring (2004) for a discussion of the typological distinction between family and collective remittances.

show that family remittances affect more micro-processes including improving their own access to drainage and water through household improvements like plumbing and septic tanks (Adida and Girod, 2010). The overwhelming attention to family remittances and their economic impact is not surprising. In 2010, global remittance flows reached an estimated $450 billion (USD) surpassing foreign direct investment and official development aid in many countries. Family remittances also act as a stable source of foreign reserves in the wake of natural disasters and periods of macroeconomic crisis (World Bank, 2011; Ratha, 2003).

However, by focusing narrowly on family remittances, researchers miss a valuable opportunity to explain constructive support between public agencies in the sending state and private migrant non-state actors. This mutual support represents an intermediary institution, referred to as transnational coproduction, which benefits both migrant and non-migrant households in the country of origin. By shifting the analytic lens to collective remittances and a coproduction framework and putting migrants' hometown communities at the center of analysis, this study explains more of the variation in public goods provision across localities in Mexico. Also, it demonstrates a mechanism through which migrants are helping improve social welfare in their places of origin in partnership with sending country governments.

As migration is a network phenomenon, the social links between emigrants and more established immigrants channel migrants to places with existing migrant populations. The build up of migrant densities reproduces hometown communities in the host society enabling immigrants who share common hometown social ties and attachments to form civic clubs based on overlapping memberships and feelings of belonging in both the

home and host society (Levitt, 2001; Waldinger, 2008; Fitzgerald, 2008). As Basch et al. (1994) and Foner (1997) describe, migrants maintain multiple familial, economic, political and cultural ties across international borders making the home and host society a single arena of social action.

The migrant transnationalism community has built a rich literature over the last two decades, focusing extensively, but not exclusively on hometown associations, and the transmission of financial (monetary resources) and social remittances (ideas, norms, attitudes and practices) through migrant social networks. However, the domestic political effects of migrant transnational involvement on the sending countries have been obscured in this literature and remain overlooked by political scientists.[4] Even Kapur, who pushes researchers to think more systematically about the political economy of international migration, overlooks migrant hometown associations, collective remittances, and links to social welfare provision. This paper thus fills an important gap in our understanding of the diaspora channel by examining the impact of HTA investment on access to public services through an institutionalized social spending policy.

This study shows that while collective remittances are trumped by family remittances in total volume, this source of transnational financing is a growing component of social spending policy in out-migration countries. Since sending states are unable to influence how family remittances are used, many governments have created outreach initiatives including public policies and programs for immigrants and their families to attract HTAs' collective remittances (see Iskander, 2010).[5] Furthermore, even relatively small

[4] Notable exceptions include Levitt (2001), Ostergaard-Nielson (2003), Goldring (2002), R.C. Smith (2006) and Itzigsohn and Villacres (2008). See also Beauchemin and Schoumaker (2009) for a quantitative study of the effects of independent HTA investment on local development in Burkina Faso.

[5] The *Programa para las Comunidades Mexicanas en el Extranjero* (PCME) or the Program for Mexican

investments in public goods can improve citizens' access to social welfare at the local level, especially when HTA resources are amplified by investment from sending state public agencies. Also, in the case of Mexico as in many other countries, since migrants overwhelmingly emigrate from outlying rural communities, which receive far fewer public works projects compared to areas with much higher population density, migrant transnational investment often serves as the only source of capital for public infrastructure in these communities. HTAs investment in public goods in their hometowns not only aims to improve social welfare, but by coproducing public works in conjunction with the sending state, these transnational associations also attract public resources to communities receiving much less attention from subnational governments.

As many in the development community show, the interaction between state and non-state actors in different types of participatory governance not only improves citizens' access to basic services (Evans; 1997; Ostrom 1997; Wampler and Avritzer, 2004), but may also improve social capital and informal forms of political participation improving the quality of local democracy. While this study focuses exclusively on the social welfare effects of transnational coproduction, there is growing evidence to suggest that coproduction also has important consequences for citizen-state relations and democratic governance.[6]

Communities Abroad, was created in 1991 by the PRI administration as part of the division of the Ministry of Foreign Relations. The PCME was directed by ministry staff in conjunction with consulates and Mexican cultural institutes abroad and was designed to develop and maintain relations with emigrants from various social groups in the United States. The program focused on several different areas where services were provided to migrants in education, community, culture, sports and business. The community program, in particular, focused on helping migrants form HTAs and state-level federations of clubs as well as promoting state offices for migrant affairs. One of the chief activities of Mexican state offices for migrant affairs was to collect information on immigrants' whereabouts in the U.S. and publicize state level matching funds programs in the states of Zacatecas, Guerrero, Jalisco, Guanajuato, and Durango.

[6] Burgess (2005) and Duquette (2011) examine the effects of transnational coproduction on local democratic governance, participation and accountability.

In 2002, Mexico implemented a social spending policy designed to channel the material contributions of Mexican migrant HTAs toward community development ends – the 3x1 Program for Migrants (*Programa 3x1 Para Migrantes*). The 3x1 Program is a matching grants program in which the local, state and federal government each contribute 25% of the total cost of the project in addition to the migrant HTAs 25% contribution with collective remittances. As other countries implement their own co-financing mechanisms with migrant associations (Mali, Somalia, Colombia, El Salvador[7], Peru, France, the Netherlands, Haiti and the Philippines[8], for example), it is perhaps more important than ever to assess the welfare effects of these programs (Galatowitsch, 2009; Garcia-Zamora, 2007; Panizzon, 2011).

Mexico provides an auspicious opportunity to study the effects of collective remittances and transnational coproduction. Mexico receives upwards of $25 billion in remittances annually and 1 in 10 nationals currently lives abroad, 90% of whom live in the United States. Also, estimates put the number of Mexican migrant HTAs in the U.S. at around 1,000 clubs (Sedesol, 2008). Most importantly, through the 3x1 Program, migrant HTAs and Mexican government officials are financing, selecting, and implementing a wide array of projects including water and drainage systems, roads, electricity, public spaces, and sidewalks in a transnational context.

As of 2010, the Mexican 3x1 Program budget reached $1.7 billion, second in the national welfare budget only to the conditional cash transfer program supporting poor households, *Oportunidades*. As of 2008, 40% of Mexican municipalities that participate

[7] As of this writing, the national co-financing program in El Salvador is longer active.
[8] Efrain Jimenez, former president of one of the largest and most powerful federations of hometown associations from the state of Zacatecas helps countries, including the Philippines and Haiti, design their own versions of the 3x1 Program (personal correspondence, August 2013).

in the 3x1 Program are considered poor, which is about 26% of all Mexican municipalities classified as poor or very poor by the Mexican Census.[9] Between 2000 and 2010 there have been significant improvements in household access to public utility coverage in drainage (24%), water (11%), and sanitation (12%) across Mexican municipalities. Can these improvements be attributed to transnational coproduction and 3x1 Program participation? Does the remittances and development link hold up under empirical scrutiny, especially in poor migrant places of origin? Using an original dataset, this paper evaluates the extent to which coproduction improves citizens' access to water, drainage, sanitation, and electricity coverage across Mexican municipalities from 2002-2008.

As Przeworski and Vreeland (2000) show, the difficulty in evaluating the effects of program participation is nonrandom selection (see also Achen 1986 and Heckman 1988). Participating in the 3x1 Program is not randomly assigned, thus we are dealing with quasi-experimental data. Program participation is a function of structural factors, namely migration intensity and poverty. As such, the effects of participating in transnational coproduction may depend in some part on program participation, but endogenous factors may also account for changes in public goods provision. Comparing municipalities that participate in the program with municipalities that do not as if the group assignments were random may then lead to selection bias in the estimates.

To overcome these challenges, I model both the process of selection into the sample, participation in the 3x1 Program, and corresponding outcome of the assignment to treatment group, the changes in coverage rates for select public goods (Achen 1986: 37). Using a Heckman two-stage model and controlling for municipal characteristics,

[9] Data calculated by author from municipal (INEGI) and 3x1 Program statistics (SEDESOL).

empirical analysis offers support, first, that the 3x1 Program systematically improves public provision of potable water, drainage and sanitation services, although not electricity. Second, evidence from interaction effects between family remittances that go directly to migrant households and 3x1 Program expenditures reveals a negative and significant relationship. This interaction effect suggests that the marginal effects of participating in the 3x1 Program on public goods coverage are conditional on changing levels of family remittances. In addition to the independent effects on public goods provision, the interaction effect suggests a substitution between 3x1 Program expenditures and family remittances.

This study also reveals that the bulk of improvements in public utility coverage attributed to transnational coproduction are not in the poorest Mexican municipalities. These positive effects occur in medium and low poverty places with higher migration. Therefore, this paper shows that migrants using their collective remittance resources represent an important non-state actor working to provide goods and services to their communities of origin. However, transnational coproduction through the 3x1 Program is progressive only up to a point, as it does not positively aid the poorest Mexican localities that are in most need of social welfare services.

The paper proceeds as follows: In section two, I provide an overview of the mechanics of the transnational coproduction process in the provision of public goods between migrant HTAs and sending state governments. In section three, the 3x1 Program for Migrants is described in greater detail. Section four presents the empirical methodology and data, while section five presents the results of the statistical analyses. The concluding remarks follow the discussion of the results.

Transnational Coproduction and the Provision of Public Goods

Public goods – potable water, electricity, education, and roads, for example – are intrinsic components of social welfare. Inadequate provision of clean drinking water and sanitation often leads to disease outbreaks. Access to quality health care services reduces complications during maternal childbirth and infant mortality rates. And paved, easily navigable roads connect important market centers where agricultural producers sell and export commodities. In short, public service delivery is important to the welfare of individuals and communities.

Scholarship that examines the provision of public goods is typically divided between a market-based logic of development and traditional theories of public administration (Evans 1997). Since the private sector confronts typical problems associated with collective action – free riding, shirking, and opportunism, for example – market institutions often fail to supply satisfactory levels of public goods. The public sector is considered to be in the most favorable position to provide public goods because it is the best equipped with the economies of scale, legal capacity and technical expertise required for the construction of public infrastructure projects. There is a substantial literature that evaluates the factors that affect the effective design and size of the public sector including regime type, decentralization, federalism, economic modernization, civil society, administrative capacity, ethnic heterogeneity, and electoral competition (Baum and Lake 2001; Boix 2001; Oates 1997; Besley and Coate, 2003; Lipset 1959; Adsera et al. 2003; Putnam 1993; Tsai 2007; Alesina et al. 1999; Cleary, 2007). However, as several researchers observe, current systems of public administration, decentralization of decision-making to sub-national governments, and greater political competition fail to

deliver on their promise to improve public service delivery (Bardhan, 2002; Cleary, 2007).

A focus on either side of the "Great Divide" in the distribution of public goods overlooks the role of public-private partnerships. And, studying only civil society groups that physically reside in the place in which they help to provide public goods obscures the important role that migrant HTA play in development of their hometowns from across national borders. As Ostrom (1997) argues, government is the regular producer of public works, but whether the regular producer is the only producer depends both on the nature of the good itself and on the incentives that encourage the active participation of others. International migration and migrants' dual loyalties to the host and home country create the social, political and economic opportunity for transnational public-private partnerships. These partnerships enable state and non-state actors to produce levels of public good provision neither partner could provide on its own.

Two sets of complementary inputs define the transnational coproduction process: material and organizational. First, material inputs in the form of collective remittances that HTAs generate in the host society through personal donations, fundraising, and membership dues complement funds from the sending country government's budget. Second, organizational factors exist that incentivize coproduction partnerships for each set of public and private agents. For example, HTAs may participate in transnational coproduction for altruistic reasons, to uphold ethno-religious obligations in their communities of origin, or for more instrumental reasons like social status valorization (Goldring, 1998). Additionally, local governments may participate in coproduction for electoral gain or because they seek to improve local development through programmatic

spending. In sum, each set of coproduction actors is motivated to coproduce projects for a variety of reasons. However, the incentives that bring migrant HTAs and government agents together to coproduce community projects do not have to be the same for tangible goods and service to be produced.[10]

The Mexican 3x1 Program for Migrants and Public Goods Provision

Migrant HTAs provide an important source of funds for migrant sending countries, particularly migrants' hometown communities. The Mexican government and other countries with substantial emigration actively court collective remittances for local development initiatives and business investment opportunities.[11] The Mexican government, in conjunction with migrant HTAs and state federations of HTAs in the US, pioneered the federal 3x1 matching funds program in the state of Zacatecas in 1986 (Ferdandez de Castro, 2006; Iskander 2010). Various versions of the state program were later adopted in Jalisco, Durango, Guerrero and Guanajuato in the 1990s. As former governor of Guanajuato, President Vicente Fox implemented a state version of the 3x1 Program, which he later launched as the federal 3x1 Program his second year in presidential office. The Mexican Ministry of Social Development (SEDESOL) now administers the 3x1 Program.

Since the federal version of the 3x1 Program launched in 2002, the number of participating municipalities, hometown clubs and number and type of projects has

[10] See Burgess in this issue for an in-depth discussion of the likely set of factors that motivate migrant transnational participation in their countries of origin.

[11] For example, China has been very active in recruiting migrant HTAs, especially those in Europe, as partners in public goods provision. They were created with the support of the provincial governments and are more akin to business and investment bureaus than social clubs like the Mexican case (Nyíri, 2001). El Salvador implemented a program similar to the 3x1 Program through the Social Investment Fund for Local Development (FISDL), which offered co-financing to Salvadoran communities and HTAs seeking to invest their collective remittances (Gammage, 2006).

significantly expanded. In the inaugural year, 17 Mexican states participated in the program. By 2007, 27 of 30 Mexican states were participating and currently every Mexican state participates. As Figure 1 shows, the total amount of collective remittances and government funds invested in projects has increased as well: between 2002 and 2008, the total budget for coproduction budgets increased from $424 million to $1.7 billion (USD), an increase of about 300%. While the traditional migrant sending states of Zacatecas, Jalisco, Guanajuato and Michoácan benefit the most from the 3x1 Program in both total expenditures and number of projects, states with more recent migration are also taking part.

The core objective of the 3x1 Program is the development of social infrastructure and productive projects in high migration and poor Mexican localities.[12] *Oportunidades*, the federal cash transfer program, still commands the lion's share of Mexico's anti-poverty budget, but the 3x1 Program is the next most funded social welfare program. Currently, around 34% of Mexican municipalities are active in the 3x1 Program. While the total federal contribution to coproduction projects is only 25% of $1.7 billion, the total amount the program generates for local investment in public goods and services is noteworthy. Since local authorities in Mexico are constitutionally prohibited from collecting income tax revenues, they are almost completely reliant on state and federal revenue transfers to supply public works, one of their chief administrative responsibilities. For many municipalities, the matching funds and collective remittances acquired from the 3x1 Program command a significant share of local public works budget. Data shows that between 2002-2008, 3x1 program funds comprised up to 20% of the total municipal public works budget in 67% of participating municipalities, between

[12] Interview with Ms. Irma Hidalgo, director of the 3x1 Program, Mexico City, March 2009.

20%-50% of the budget in 25% of participating municipalities and more than 100% of the public works budget in 8% of participating municipalities. In some places, 3x1 Program expenditures are the only source of funds for much needed public infrastructure.

The formation of the HTAs and selection of 3x1 projects varies substantially across Mexican municipalities. Duquette-Rury and Bada (forthcoming) find using a representative survey of Mexican migrant HTAs in the U.S. that clubs come together both on their own and as a result of their hometown governments asking them to form a club. This survey also shows that project selection occurs primarily in one of three ways. First, the HTA may independently propose a project for funding to the Committee of Validation and Attention to Migrants (COVAM), for approval. Second, the HTA may directly engage the local government to negotiate project selection. Finally, the HTA may engage the local citizenry to determine which projects they favor for their community. After coproduction projects are proposed, the COVAM, which is comprised of municipal, state, federal and migrant representatives, approves or rejects projects for local implementation. 3x1 project budgets can be up to $80,000 USD, but the bulk of projects finance small-scale infrastructure. Table 1 shows the number and range of projects funded by the program.

The Mexican 3x1 Program provides an interesting case in which to understand how a coproduction process enables each partner to produce a larger provision of public goods than possible through independent action. For example, a street pavement and drainage project in the town of Santiago Tlatelolco, Jalisco cost about $14,000 USD. The division of resources per 3x1 partner can increase access to public goods for a sizeable share of local households: for a cost of $3,500 USD ($35 per capita) for each coproduction partner

(local, state, federal and migrant club), 350 residents (80 households) in Tlatelolco gained access to paved roads and public drainage[13]. In the town of El Sabino, Guanajuato, a $19,000 USD 3x1 project extended the public electricity grid to a part of the town where residents had never had electricity before. At a cost of $4,750 for each coproduction contributor, the equivalent of $1.19 per person in the town, a group of households received public electricity for the first time. At a cost of four times the material inputs necessary for these 3x1 projects, it is unlikely that any individual actor in the coproduction process could provide these goods independently.

There is very little research on the political economy of the 3x1 Program and transnational coproduction partnerships, more generally. Data from the few available studies suggests that, like many social welfare programs, politicians have identified ways to politically manipulate the program for their own electoral interests. Simpser et al. (forthcoming) find that municipal strategic electoral decisions motivate local political officials to time the disbursements of matching funds according to local electoral cycles and protect politically sensitive expenditure categories. Aparicio and Meseguer (2012) demonstrate that the ruling *Partido de Acción Nacional* (PAN) party is more likely to participate in the program and that PAN strongholds receive more projects than the two other major opposition parties, the *Partido de la Revolución* (PRI) and the *Partido de la Revolución Democrácia* (PRD). These studies point to political bias in the program and raise concerns of the progressive economic effects for participating municipalities.

While political bias is an important aspect of program effectiveness, these studies do not assess the social welfare outcomes of the 3x1 Program. I test two hypotheses related

[13] Project data from HTAs and municipal governments during visits to coproduction municipalities in Jalisco and Guanajuato, February-August 2009.

to 3x1 Program participation and social welfare provision. First, I test the overall potential of the program relative to non-participating municipalities.

Hypothesis 1 – *effects on public good provision*: Transnational coproduction financed by migrant collective remittances and municipal, state and federal matching funds through the 3x1 Program positively affects household access to public water, drainage, sanitation and electricity.

Second, I focus on whether the program improves public goods in poor municipalities that lag behind relatively more wealthy places with better public goods provision. As Aparicio and Meseguer (2012) show, while poor municipalities do participate in the program, they receive fewer projects than their wealthier municipal counterparts. Their result calls into question the program's ability to benefit the poorest places in Mexico that need coproduction the most. Places with the highest migration rates are more likely to participate in the program, which are often not the poorest localities. Across all Mexican municipalities, data reveal that 72% of places categorized as having high or very high migration intensity participate in the 3x1 Program while medium and low migration localities are less likely to participate (28% and 19%, respectively). As of 2000, 53% of all Mexican municipalities are categorized as having very high or high levels of poverty and 40% of those do participate in the 3x1 Program. I have no priors regarding the direction of the effect of 3x1 projects on public goods provision in poor municipalities.

Hypothesis 2 – *effects on poor municipalities*: Transnational coproduction financed through the 3x1 Program positively (negatively) affects relative household access to public water, drainage, sanitation and electricity, in poor municipalities.

Data and Empirical Methodology

To assess the impact of 3x1 Program expenditures on public goods provision, I compiled a panel dataset from several Mexican sources during active years of the Program for which data was available, 2002-2008. Data on coproduction project expenditures was collected from the Mexican Ministry of Social Development's 3x1 Program dataset and socio-demographic, economic and political data collected from the *Instituto Federal Electoral* (IFE), *Instituto Nacional de Estadística y Geografía* (INEGI), *Sistema Estatal y Municipal Base de Datos* (SIMBAD) and the *Consejo Nacional de Población* (CONAPO). First, I estimate a logistic model to identify the selection equation for program participation as well as linear models of the effect of 3x1 expenditures on access to public goods. Next, I estimate the Heckman Two-Stage models to correct for selection bias in the ordinary least squares models. The four dependent variables in the analysis, public coverage of water, drainage, sanitation and electricity, are transformed into first differences in order to capture the improvements in household access to each public good rather than using levels of public provision. As Wooldridge (2001) argues, the strength of first-differencing lies in the fact that it differences out unmeasured and unchanging causes of the outcome measure that may be associated with independent variables, which eliminates measurement error biases and captures dynamic processes. The dependent variables are captured as differences between the year 2000 and 2010 from the Mexican decennial census. The longer time period for the change in coverage of public goods reflects the possibility that the implementation of projects may lag behind budget approval. The dataset includes 2,427 Mexican municipal observations.

The dependent variable in the logistical selection equation is whether or not a

municipality participated in the 3x1 Program during the years 2002-2008. The participation variable is a dichotomous variable that takes the value of 1 if a given municipality participated and 0, otherwise. I include a series of explanatory variables that predict program participation. I include two continuous variables that capture the intensity of international migration and poverty. The first measure is a principal-component score based on the number of family members who live abroad, circulatory migration, and return migration in the household, based on data compiled from the 2000 Mexican census. The second measure is the index of marginalization, also from year 2000 data. The index of marginalization is also a principal-component score based on percentage of illiterate population, the percentage of population without elementary school, the percentage of population living in dwellings without toilet, electricity, access to water, household and dirt flooring, as well as localities with less than 5,000 inhabitants and with incomes lower than 2 minimum wages. I also include the quadratic term of the marginalization index to account for the possibility of a curvilinear relationship between migration and poverty. Next, I include a dichotomous variable for whether the municipal incumbent party affiliation was the PAN party, between 2000 and 2002, the years in which the 3x1 Program was announced and launched. We would expect that localities in which a PAN mayor was in power were likely to receive more information about the program and report greater participation. I also include the log of population of each municipality. Finally, since traditional migration sending states including Guanajuato, Jalisco, Zacatecas, Michoácan, Durango, Guerrero, San Luis Potosí, and Hidalgo have a very long history of international migration to the U.S., they are more likely to have more organized migrants to create HTAs. I include a dichotomous variable that takes the value

of 1 if the municipality is in one of the traditional migrant sending states listed above, and 0, otherwise.

For the OLS and Heckman models, 3x1 Program expenditures of a given municipality are the central explanatory variable. The 3x1 Program expenditures of a municipality is a continuous variable that captures total collective remittances and local, state and federal matching fund contributions per capita for each year between 2002 and 2008.

The models include several controls for economic, political and socio-demographic factors that affect the change in municipal public utility coverage over the observation period. First, in the context of local budgets, I account for municipal government expenditures that contribute to public utility coverage by including a measure of average municipal public works expenditures per capita. Second, to control for the municipal budget constraint and financial capacity, the models include the average total revenue collected by municipal authorities from local sources as well as revenue transfers from state and federal levels of government.

Public goods delivery is also influenced by socioeconomic and demographic conditions of the municipality. As a third control for changes in municipal socioeconomic development, I include the change in the proportion of the total population over the age of twelve that is literate. If places with higher levels of socioeconomic development enjoy greater access to public goods, a positive change in literacy rates would improve household access to water, electricity, sanitation and drainage. Moreover, as Cleary (2007) argues, literacy rates serve as a good proxy for non-electoral forms of political participation. If the share of the total municipal population that is literate improves, this

may also suggest positive changes in utility coverage due to citizens making greater demands on the local government. Fourth, I include the proportion of the population that speaks an indigenous language. Some scholars argue that a greater indigenous population is an indicator of poverty. As the final control for socio-demographic factors, I include a measure of the change in the log of the population size to control for potential demand for water, drainage, electricity and sanitation. The expectation is that as municipal population size grows, there will be a greater demand for public goods.

I also control for local democratic institutions that theoretically affect the provision of public goods. Sixth, I include a dichotomous variable of the partisan affiliation of the municipal incumbent (PAN, PRI, PRD)[14] that was in power for the majority of the observation period. Since Mexican municipal elections occur every 3 years and are not the same years across Mexican states, I capture the party ID of the incumbent party that held the office of municipal president (local mayor) between 2002-2008. This means that during the observation period, a given municipality may have experienced as many as 3 electoral cycles. In the event that a municipality did not have a clear dominant party, I code the partisan affiliation of each political party that held local office, thus in some cases the total may exceed 100% across the three major parties. The party label of the municipality controls for the possibility that select political parties use social spending to maximize electoral payoffs.[15] Seventh, I include an indicator of municipal political competition to account for the possibility that households have greater access to public

[14] "Other" parties are the excluded group.

[15] For example, Magaloni, Diaz-Cayeros and Estevez (2007) find that the PRI distributed National Solidarity Program (Pronasol) anti-poverty funds to municipalities depending on the degree of electoral competitiveness: in highly competitive districts they used public goods to mobilize swing voters, whereas in PRI strongholds they rewarded their loyal base of support with private goods. By contrast, Takahashi (2013) shows that policy and institutional reforms enacted during the period of democratization after Salinas left office in 1994 has limited the ability of politicians to manipulate social spending programs for electoral gain.

goods in places in which competitive elections produce more responsive and accountable local government (Hiskey, 2003). I calculate the average effective number of parties (ENP) during the 2002-2008 period following Laakso and Taagepera (1979) formula (ENP = $1/\sum v_i^2$), where v_i represents the vote share received by each political party in each municipal election (ENP).[16] Eighth, as Moreno-Jaimes (2007) shows, local incumbents that hold office in a state with an opposition governor may face additional financial restrictions if the state government restricts local access to state funds for political reasons. I include a dummy variable that takes the value of 1 if the party label that held the office of the municipal president the majority of the observation period was different than the state governor.

Finally, recent research demonstrates that migrant households receiving family remittances from migrants abroad are able to improve household technologies that enable greater access to public goods. Adida and Girod (2010) show that places with more family remittances have better public utility coverage than places with less family remittances because households build indoor pipes that connect their dwellings to the public water system as well as purchase septic tanks for drainage. I include two measures that capture international migration intensity and the change in household remittances. Following Adida and Girod (2010), the first measure is an indicator of the change in the proportion of households that have a family member that is living abroad internationally. The second measure is the proportion of households that report receiving remittance from an international migrant in the year 2000.

[16] Alternatively, I use a different measure of municipal electoral competition, the margin of victory, which captures the difference in the vote share between the winner of the election and the second-place finisher. There are no differences using this variable in the estimates and they are available by request.

Ordinarily, an OLS regression would suffice to evaluate the effect of total 3x1 Program expenditures on the change in public utility coverage. However, a selection problem arises because some Mexican municipalities (66%) do not participate in the 3x1 Program and these municipalities differ in important unmeasured ways from Mexican municipalities that do participate. Therefore, I model the likelihood that a municipality participates in the 3x1 Program conditional on hypothesized (and measurable) structural features before estimating the outcome effects of the 3x1 Program, conditional on participation. Next, I estimate OLS regressions observing the exclusion rule, which states that because of issues with identification, the selection equation must include a variable that affects selection, but not the outcome (Sartori, 2003). In accordance with the exclusion rule, the PAN party dichotomous variable that significantly predicts 3x1 Program participation is excluded from the Heckman outcome equation. There is no theoretical reason to believe that a PAN incumbent in the 2000 electoral cycle is a significant predictor of changes in the provision of public goods provision over the 3x1 Program observation period, thus I exclude this variable. As the OLS models show in the next section, there is no statistical relationship between municipal PAN party affiliation and public utility coverage.

Results and Discussion

Table 2 presents descriptive statistics of the data for all Mexican municipalities according to whether they participated in the 3x1 Program during the observation period. First, the data shows that municipalities that participate in the 3x1 Program out-perform non-participating municipalities in terms of public service coverage in sanitation, drainage, water and electricity, prior to the launch of the 3x1 Program, providing

empirical support of selection bias. Figure 2 shows that in municipalities that participate in the 3x1 Program, the difference in the mean proportion of households with access to drainage (45%) and water (71%) was starker than in places that do participate in the 3x1 Program (60% drainage and 79% in water) when compared to sanitation and electricity coverage in the year 2000. Also, year 2000 levels of household access to electricity are high in both participating and non-participating municipalities at 91% and 88%, respectively. This data suggests that there is likely to be a ceiling for 3x1 Program expenditures and other local factors targeting improvements in electricity coverage.

Second, municipalities not participating in the 3x1 Program experience greater percentage improvement in household access to public goods during the observation period. This occurs mainly due to the fact that non-participating municipalities are systematically poorer and more rural than their participating counterparts. As poorer, more rural localities, their residents had lower initial levels of access to the public goods examined in this study. Therefore, a smaller overall change in the number of households covered in a small, poor municipality could represent a large percentage change in the number of households covered since these localities have very low population density. Figure 3 shows that places that participate in the program are less poor and have higher migration than places that do not. Third, participating municipalities are much more likely to be from one of the traditional migrant sending states (54% vs. 8%) and have much smaller indigenous populations. Finally, while 3x1 participating municipalities have slightly more competitive elections in terms of the effective number of parties (the difference in margin of victory statistics are negligible), participating municipal

governments studied here spend about the same on public works and have similar revenue constraints as non-participating places.

Models 1-3 in Tables 3 and 4 report the selection equation, the outcome equation and the effect of 3x1 Program participation on the change in household access to sanitation, water, drainage and electricity. Robust standard errors and state fixed effects are also reported.[17] Model 1 in Table 3 presents the logistic maximum likelihood estimation of 3x1 Program participation and finds that as the index of marginalization increases, the likelihood that a municipality participates decreases by 5%. By contrast, when the migration intensity index increases, a municipality is 15% more likely to participate. This data provides additional evidence of the independent statistical relationship between migration and 3x1 Program participation and poverty and 3x1 Program participation as suggested by Aparicio and Meseguer (2012). Additionally, municipalities located in one of the traditional migrant sending states are 39% more likely to participate than places in different states, and localities represented by the PAN during the launch of the 3x1 Program are 8% more likely to participate.

Models 2a-d in Table 3 show the effects of 3x1 Program participation on changes in coverage of sanitation, water, drainage and electricity using the standard OLS estimation. However, since we know from the logistic model that municipal participation in the 3x1 Program is more likely given specific municipal structural features including migration intensity, poverty and political bias, it is important to model the effect of 3x1 Program participation conditional on selection into the program. Since PAN party affiliation is not correlated with the outcome variables in any of the models, this variable is omitted from

[17] The approximately 400 municipalities that maintain the traditional institution of self-government called *usos y costumbres* are excluded from the analysis.

the Heckman Model to identify the selection equation. After controlling for municipal selection into the 3x1 Program, the Heckman Models 3a-d in Table 4 report the effect of 3x1 Program expenditures, controlling for economic, political and demographic factors and state fixed effects.

Data shows that 3x1 Program expenditures are significant and positively affect the change in household access to sanitation, water, and drainage, but not electricity. For every $1,000 pesos per capita ($100 USD) of 3x1 Program expenditures, the change in public coverage of water improves by 1.2%, drainage by 1.2%, and sanitation by 1.7%. The average municipal program participant received $422 pesos per capita (73% of the sample), while the remaining 27% of the sample accrued more than $421 in 3x1 expenditures; in 10% of participating municipalities, 3x1 expenditures topped $1,000 MXN between 2002-2008.

Moreover, model estimates show that the changes in family remittances to municipalities with international migrant households are positive and statistically significant for drainage and sanitation, but not for water and electricity, which is consistent with Adida and Girod's findings for drainage and sanitation, but not water. In fact, a 1% increase in the proportion of households that receive family remittances improves drainage by 2.1% (about 1% more than transnational coproduction) and sanitation by 1.7%, which is the same magnitude of the 3x1 expenditures effect. Both 3x1 expenditures and family remittances that benefit migrant households have direct and positive effects on the change in public provision of drainage and sanitation. But how does the presence of family remittances impact the magnitude of the effect of transnational coproduction? And, is it the case that the positive effect of family

remittances is enhanced or complemented by the presence of transnational coproduction? These questions bring to the fore the possibility of a conditional effect of 3x1 expenditures and family remittances on public goods provision.

Hypothesis 3 - *Conditional Effects on Public Goods*: 3x1 expenditures effect on public goods coverage improves (declines) with increasing (decreasing) family remittances to migrant households.

To test the effect of the conditional hypothesis on public goods provision, I include a multiplicative interaction term between 3x1 expenditures and changes in family remittances as well as the constitutive terms, the same set of controls and state fixed effects. Model estimates in Table 5 show that the interaction terms are negative and significant for drainage and sanitation.[18] This suggests that the conditional marginal effect of transnational coproduction on changes in sanitation and drainage coverage decreases with changes in family remittances to migrant households. Conversely, as family remittances decrease, the marginal effect of 3x1 expenditures on public goods increases. Whereas both 3x1 Program spending and family remittances are positively associated with improvements in sanitation and drainage, their interaction shows a substitution effect, rather than a complementary effect.

Data suggests households receive less family remittances as collective remittances to their municipalities increase and vise versa. Since financial remittances are finite resources, immigrants must make decisions about how to allocate savings accrued in the host society. When migrant HTAs support community wide public goods projects like

[18] The interaction term was also tested for water and electricity models, but yielded no significant results. Those models are not reported. Also, the interaction models were run separately with a dichotomous family remittances variable (increase = 1; 0 or no change = 0) and the effects remain statistically and substantively significant.

better drainage and sanitation through the 3x1 Program, migrant households do not need to spend family remittances on these types of public goods. In most cases, in the presence of transnational coproduction there are few reasons for migrant households to spend finite remittance resources twice on the same types of projects.[19] The negative sign on the interaction term suggests that migrant households are substituting family remittances for 3x1 Program spending because transnational coproduction arrangements induce more programmatic spending on public services. By contrast, as family remittances increase to municipal migrant households, the positive effects of 3x1 expenditures administered through the 3x1 Program are diminished.

After including the multiplicative interaction term, the independent estimates for 3x1 expenditures and family remittances no longer refer to average effects, but to conditional effects holding when the value of the other constitutive term is zero (or other values) (Brambor, et al., 2005). The positive relationship between 3x1 expenditures and public goods provision refers to municipalities with no increases in family remittances to migrant households. The marginal effects of 3x1 expenditures on public service delivery conditional on family remittances are graphed in Figure 4 and Figure 5, on the bases of the coefficients reported in Table 5. The negative interaction effect is evident in the decrease in the marginal effect of sanitation and drainage coverage, as family remittances increase. The graphs show substantively significant conditional effects of 3x1 expenditures on sanitation when family remittances are between 0 and 2.3 for sanitation, comprising 84% of the sample, and between 0 and 1.9 for drainage, which is 76% of the

[19] Cases of corrupt 3x1 projects may influence immigrants' remittance sending decisions and by extension, household spending on public goods.

sample.[20] Table 6 includes the marginal effects of different combinations of meaningful values of 3x1 expenditures and family remittances to gauge the relative interaction effects on drainage and sanitation. When there is no change in family remittances and 3x1 expenditures are at their mean, program participating municipalities experience a 22% and 16% increase in drainage and sanitation, respectively. By contrast, in the absence of transnational coproduction, family remittances at their mean value improve drainage and sanitation coverage 21% and 15%, respectively. In terms of likely scenarios, despite the negative sign of the interaction effect, increases in both 3x1 expenditures and family remittances improve public goods coverage more substantially than the absence of family remittances and 3x1 Program participation. When municipalities participate in the 3x1 Program and increase their spending on transnational coproduction projects this can substitute for migrant households using family remittances to invest in household technologies that improve their access to drainage and sanitation.

The second hypothesis concerns the effect of 3x1 Program participation across municipalities that participate according to poverty classification from Conapo's marginalization index. Since previous research shows that poorer municipalities are less likely to receive 3x1 Projects (Aparicio and Meseguer, 2012) and match collective remittances one-to-one compared to relatively wealthier municipalities (Simper et al., forthcoming), the progressive effects of transnational coproduction through the 3x1 Program may be mitigated. Although more poor municipalities participate in the program than previously believed, OLS estimates in Models 4a-4e in Table 5 report that in 3x1 participating municipalities categorized as having high or very high poverty, 3x1

[20] Note that the marginal effect changes signs from positive to negative at family remittance values of 3.3% and 2.6% for sanitation and drainage, respectively.

Program expenditures only have an effect on the change in public provision of sanitation, but no statistical effect on drainage, water or electricity.

Data from the Heckman estimation suggests that the 3x1 Program has important substantive effects across Mexican municipalities. These transnational public-private partnerships improve citizens' access to water, drainage, and sanitation, important and basic public goods in migrants' places of origin. However, transnational coproduction financed through the 3x1 Program is only progressive up to a point as poor municipalities do not benefit from program participation as much as their relatively wealthier municipal counterparts.

Concluding Remarks

While collective remittances are a very small source of external financing compared to family remittances, they organize transnational public-private partnerships that improve public goods provision with complementary funding by migrant sending states. Despite living and working abroad in the U.S., Mexican immigrants investment in their hometowns has positive effects on citizens' access to essential public goods. The transnational coproduction of public services between migrant HTAs and public agencies is an important intermediary institution in public service delivery.

In Mexico, the development of the 3x1 Program amplifies local public works spending to improve water, sanitation and drainage coverage across Mexican municipalities. Moreover, by mobilizing collective remittances and leveraging resources to form coproduction partnerships with the Mexican local, state and federal government, migrant clubs are also able to influence how and where public resources are spent. As Burgess (2005) shows, the majority of 3x1 Projects are implemented in communities

outside the municipal county seat, which have worse off public goods provision. Since a substantial portion of migrants hail from these communities, they are able to use their collective resources to bring much-needed attention of municipal officials.

The 3x1 program also generates opportunities for local governments to amplify public works budgets. While decentralization reforms have devolved administrative and political authority to subnational governments, many countries have yet to decentralize fiscal authority and tax collection to lower tiers of government. This requires those directly responsible for public goods provision to "liberate" resources from elsewhere (Grindle, 2007). Transnational coproduction, since it is enabled by complementary resources of each public and private agent, allows local officials with development and electoral aspirations to overcome budget constraints and provide collective goods in conjunction with interested, capital-holding investors, who happen to be migrants. To be sure, these resources may also be used for clientelism, corruption, or timed according to an electoral budget cycle (Simper et al., forthcoming) however, at the very least, this study shows that it does not negatively affect the average change in water, sanitation and drainage coverage.[21]

Transnational coproduction administered by the 3x1 Program may also save migrant households important resources. In lieu of spending family remittances on improving access to public utilities, migrant households can invest in healthcare, education, business ventures and other investments when migrant clubs and local governments engage in the coproduction of public works. While results provide additional support for Adida and

[21] The dataset does not currently permit the analysis of individual project type and household access to select goods and services. Future research may wish to consider how different project investment has independent effects on change in coverage as well as whether some projects are more likely to be correlated with worse outcomes.

Girod (2010) findings that family remittances have a positive and independent affect on public coverage of drainage and sanitation, the negative and significant interaction effect of family remittances and 3x1 expenditures reveals a substitution rather than a complementary effect on public goods: as family remittances decline, the conditional effect of transnational coproduction on drainage and sanitation increases. While in the absence of 3x1 Program participation, family remittances remain an important source of revenue for migrant households to invest in private consumption and some public goods, transnational coproduction has the added benefit of improving public services for migrant and non-migrant households, alike. For those municipal households that do not have a migrant living abroad and sending family remittances back home, transnational coproduction serves as an intermediary institution in the provision of public goods.

Mexico is a pioneer in the design of a national social spending policy mobilizing migrant collective remittances for social welfare provision and other out-migration countries have taken note. While Mexico's close proximity to the U.S. and long history of emigration to one host place is unique, these factors do not thwart independent migrant philanthropy, ad hoc public-private arrangements or formal public policies that institutionalize transnational coproduction in migrant places of origin as recent research shows. The Mexican case highlights important factors at play in the collective remittance-development nexus. First, although municipalities that participate in the 3x1 Program experience an improvement in social welfare, the poorest municipalities do not fare as well as wealthier places with more migration because migration is a costly endeavor and HTAs are less likely. Since HTAs overwhelmingly organize of their own volition, outreach initiatives to migrants from poorer localities may prove necessary for

transnational coproduction partnerships to serve those most in need as part of a larger local or national development strategy. Second, matching HTAs collective remittances with matching contributions from local, state and federal government helps cash-strapped local governments overcome budget constraints to implement more public works projects than would be possible without migrant intervention. Programs like the 3x1 Program cannot substitute for government investment in public goods, but they can help amplify public expenditures for entire communities, which family remittances alone cannot.

By 'voting with their feet' and taking up residence in host countries with employment opportunities and higher wages, migrants create opportunities to collect new forms of capital to participate in the collective decision-making of their hometowns in conjunction with local political authorities. By opening up one of the core functions of the state to participation from migrant associations, transnational coproduction improves social welfare for the citizenry in migrant countries of origin through a collective mechanism outside the formal electoral process. While this paper considers only the social welfare effects of transnational coproduction partnerships, the participation of migrant actors in decisions about project selection, implementation, budgets, technical planning and the distribution of public resources also has important implications for citizen-state relations and the quality of local democratic governance. As Iskander (2010) and Duquette (2011) show, many local citizens and civil society groups are often active co-participants in coproduction arrangements (and dismissed by local officials and migrant groups with accompanying consequences for democratic governance). Future research will need to consider the conditions under which migrant cross-border involvement in their hometowns improves or stymies local democracy.

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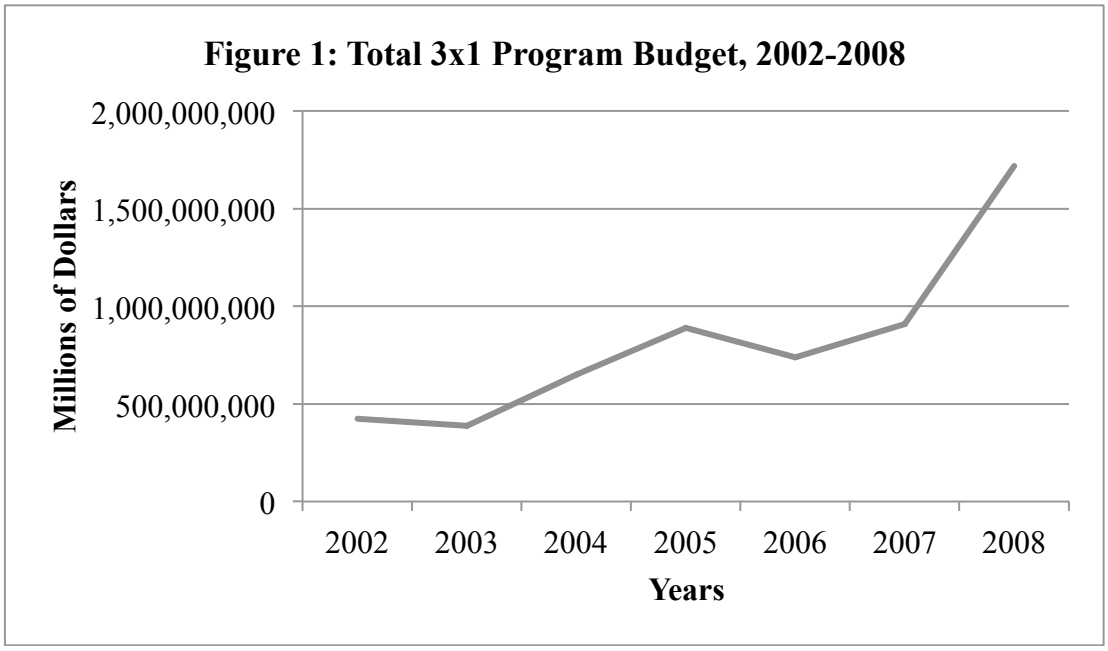
Tables and Figures

Table 1: 3x1 Program Project Type and Number, 2002 & 2008

	Total Projects		Amounts ($ Millions Pesos)	
Type of Project	2002	2008	2002	2008
Urbanization/Pavement	277	979	-	-
Centers/Auditoriums	122	127	-	-
Schools/Scholarships	113	232	-	-
Electricity	103	200	-	-
Potable Water	77	195	-	-
Sidewalks	67	103	-	-
Recreation	51	111	-	-
Sanitation/Drainage	49	181	-	-
Other	36	131	-	-
Productive Projects	35	100	-	-
Health Infrastructure	28	49	-	-
Cultural Centers	9	49	-	-
Total	967	2,457	424,186,877	1,717,271,025

Note: Other includes: monuments, cemeteries, retirement homes, ambulances, rehabilitation centers, and firehouses; Source: Sedesol 3x1 Data obtained by author



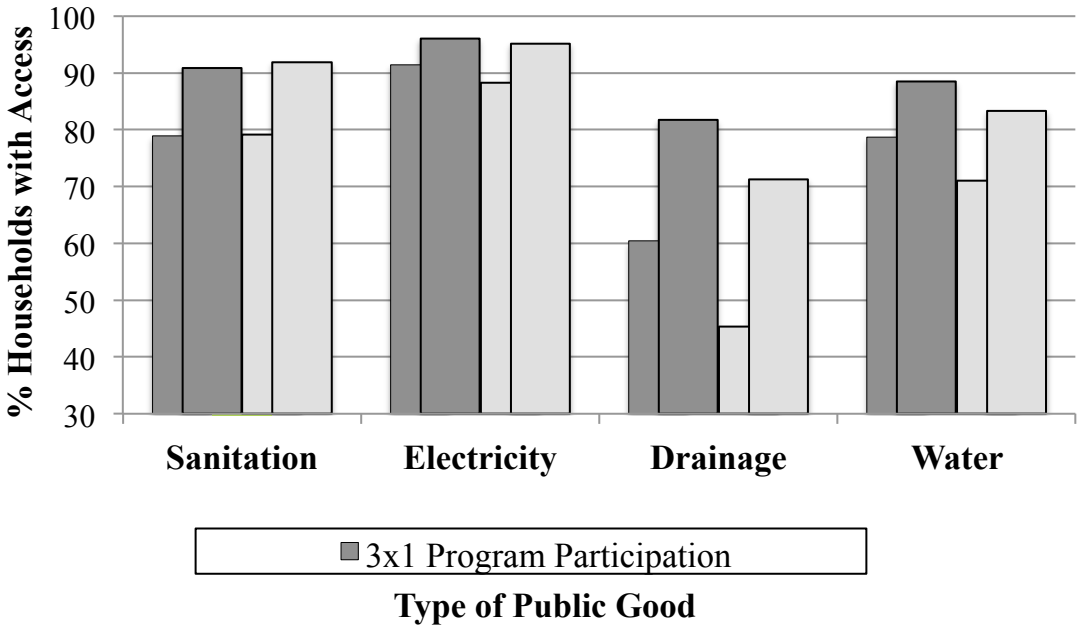
Source: Conapo 2000

Table 2: Descriptive Statistics for Mexican Municipalities

	No 3x1 Participation		*3x1 Participation*	
Variable	Mean	Std. Dev.	Mean	Std. Dev.
	N = 1,600		N = 827	
Change Drainage	26.00	16.65	21.30	12.61
Change Water	12.30	14.35	9.78	9.37
Change Sanitation	12.64	11.48	11.95	9.08
Change Electricity	6.87	9.21	4.59	6.02
Percent Indigenous	30.62	37.79	12.37	26.59
Change Literacy	5.78	12.39	5.27	8.29
Log Population Change	0.23	0.18	0.20	0.16
PRI	0.83	0.38	0.79	0.41
PAN	0.16	0.37	0.16	0.37
PRD	0.11	0.31	0.10	0.30
Margin of Victory*	30.74	22.25	31.35	22.56
Average ENP*	2.68	0.67	2.71	0.62
Shared Partisanship*	0.55	0.50	0.48	0.50
Pub. Wks. Expenditures	$740.67	$398.60	$736.94	$439.54
Municipal Revenue	$2,209.19	$1,459.12	$2,282.60	$1,259.82
Level Family Remittance	4.1%	5.5%	11.4%	9.0%
Change Family Remittance	0.94%	0.99%	1.56%	1.09%
High Migration	8.6%	28.0%	42.9%	49.5%
Medium Migration	26.7%	44.2%	20.0%	40.0%
Low Migration	73.1%	44.4%	34.1%	47.4%
High Poverty	60.0%	49.0%	40.1%	49.0%
Medium Poverty	16.4%	37.0%	27.1%	44.5%
Low Poverty	23.6%	42.5%	32.8%	47.0%
Poverty Squared	1.1187	1.3461	0.7176	0.8686
Poverty Index	0.1501	1.0470	-0.2536	0.8087
Migration Index	-0.2759	0.7413	0.6453	1.1103
Log Population, 2000	7.58	1.50	8.17	1.26
Log Population, 2010	7.80	1.56	8.37	1.32
Trad. Sending State	9.1%	28.8%	54.5%	49.8%
Rural	52.4%	50.0%	34.3%	47.5%
Poor Municipality	60.0%	49.0%	40.1%	49.0%
PAN, 2000	15.0%	35.7%	20.0%	40.0%
3x1 Prog. Expenditures	---	---	$421.91	$768.30

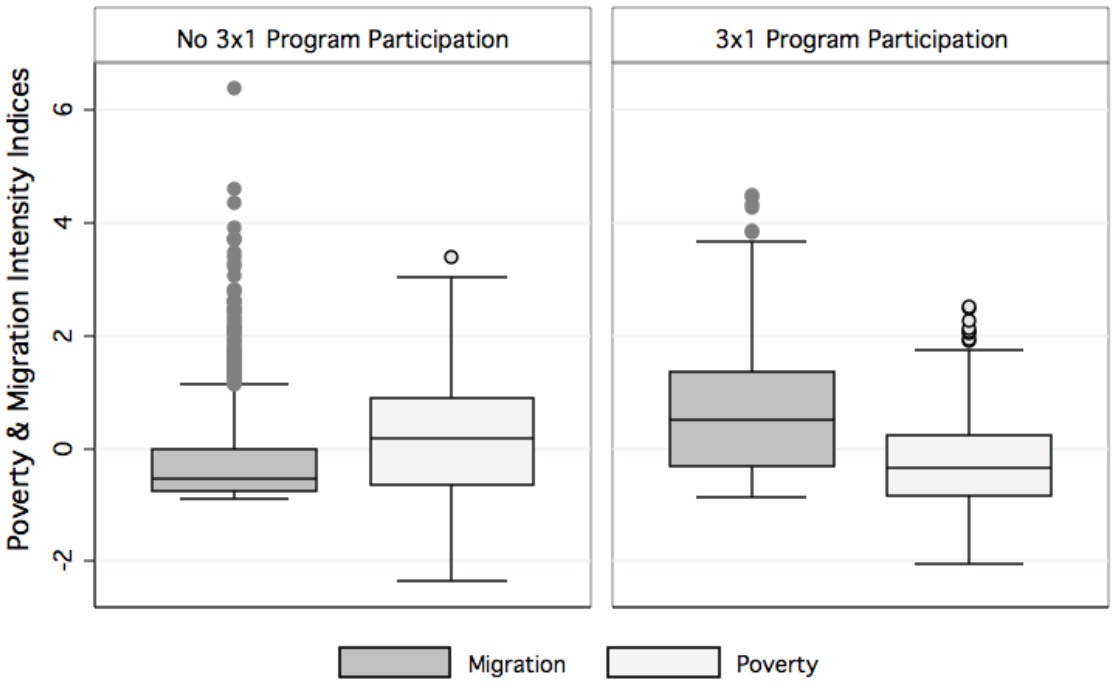
* Observations reduced to 1,107 and 705 for political parties, reflecting the excluded municipal cases that observe *usos y costumbres.* Source: Author's calculations.

Figure 2: Levels of Public Goods Provision in Years 2000 & 2010, by 3x1 Participating Municipality



Source: Author's calculations.

Figure 3: Migration Intensity and Poverty Indices in Year 2000
by 3x1 Program Participation



Source: Author's calculations.

Table 3: Logistic Model of 3x1 Program Participation & OLS Models of 3x1 Program Expenditures on Change in Access to Public Goods

	Model (1)	Model (2a)	Model (2b)	Model (2c)	Model (2d)
	Logistic	*Ordinary Least Squares*			
	3x1 Prog.	**Water**	**Sanitation**	**Drainage**	**Electricity**
3x1 Expenditures		0.0011	0.001	-0.0008	0.0000
		[0.0005]**	[0.0004]**	[0.0006]	[0.0003]
Poverty Index	-0.2723				
	[0.0565]***				
Poverty Squared	-0.1989				
	[0.0667]***				
Migration Index	0.7538				
	[0.0739]***				
Log Population	0.2737				
	[0.0447]***				
Trad. Send State	1.7261				
	[0.1277]***				
PAN Party	0.4014	-0.6326	-0.5182	-1.0691	-0.4685
	[0.1343]***	[0.6550]	[0.5445]	[0.7746]	[0.3627]
Indigenous		0.0502	0.0852	0.0854	0.0460
		[0.0120]***	[0.0132]***	[0.0142]***	[0.0081]***
Change Literacy		0.2009	0.1618	0.1890	0.1853
		[0.0362]***	[0.0310)***	[0.0481]***	[0.0263]***
Chng. Log Pop.		-4.6656	1.4074	-2.2776	-4.1410
		[1.6021]***	[1.1310]	[1.8085]	[0.9627]***
PRI Party		0.5505	0.0386	0.4483	0.1563
		[0.5797]	[0.6062]	[0.7759]	[0.3700]
PAN Party		0.0347	0.2421	0.6505	0.1949

		[0.6305]	[0.6016]	[0.7799]	[0.4184]
PRD Party		0.2928	0.0935	0.2229	-0.1817
		[0.8329]	[0.7705]	[0.9778]	[0.4144]
Shared Party		0.8283	-0.2605	-0.6669	0.9458
					[0.2970]**
		[0.4989]	[0.4147]	[0.5792]	*
ENP		0.2179	-0.7603	-2.9741	-0.3277
			[0.3106]**	[0.4692]**	
		[0.4218]	*	*	[0.2296]
Pub. Wks. Expend.		0.0073	0.006	0.0104	0.0074
		[0.0009]**	[0.0008]**	[0.0011]**	(0.0008]**
		*	*	*	*
Total Revenue		-0.0021	-0.0015	-0.0024	-0.0013
		[0.0003]**	[0.0002]**	[0.0003]**	[0.0003]**
		*	*	*	*
Chng. Fam. Remit.		-0.0165	1.0659	0.9970	0.2936
			[0.5445]**	[0.3431]**	
		[0.3104]	*	*	[0.1470]**
Level Fam. Remit.		-0.0555	0.0823	-0.0732	-0.1767
					[0.0215]**
		[0.0412]	[0.0332]**	[0.0507]	*
Constant	-3.21	8.1109	8.1407	26.5817	3.7939
	[0.3435]**			[1.8923]**	
	*	[1.6866]**	[1.3760]	*	[1.0133]
Observations	2,427	1,765	1,765	1,765	1,765

Robust standard errors in brackets. * Significant at 10%, ** Significant at 5%, *** Significant at 1%

Table 4: Heckman Models of 3x1 Program Expenditures on Change in Access to Public Goods Conditional on Program Participation

	Model 3a	Model 3b	Model 3c	Model 3d
	Drainage	Water	Electricity	Sanitation
3x1 Expenditures	0.0012	0.001	0.000	0.002
	[0.0007]**	[0.0005]**	[0.0003]	[0.0005]***
Indigenous	0.050	0.036	0.002	0.063
	[0.0215]]**	[0.0171]**	[0.0102]	[0.0166]***
Change Literacy	0.348	0.232	0.164	0.354
	[0.0588]***	[0.0466]***	[0.0277]***	[0.0450]***
Log Population Change	-9.510	-3.770	-4.254	-3.847
	[2.8590]***	[2.2716]**	[1.3488]***	[2.1946]**
PRI Party	-0.863	-0.326	-0.278	0.403
	[1.0724]	[0.8494]	[0.5044]	[0.8203]
PAN Party	0.145	0.014	-0.669	0.492
	[1.1445]	[0.9070]	[0.5386]	[0.8760]
PRD Party	-0.285	-0.305	-0.201	-0.574
	[1.3391]	[1.0607]	[0.6299]	[1.0245]
ENP	-2.169	0.090	-1.531	0.274
	[0.6793]***	[0.5390]	[0.3200]***	[0.5207]
Shared Partisanship	-0.142	0.428	0.997	-0.207
	[0.7836]	[0.6199]	[0.3681]***	[0.5986]
Pub. Wks. Expenditures	0.012	0.003	0.004	0.007
	[0.0016]***	[0.0013]**	[0.0008]***	[0.0012]***
Total Revenue	-0.004	-0.001	-0.001	-0.002
	[0.0006]***	[0.0005]**	[0.0003]***	[0.0005]***
Change Family Remit.	2.108	-0.451	0.237	1.771
	[0.4313]***	[0.3408]	[0.2023]	[0.3291]***
Level Fam. Remit.	-0.079	-0.008	-0.103	-0.052
	[0.0656]	[0.0515]	[0.0306]***	[0.0497]
Constant	25.718	9.928	9.509	9.240
	[3.9000]***	[3.0900]***	[1.8349]***	[2.9844]***
Poverty Index	-0.227	-0.227	-0.227	-0.227
	[0.0366]***	[0.0366]***	[0.0366]***	[0.0366]***
Poverty Squared	-0.212	-0.212	-0.212	-0.212
	[0.0413]***	[0.0413]***	[0.0413]***	[0.0413]***
Migration Index	0.418	0.418	0.418	0.418
	[0.0383]***	[0.0384]***	[0.0384]***	[0.0384]***
Log Population	0.225	0.225	0.225	0.225
	[0.0283]***	[0.0283]***	[0.0283]***	[0.0283]***
Traditional Sending State	1.200	1.200	1.200	1.200
	[0.0800]***	[0.0800]***	[0.0800]***	[0.0800]***
PAN Party	0.266	0.266	0.266	0.266
	[0.0854]***	[0.0854]***	[0.0854]***	[0.0854]***
Constant	-2.557	-2.557	-2.557	-2.557

	[0.2183]***	[0.2183]***	[0.2183]***	[0.2183]***

State fixed effects included and standard errors reported in brackets. * Significant at 10%, ** Significant at 5%, *** Significant at 1%

Table 5: Marginal Effects of Heckman Interaction Models on Change in Sanitation and Drainage Coverage

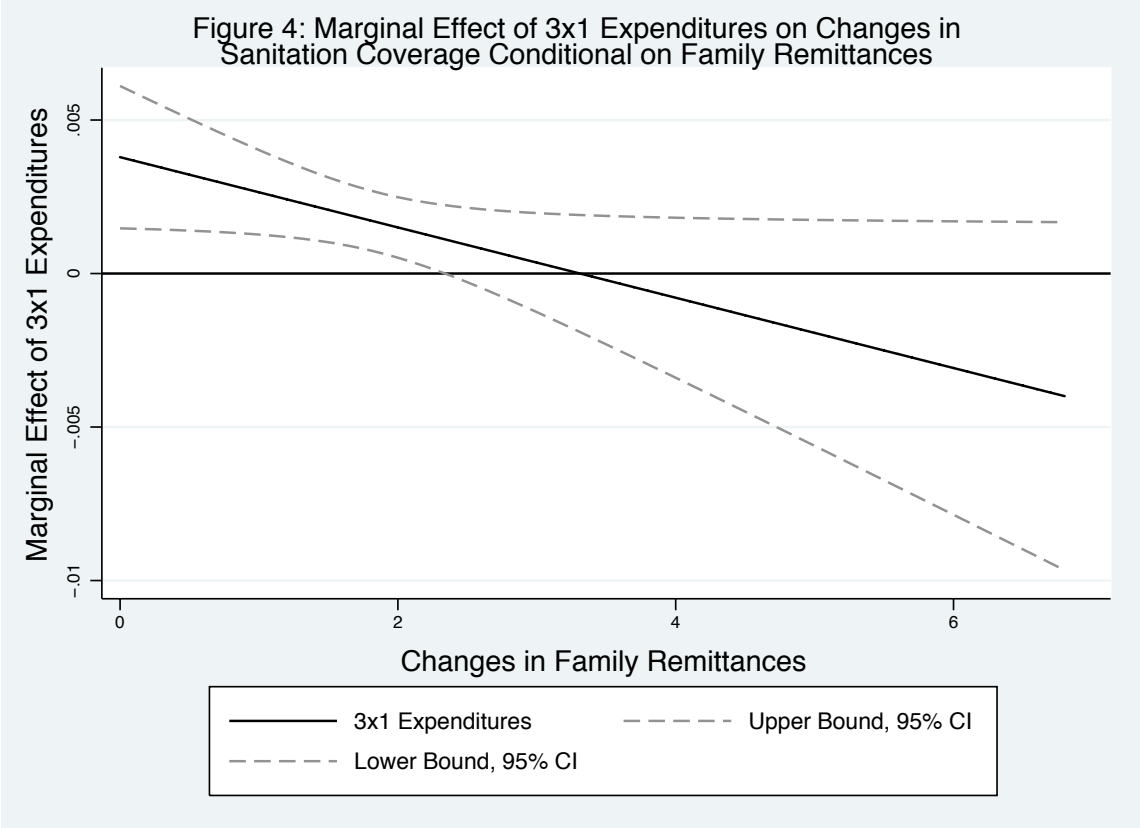
	Sanitation				Drainage			
Independent Variables	dy/dx	Std. Err.	95%	C.I.	dy/dx	Std. Err.	95%	C.I.
3x1 Expenditures	0.004	0.001***	0.00	0.01	0.004	0.002**	0.00	0.01
Family Remittances	2.150	0.380***	1.41	2.89	2.610	0.498***	1.63	3.59
Interaction	-0.001	0.001**	0.00	0.00	-0.002	0.001**	0.00	0.00
Indigenous	0.062	0.017***	0.03	0.09	0.049	0.021**	0.01	0.09
Change Literacy	0.350	0.050***	0.26	0.44	0.344	0.059***	0.23	0.46
Log Pop. Change	-3.518	2.195*	-7.82	0.78	-9.075	2.858***	-14.68	-3.47
PRI	0.406	0.818	-1.20	2.01	-0.859	1.069	-2.96	1.24
PAN	0.462	0.874	-1.25	2.17	0.105	1.141	-2.13	2.34
PRD	-0.577	1.022	-2.58	1.43	-0.288	1.335	-2.90	2.33
ENP	0.249	0.520	-0.77	1.27	-2.202	0.677***	-3.53	-0.87
Shared Partisanship	-0.216	0.597	-1.39	0.95	-0.154	0.781	-1.69	1.38
Public Works Expend.	0.007	0.001***	0.00	0.01	0.013	0.002***	0.01	0.02
Total Revenue	-0.002	0.001***	0.00	0.00	-0.004	0.001***	-0.01	0.00
Level Fam. Remit.	-0.056	0.050	-0.15	0.04	-0.084	0.065	-0.21	0.04

Source: Author's calculations of marginal effects of significant interaction models. Additional model estimates available by request. Note: Interaction models are Heckman estimations and include state fixed effects. Selection equation not reported. *Significant at 10%, **Significant at 5%, ***Significant at 1%

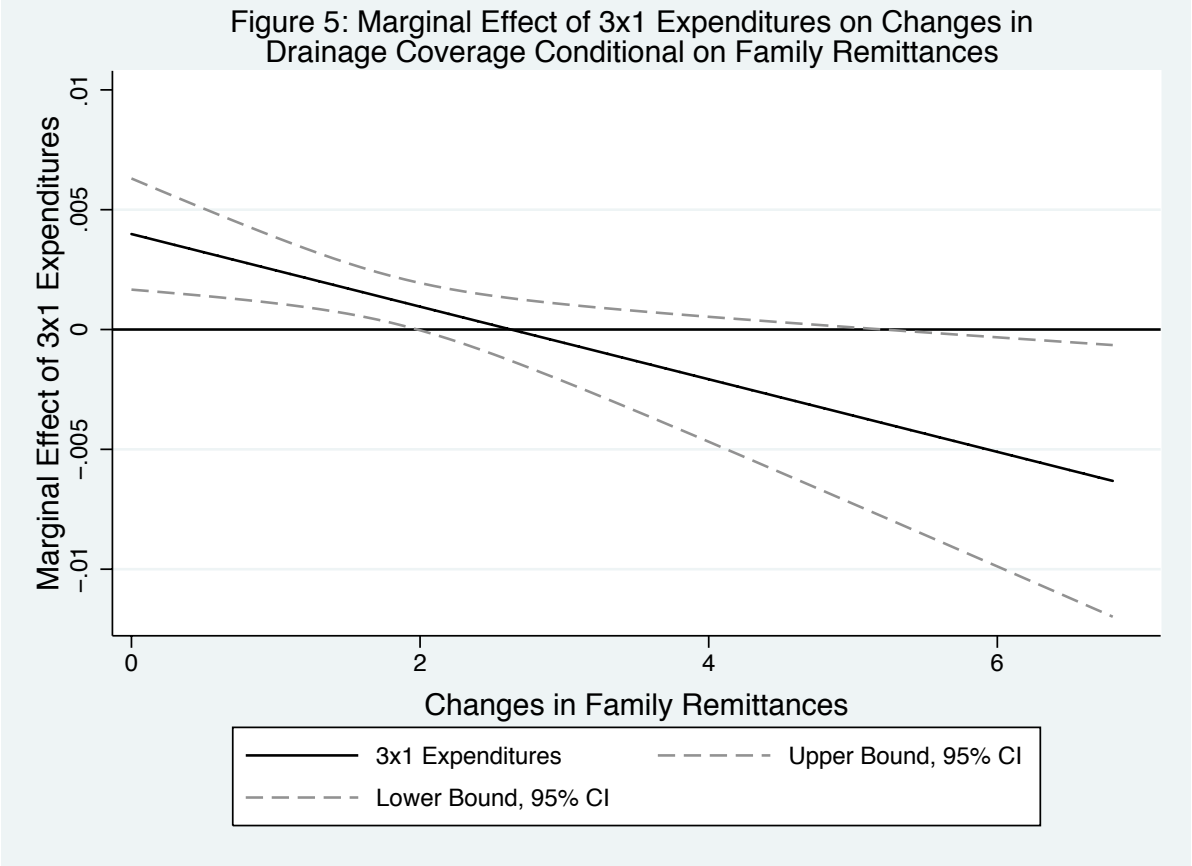
Table 6: Marginal Effects of Different Values of 3x1 Expenditures & Family Remittances Interaction on Changes in Household Access to Drainage & Sanitation

3x1 Expenditures ($MXN)	Change in Family Remittances (%)	Change Drainage Coverage (%)	Change Sanitation Coverage (%)
Max	Max	64.49	54.24
Max	0	46.29	39.24
Max	Mean	37.22	32.86
0	Max	36.70	27.76
Mean	Max	33.95	26.11
0	3%	26.26	19.16
Mean	3%	26.04	19.37
$1,000	3%	25.74	19.65
$1,000	Mean	23.68	17.71
Mean	0	22.41	16.50
Mean	Mean	22.38	16.25
0	Mean	21.43	15.18
Mean	0	20.11	14.31
0	0	18.43	12.71

Source: Author's calculations of marginal effects of different values of constitutive variables of interaction term on Y holding all control variables at their mean. Note: the mean value of 3x1 expenditures is $422. This is the mean value on municipal observations that participate in the 3x1 Program and not the mean value of the entire municipal sample ($144) that includes zeroes for all program non-participants.



Source: Author's calculations.



Source: Author's calculations.

Table 7: OLS Models of 3x1 Program Expenditures on Change in Access to Public Goods in Poor Participating Municipalities

	Model 4a	Model 4b	Model 4c	Model 4d	Model 4e
	Drainage	Water	Electricity	Sanitation	Sanitation^
3x1 Expend.	0.0017	0.0002	0.0015	0.0019	0.0013
	[0.0014]	[0.0009]	[0.0015]	[0.0011]**	[0.0010]
Indigenous	-0.1676	-0.0277	0.0459	-0.0693	0.0371
	[0.0750]**	[0.0236]	[0.0521]	[0.0301]**	[0.0337]
Chng. Literacy	0.0368	0.1193	0.0058	0.0979	0.1819
	[0.0995]	[0.0571]**	[0.1142]	[0.0876]	[0.0849]**
Log Pop. Chg.	-10.925	-12.268	-21.615	-15.496	-14.3176
	[6.8000]	[4.3878]***	[8.0315]***	[6.1474]**	[6.0894]**
PRI Party	-0.220	0.546	-0.374	0.280	-0.1638
	[1.6134]	[1.1126]	[1.8927]	[1.7556]	[1.8744]
PAN Party	-0.047	-0.063	0.458	-0.720	0.2052
	[1.8749]	[1.0138]	[2.2391]	[2.0642]	[2.1642]
PRD Party	-0.272	-0.379	-1.261	-2.729	-2.2703
	[1.8772]	[1.0983]	[2.103]	[1.8440]	[1.7805]
ENP	-2.571	-2.007	-2.217	1.786	1.7926
	[1.3579]**	[0.9646]**	[1.5910]	[1.1922]	[1.1420]
Shared Party	0.285	2.514	-1.061	0.716	-1.5732
	[1.3391]	[1.0037]**	[1.5269]	[1.1436]	[1.2922]
P. Wks. Expd.	0.0014	0.0019	-0.0069	0.0003	-0.0028
	[0.0036]	0.0022]	[0.0035]**	[0.0030]	[0.0030]
Total Revenue	-0.0010	-0.0009	0.0005	-0.0008	0.0005
	[0.0014]	[0.0007]	[0.0013]	[0.0011]	[0.0011]
Level Fam. Remit.	-0.3432	-0.1649	-0.0896	-0.2119	-0.1684
	[0.0880]***	[0.0642]**	[0.0957]	[0.0905]**	[0.0779]**
Chng. Fam. Remit.	-0.2094	-0.7131	-2.3346	0.3935	1.4059
	[1.1251]	[0.4880]	[0.9851]**	[0.6811]	[0.5101]***
Constant	63.597	13.373	38.583	24.813	15.6567
	[6.9810]***	[4.3737]***	[7.0152]***	[6.0893]***	[4.6635]***
State FE	Yes	Yes	Yes	Yes	No
Observations	251	251	251	251	251

State FE included and robust standard errors in brackets. Note: 80 municipalities excluded that observe *usos y costumbres*. * Significant at 10%, ** Significant at 5%, *** Significant at 1%