

# Do Remittances Promote Democratization?

How international Migration Helps to Overcome Political Clientilism \*

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## Abstract

This paper presents evidence for international migration to have played a significant role in the Mexican democratization process. It argues that the non-taxability of remittances reduces an incumbent government's ability to maintain political patronage systems and, as a result, elections will become more competitive. The empirical results, using data from municipal elections in Mexico, support this theory. Estimating an instrumental variable probit model, I find that remittances significantly increase the probability of a party in opposition to the former state party PRI to win in a municipal election. Moving from the first to the third quartile of the remittances measure increases that probability in previously state party ruled towns by more than 15% when party preferences are controlled for.

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# 1 Introduction

Mexico's democratization process, which on many counts started in the late 1960's and progressed with glacial speed to culminate in the election of Vicente Fox Quesada as Mexico's president in 2000, has received considerable attention in political science and among scholars of Latin American studies. The numerous literature includes the general treatments by Camp (2007) and Levy and Bruhn (2006); the recent quantitative analyses presented by Greene (2007) and Magaloni (2006); or Eisenstadt (2004)'s analysis of the role played by electoral institutions.

The lion's share of these studies focuses on political developments at the federal level with those at the state and municipal level receiving relatively scant attention. I believe this to be a critical omission given that in the same year Fox won the presidency, according to the data presented below, more than two thirds of Mexican municipalities were still governed by the old state party, the Institutional Revolutionary Party (PRI). To the degree that this is the result of persistent authoritarian power structures, it is likely to severely affect the local population in its prospects for economic development. For example, Tuiran-Gutierrez (2003) observes "a high correlation between social backwardness and town halls governed by the PRI" (pg.45/46)

This paper presents evidence for a causal link between remittances (from migrants in the United States) and electoral victories of opposition parties in Mexican municipal elections. Moving from the first to the third quartile in the measure of average remittances received per household increases the probability of an opposition victory in a continuously PRI ruled municipality by more than 15%. It argues that this is the result of institutional changes at the local level, which replace a clientelistic system by a competitive democracy, and intends to make a significant contribution to the better understanding of political processes in Mexico at the municipal level.

Political influence is interpreted as the result of migrants' enhanced economic power in the form of remittances. This argument comes in two parts: Firstly remittances increase income and act in the same way as economic growth would. Secondly, since remittances are completely outside the government's control they shift political power away from it towards the population, rendering clientilistic arrangements between the government and the electorate less sustainable. Support for this argument will be found in the paper's empirical section.

The term opposition is understood as meaning "in opposition to the PRI", which is not too much of a stretch, given that in the year 2000 the Institutional Revolutionary Party still governed the vast majority of states and municipalities. Undemocratic structures are thought to continue to persist at the local level even after the opposition won the presidency. For example, Lawson (2000) includes local fiefdoms as one of Mexico's persistent authoritarian enclaves, pointing out

that even a few new ones have been recently established. Some authors, such as Bizberg (2003) or Snyder (1999), go further to argue that the retreat of the old authoritarian centralized structures led in many cases to their replacement by similar structures at the regional and local levels. One indication for a high degree of institutional persistence is that almost half of opposition governed municipalities elected a PRI government in the period 2000-2002, while only about a third of PRI governed ones elected an opposition party into government.

The absence so far of almost any quantitative research on this particular issue is quite surprising, given the vast attention two closely related research areas have received: The process of democratization and the effects of international migration on sending regions. A big part of the democratization literature has analyzed the effect of economic growth, understood as the effect of the income level and its distribution, on the probability for a democratic system to emerge and/or to prevail.<sup>1</sup> In a well known study Przeworski and Limongi (1997) argue that a higher income doesn't promote a transition to democracy but, rather, prevents countries from falling back into dictatorship once democracy has been established. This result is contested by Boix and Stokes (2003) on empirical grounds, due to small sample, selection and omitted variable problems; as well as because of the lack of a clear causal mechanism which would explain it. Such a mechanism is in turn provided in a later paper by Przeworski (2005). Other authors who find evidence for a higher income to promote democracy include Londregan and Poole (1996) and Barro (1999).<sup>2</sup>

One drawback of most of these studies is that they assume the political regime to be a binary outcome, either democratic or autocracy. The case of Mexico (and many other countries) can better be seen as a hybrid which shares elements of both systems. Greene (2007) and Magaloni (2006) interpret Mexico's democratic transition in exactly this context, referring to it as "electoral authoritarianism" or "dominant party systems". I will draw on their work when motivating my approach, in that I assume the existence of a formal, but flawed electoral process.

The literature on the effects of international migration has traditionally focused on the receiving country<sup>3</sup>. Only fairly recently have development economists begun to take a closer look on its impact in the places of origin. Most of this research deals with the role played by remittances with only a small number of papers taking into account other effects of emigration. Some early studies have inquired how remittances are spent (Durand, Kandel, Parrado, and

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<sup>1</sup>The probably most comprehensive treatments in recent years has been put forward by Acemoglu and Robinson (2005) and Boix (2003).

<sup>2</sup>A related strain of the democratization literature deals with the effect of a high dependence on natural resources (the resource curse). See Ross (1999) for an extensive discussion. See also Wantchekon (2002) and Jensen and Wantchekon (2004) for how natural resources affect the regime type

<sup>3</sup>almost exclusively the United States, see Borjas (2001) among many others.

Massey 1996) or on their impact on local economic activity (Durand, Parrado, and Massey 1996). More recently, Yang (2007) confirms that remittances act as an insurance against exogenous income shocks in poor Philippine households and Hildebrandt and McKenzie (2005) find that for the case of Mexico migration improves child health through remittances as well as through knowledge transfers. Regarding school attendance, McKenzie and Rapoport (2006) identify a negative effect of family migration experience for Mexico, while Cox and Ureta (2003) and Yang (2008) find a positive effect of remittances for the cases of El Salvador and the Philippines respectively. Mishra (2007) finds that emigration had a strong positive effect on Mexican wages.

The present study is motivated by the simple observation that, at least for the Mexican case, the country's emigrant community in the United States appears to have a sizeable impact on the domestic Mexican political process. The anthropological and sociological literature has already given considerable attention to this phenomenon, focusing mainly on the role played by home town associations and political organizations (see de-la Garza and Hazan (2003) for an extensive discussion). The group that has possibly drawn the most attention in this regard, also in the popular press, is the federation of zacatecanos in Chicago, which has reportedly had a big role in the election of opposition candidates to political office (de-la Garza and Hazan 2003). But the former Mexican state party, the Institutionalized Revolutionary Party (PRI), has also been active in courting the migrant community, as has been documented by the establishment of Casa Puebla in New York City (Smith (2001), Smith (2005)).

While almost all authors argue that migrants have a significant influence on political outcomes, very few identify clear casual mechanisms. The most common explanation appears to be that there is some kind of learning process by which "immigrants learn the political values of their host societies and export them to their home countries" (de-la Garza and Hazan (2003), pg. 14). This argument is contested by Goodman and Hiskey (2008), based on the observation that most immigrant communities have scant exposure to the host country's democratic institutions.

The quantitative literature on the political effects of migration is almost non-existent so far. Diaz-Cayeros, Magaloni, and Weingast (2003) use a migration proxy as an explanatory variable in their work on transfer payments from the state and federal levels to municipalities. Goodman and Hiskey (2008) find that high migration municipalities have a lower level of political participation, manifested in a lower voter turnout and participation in political organizations. In a similar vein, using survey data at the individual level, Bravo (2007) identifies a negative relationship between having a close relative in the U.S. or receiving remittances and series of variables of political engagement including electoral participation. Merino (2005) makes a similar argument to the one made here in observing that remittances represent an exogenous source of income which the state is unable to tap into. Following Dixit and Londregan (1996) it is

argued that as a result a party's ideological platform becomes more important in the voting decision relative to its redistributive proposals. The final result is a realignment of party preferences along the ideological dimension. In the present paper the role of party preferences will be taken into account, but only as an identification problem in measuring remittances' impact on democratic institutions.

The next section motivates the empirical strategy by providing a deliberately parsimonious model for a causal mechanism through which remittances could have the described effect. It also presents some descriptive statistics which strongly back its claim. Section three discusses a series of identification issues in the estimation, section four describes the data used and section five presents results and robustness checks. Finally, section six concludes and points to further research.

## 2 Motivation

Two foundational papers in the literature on clientelism are Myerson (1993) and Dixit and Londregan (1996). The first shows the implications of personal transfers to randomly chosen, otherwise identical voters under different electoral systems. The second offers a more elaborate model for the case of majority voting with two parties. It is assumed that voters have an ideological preference for one of the parties and that each belongs to a clearly identifiable social group. The two parties contesting the election promise specific transfer payments to exogenously given groups (such as farmers, miners etc.) and voter's electoral preferences are determined by a combination of their ideological position and the transfers offered.

While these papers give an idea of clientelism in a mature democracy (such as the United States), clientelism in the present context has to be defined differently. A good starting point is to think how an autocratic regime, which is forced to hold elections and faces a certain degree of scrutiny from other social actors, is able to maintain itself in power and on top to extract rents from society. Following Greene (2007) and Magaloni (2006), I believe that dominant party systems can be defined by two essential institutional differences to competitive democracies. First, the dominant party controls the electoral process and is hence in the position to commit fraud if it decides to do so. Second, it also has a big discretionary power over public spending, which allows it to allocate resources unchecked and in a way that would be legally impossible in a competitive democracy.<sup>4</sup>

With regard to this last point, Dixit and Londregan (1996) motivate their work with the observation that, unlike in Myerson (1993), governments can-

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<sup>4</sup>In this context Greene (2007) identifies "five types of *illicit* public resources that they politicize for partisan purposes" (italics in original,pg.40).

not pay transfers to individual citizens, but have to pick large, exogenously given, social groups to which resources can be redistributed. For the case of an electoral autocracy, on the other hand, one can interpret the dominant party's discretionary spending power as the ability to make payments to individual recipients (or, at least, small groups of voters). This would enable it to target its transfers much more efficiently than the incumbent government in a competitive democracy ever could, and constitutes the basis for vote buying.

The assumption that the dominant party can commit electoral fraud translates effectively into a mechanism akin to being able to observe the voting behavior of those whose votes have been bought. Assume that instead of casting their ballot for the dominant party, the bought off constituents instead voted for the opposition. The regime would then use its control over the electoral process to change the results according to its expectations, based on the number of voters it made transfer payments to. Denouncing this fraud would entail revealing ones true vote and the consequent exclusion from the patronage system in the future. The question if the dominant party controls the electoral process to the extent that it is able to observe votes directly is therefore immaterial for those voters who form part of its patronage network. This will prevent them from accepting bribes but voting for the opposition.

In order to put these ideas into a formal framework, assume a unit mass of households, all identical except for their migration status and with each household acting as one single voter. All households receive an income  $I$  which can be taxed by the government and migrant households receive in addition a non-taxable remittance income  $R$ . In what follows the subscript  $M$  will be used for migrant households and  $N$  for non-migrant ones, and for notational simplicity  $R_N = 0$  and  $R_M = R \geq 0$ . The government is assumed to be extractive, levying a tax rate  $\tau \in [0, 1]$  on income  $I$ . The resulting revenue is used for its own consumption and to pay transfers  $t$  to voters willing to sell their vote. It is furthermore assumed that the government has to assure itself of a fraction  $\lambda$  of support through patronage in order to stay in power. As Magaloni (2006) points out, in elected autocracies the incumbent government often strives to win elections by huge margins, so it can control the entire political process single handedly (for example by amending the constitution). This implies that  $\lambda$  could be substantially above 0.5. In that case, if the government is unable to secure the necessary number of votes it won't lose power immediately, but the system will rather start to slowly unravel.

Household's utility is defined as an increasing, strictly concave function of its consumption, multiplied by a term  $\theta \in [0, 1]$  if the household casts a vote for the autocratic government. This term captures the disutility from voting against ones conscience (i.e. households are assumed not to strictly prefer the dominant party). It is also assumed that voters don't think of themselves as pivotal and expect the ruling party to stay in power, independently of their own vote. The condition to accept the government's offer to exchange one's vote for

a transfer, for  $i=(N,M)$ , can than be expressed as:

$$\theta[(1-\tau)I + R_i + t_i]^\alpha \geq [(1-\tau)I + R_i]^\alpha, \quad \alpha \in (0, 1) \quad (1)$$

It is important to remember that it is assumed that the government can effectively control the votes of the households forming part of its patronage network. Accepting the transfer therefore implies losing one's vote. Expression (1) can then be rearranged to yield the minimum transfers necessary:

$$t_i \geq \left[ \theta^{-\frac{1}{\alpha}} - 1 \right] [(1-\tau)I + R_i] \quad (2)$$

The government's objective is to maximize its tax revenue net of transfers. In order for the autocratic system to be sustainable, and for the regime to have an incentive to stay in power, this net revenue has to be positive. If it's not the dominant party loses power and the elected autocracy gives way to a competitive democracy. Assuming that taxation carries an efficiency loss of  $\tau^2$ , the government's rent can be expressed as:

$$(\tau - \tau^2)I - \lambda_N t_N - \lambda_M t_M \geq 0, \quad (3)$$

where  $\lambda = \lambda_N + \lambda_M$ . From (2) it is clear that migrant households will always require a bigger transfer than non-migrant households. For  $\lambda_M$  to be positive the proportion of the latter in the population has therefore to be smaller than  $\lambda$ . If that is the case  $\lambda_M$  equals the shortfall in the proportion of non-migrant households with respect to  $\lambda$ .

Maximizing (3) w.r.t.  $\tau$  and using (2) one gets:

$$\tau^* = \min \left( 1, \frac{1}{2} + \frac{\lambda}{2} (\theta^{-\frac{1}{\alpha}} - 1) \right), \quad (4)$$

where  $\tau^* = 1$  would necessarily imply a negative payoff and hence a system break-down. Using (2) in (3) and rearranging one can then derive the two values of  $\tau$  in which range payoffs would be positive and the system sustainable:

$$\tau_{1,2} = \frac{1 + \lambda(\theta^{-\frac{1}{\alpha}} - 1)}{2} \pm \left[ \left( \frac{1 - \lambda(\theta^{-\frac{1}{\alpha}} - 1)}{2} \right)^2 - (\theta^{-\frac{1}{\alpha}} - 1) \lambda_M \frac{R}{I} \right]^{\frac{1}{2}} \quad (5)$$

In order for such  $\tau$ s to exist the term in the square brackets has to be non-negative. This permits the derivation of the condition for an electoral autocracy to exist only in terms of exogenous parameters:

$$\theta \geq \underline{\theta}(\lambda_M, R) = \left[ \frac{\lambda + \lambda^2 + 2 \left( \lambda_M \frac{R}{I} - (\lambda_M \frac{R}{I})^{\frac{1}{2}} (\lambda + \lambda_M \frac{R}{I})^{\frac{1}{2}} \right)}{\lambda^2} \right]^{-\alpha} \quad (6)$$

Expression (6) constitutes in effect a lower bound on the anti-government ideology parameter  $\theta$  for vote buying to be viable. If it drops below  $\underline{\theta}$  the system becomes unsustainable. For  $\lambda_M = 0$  it reduces to  $\underline{\theta}(\lambda_M, R) = \left[\frac{1+\lambda}{\lambda}\right]^{-\alpha}$  which gives the condition for patronage to be viable in the absence of migration. It is straightforward to show that  $\underline{\theta}(\lambda_M, R)$  is increasing in  $\lambda_M$  and  $R_M$ , taking the corresponding partial derivatives:

$$\begin{aligned}\frac{\partial \underline{\theta}(\lambda_M, R)}{\partial \lambda_M} &= \Delta \frac{2}{\lambda^2} \left( \frac{R}{I} - \frac{1}{2} \frac{R}{I} \left[ \left( \frac{\lambda + \lambda_M \frac{R}{T}}{\lambda_M \frac{R}{T}} \right)^{\frac{1}{2}} + \left( \frac{\lambda_M \frac{R}{T}}{\lambda + \lambda_M \frac{R}{T}} \right)^{\frac{1}{2}} \right] \right) \\ \frac{\partial \underline{\theta}(\lambda_M, R)}{\partial R} &= \Delta \frac{2}{\lambda^2} \left( \frac{\lambda_M}{I} - \frac{1}{2} \frac{\lambda_M}{I} \left[ \left( \frac{\lambda + \lambda_M \frac{R}{T}}{\lambda_M \frac{R}{T}} \right)^{\frac{1}{2}} + \left( \frac{\lambda_M \frac{R}{T}}{\lambda + \lambda_M \frac{R}{T}} \right)^{\frac{1}{2}} \right] \right), \quad (7)\end{aligned}$$

$$\text{where } \Delta = -\alpha \left[ \frac{\lambda + \lambda^2 + 2 \left( \lambda_M \frac{R}{T} - \left( \lambda_M \frac{R}{T} \right)^{\frac{1}{2}} \left( \lambda + \lambda_M \frac{R}{T} \right)^{\frac{1}{2}} \right)}{\lambda^2} \right]^{-(1+\alpha)}, \text{ which is always}$$

negative. In either case, as long as  $\lambda_M > 0$ , for the remaining part of the expression to be negative it is enough to verify that the term in square brackets, which can be written as  $\left(1 + \frac{\lambda}{\lambda_M \frac{R}{T}}\right)^{\frac{1}{2}} + \left(1 + \frac{\lambda}{\lambda_M \frac{R}{T}}\right)^{-\frac{1}{2}}$ , has to be greater than 2. For a movement from  $\lambda_M = 0$  or  $R=0$  to a strictly positive value the result follows by direct inspection of (6).

To summarize the model's results: Once the proportion of migrant households in the population exceeds a critical threshold, so that some of them need to be incorporated into the government's patronage system, an increase in their proportion or the amount of remittances they receive will decrease the rent the government is able to extract. It also decreases the maximum level of political ill will it is able to fight off by means of transfer payments. These transfers are increasing in the voters income, as their marginal utility will be declining<sup>5</sup>. As long as the increase in income can be taxed, the government is able to perfectly offset this effect. But if that is not the case, as with remittances, a rising income will eventually lead to the system's collapse.

As an aside, an interesting extension to the model is to include an external income  $E$  at the government's disposal (such as a natural resource, foreign aid or transfers from a higher level of government). This would simply have to be included additively in the government's budget constraint (3) and results, unsurprisingly, in lowering the bound on  $\theta$  in (6) and hence make autocracy more sustainable<sup>6</sup>. Even though of no direct interest here it helps to illuminate the role played by remittances in the model: By not being taxable they have the exactly opposite effect than the one identified in the resource curse literature

<sup>5</sup>this point is also made in Greene (2007), pg. 50

<sup>6</sup>to be precise expression (6) would change to:



for external government funds.

I will now present some basic descriptive statistics which motivate the model developed above and the empirical analysis that follows. The aim of Figure 1 is merely to give the reader a taste of the evolution of municipal governance in Mexico. It presents the percentage of opposition ruled municipal governments since 1983, the first year in which data for all municipalities holding party based elections is available. One can clearly discern an upward trend in three steps, tracking the last three presidential terms (Salinas (1988-1994), Zedillo (1994-2000), and Fox (2000-2006)). It is also visible that period under consideration here (2000-2002) continued to experience a steep increase in non PRI governed municipalities.

(Figure 1 about here)

The empirical motivation for the analysis that follows is given in Table 1. Observations for all municipalities which have complete data on municipal elections in both periods under consideration are included. It shows that municipalities which elected a PRI government between the years 2000-2002 received 35.33% lower average remittances per household than those which elected an opposition party. This difference is significant at the 1% level. It furthermore shows average remittances per household for municipalities electing a PRI or opposition government conditional on the nature of the incumbent: In PRI governed municipalities an opposition victory is associated with a much higher difference in remittances received than it is in places already run by an opposition party. These differences amount to 49.97%, significant at the 1% level, in the former but only 8.04%, and completely insignificant, in the latter.

(Table 1 about here)

This suggests a strong effect of remittances on voting the former state party PRI out of power. Once the transition to competitive elections has been made (as signaled by an opposition victory) it is possibly irreversible. The role of remittances in future elections is then confined to its effect on party preferences and significantly reduced. This, in a nutshell, is the hypothesis under consideration in what follows.

### 3 Identification Issues

A series of problems related to model identification have to be discussed, and possible limitations of the approach taken here need to be pointed out. I then

$$\theta \geq \underline{\theta}(\lambda_M, R, E) = \left[ \frac{\lambda + \lambda^2 + 2 \left( \lambda_M \frac{R}{T} - (\lambda_M \frac{R}{T} (\lambda + \lambda_M \frac{R}{T}) + \lambda^2 \frac{E}{T})^{\frac{1}{2}} \right)}{\lambda^2} \right]^{-\alpha}$$

proceed to explain the data, before presenting the results.

I'll run a generic probit model, plus its instrumental variable version. A binary dependent variable, taking a value of one for an opposition victory in municipal elections, is regressed on a measure of remittances plus a number of control variables. An opposition victory is understood as a simple majority won by a candidate for mayor who is not backed by the PRI. The model in section (2) predicts that a patronage system break-down becomes more likely with increases in either the amount of each remittance or the total number of remittance receiving households. Given restrictions on data quality and instrument availability I am not in the position to contrast these two effects separately. Instead, the variable of interest used, logarithm of average remittances per household at the level of the municipality, being the product of the two variables, has to be understood as a composite measure. More formally in latent variable notation:

$$\begin{aligned} y^* &= c + (\beta_1 + \gamma)x_1 + \beta_2x_2 + \epsilon, \\ y &= I[y^* > 0] \end{aligned} \tag{8}$$

where  $y$  is the observed binary outcome of an opposition victory,  $x_1$  is the potentially endogenous variable (log of remittances),  $x_2$  is just any exogenous control, and the  $\gamma$  term represents the bias that would arise in  $\beta_1$  if one estimated the model with a simple probit procedure.  $\epsilon$  is a standard normally distributed error term. The latent variable  $y^*$  can be thought of as representing the difference in “real” power between the opposition and the PRI, taking into account a variety of measures of political control.

The aim is to identify a causal effect of remittances on the competitiveness of elections at the local level, i.e. a situation in which no clientilistic practices undermine electoral competition. Unfortunately, one is somewhat restricted in the endeavor by data availability. Three different issues need to be addressed: Possible endogeneity of the right hand side variables, the role of political preferences, and the possibility of alternative explanations for the results.

### 3.1 Variable Endogeneity

The independent variable of interest is a measure for the average remittances received per household at the level of the municipality. Endogeneity might be a problem because of omitted variables, measurement error and reverse causation.

The case for potential omitted variable bias ought to be pretty clear. There possibly exist some fixed municipal characteristics that cannot be controlled for which might affect the amount of remittances received or the proportion of migrant households as well as political outcomes. An example for such a characteristic would be nationalist or patriotic values, which might politically favor the PRI and at the same time have people frown on emigration. Since the

variables of interest are only available on the municipal level for the year 2000, it is not possible to run panel data specifications to solve this problem.

The concern about measurement errors is slightly more complicated. Relatively few people are upfront about their incomes when interviewed by a complete stranger. This systematic under reporting might hence bias the estimates. To illustrate this point I computed the (unweighted) share of households which report that at least one member receives remittances for those households which report to have sent at least one migrant who didn't yet return in the five years prior to the interview. In most states that proportion is between 20 and 40 percent, which compares with close to 80 percent of Mexican migrants living in the United States who reported to send remittances in a 2005 survey by the Pew Hispanic Center <sup>7</sup>. These numbers are of course not one hundred percent comparable (the former measure, for example, doesn't take into account migrants who have since returned) and could possibly be reconciled in theory, but they nonetheless strongly suggests a high degree of under reporting with regard to remittances. An additional complication arises due to the possible correlation of the measurement error with the outcome variable. Given that the interviewer sent by the Mexican census bureau has certain government credentials it cannot be ruled out that the response probability depends on political attitudes, which, in turn, are likely to influence electoral outcomes. This adds an additional potential source of endogeneity as more independent variables are included and would therefore call for the most parsimonious specification. This point is worth keeping in mind when results are presented.

Finally reverse causation might arise due to the high temporal persistence of the outcome variable and the possibility that more authoritarian places might eject more migrants and become more dependent on remittances. These problems will be addressed by the use of an instrumental variable which will be discussed below.

### **3.2 Democratization vs. Political Preferences**

In a perfect world it would be possible to observe if an election stands up to democratic standards, independent of who won, and could use it directly as the dependent variable. Since this is not the case one has to conform with an indirect identification strategy of an institutional variable, using electoral results in the form of a binary variable for an opposition victory.

This approach could of course be criticized on the ground that instead of measuring actual political opening it is simply picking up political preferences, i.e. that remittance receiving households favor opposition parties. Even though this criticism will be addressed, it is worth pointing out that Mexico is a country which has been effectively under single party ruled for more than 70 years.

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<sup>7</sup>See <http://pewhispanic.org/datasets/>

Observing the demise of that party should then be regarded as the result of an important institutional change and not just of voters changing their political opinions. Nonetheless, I will now explain the two additional assumptions imposed in order to identify institutional quality indirectly.

The first is to introduce a proxy for party preferences, expecting that a pure political preference effect would be picked up by that proxy rendering our variable of interest insignificant. Such a proxy can be found in electoral results from federal elections. The Mexican Federal Electoral Institute (IFE), after becoming completely independent of government control in 1996 (Camp 2007), is widely credited with having assured non-fraudulent elections at the federal level (Lawson (2000); Magaloni (2006)). At the same time it is important to note that the IFE “only has jurisdiction over national contests, and sub-national elections are monitored by state level organizations that vary dramatically in political independence and technical capacity” (Lawson (2000), pg. 277). It can therefore be assumed that the outcomes reported in federal elections closely reflect political preferences.

The probably best way to capture these preferences is to use electoral results for the lower house of the legislature and not for the presidency, given that the latter might be influenced by other considerations (such as personal sympathy for one of the candidates). I computed a binary variable taking on a value of one if an opposition party received the largest share of votes in the year 2000 general elections in a given municipality. It therefore closely mirrors the outcome variable and its marginal effect will have a straightforward interpretation. Estimation results will be presented including and excluding this variable.

More formally, suppose that instead of expression (8) the true model had the form:

$$y^* = c + (\beta_1 + \alpha_1 + \gamma)x_1 + (\beta_2 + \alpha_2)x_2 + \varepsilon, \quad (9)$$

There are now two different effects of each variable on the outcome, which cannot be separately identified under this specification. The first parameter,  $\beta_i$ , captures the effect on democratic quality of the elections, which of primary interest here. The second one,  $\alpha_i$ , measures the effect through electoral preferences.  $\varepsilon$  is as before a standard normally distributed error term. The identification problem can be treated as a standard case of an omitted variable, with that variable being party preferences and federal election results a valid proxy.

The second approach is to run two additional specifications, conditional on whether an opposition government ever won an election since 1980 (which is the first year for which data is available). The assumption is made that those municipalities which have already been governed by an opposition party have to be a competitive democracy. With respect to the continuously PRI governed ones, one is unable to determine whether they are clientilistic or not, but one

can be sure that all clientilistic ones have to be in this group. Note that this approach is similar to the alternation rule for defining democracies in Przeworski, Alvarez, Cheibub, and Limongi (2000).

If the results were simply driven by the effect of remittances on electoral preferences, estimations should yield similar results in both groups regardless whether an opposition party has ever won an election. If remittances affect preferences as well as institutions, they should be insignificant in places that already had an opposition government once preferences are controlled for. In continuously PRI ruled municipalities, on the other hand, remittances should still be significant. If they remained positively significant in both cases one would have to rethink this approach.

As a corollary to this argument it follows that the margin of an electoral victory should only play a bigger role in institutionally weak places. Clearly, as the margin which determines the binary electoral outcome shrinks an element of randomness should become more important and the significance of the explanatory variable weaker. As a robustness check one can therefore enhance the model outlined above by conditioning in addition on the winning margin. An institutional effect would then be associated with remittances playing a more prominent role if elections are closely fought (and hence vote buying becomes decisive).

In order to sum this discussion up, the central hypothesis that remittances have a positive impact on the functioning of democratic institutions can be tested by the following three hypotheses, which will be the subject of the empirical section:

- *Hypothesis 1:* Remittances significantly increase the probability of an opposition party winning an election.
- *Hypothesis 2:* This effect is larger in municipalities continuously governed by the PRI.
- *Hypothesis 3:* Remittances don't have such an effect in municipalities which have already had an opposition government once the results of federal elections are controlled for. In continuously PRI governed municipalities this effect persists even after taking federal election results into account.

In order to test the robustness of these results it has to be furthermore the case that:

- *Hypothesis 4:* In continuously PRI governed municipalities this effect is stronger in elections with a small winning margin.

### 3.3 Alternative Explanations

Another, and possibly more serious, problem is the fact that the variable of interest, average remittances per household, is highly correlated with the overall level of migration in a given municipality. This implies that the result might well capture the effect of migration through channels other than remittances.

The obvious solution to the problem would be to simply run the model including both variables. There are two problems with that approach: The first is the possibility of collinearity in our data and that different significance levels might rather reflect a more precise measurement of one of the variables than different causal effects. The second problem is related to the discussion of endogeneity issues above. Remittances as well as migration levels will have to be instrumentalized for. In order to avoid weak instruments this would require finding a valid instrument which affects the level of remittances but not the levels of overall migration- which is a formidable problem. Using, for example, determinants of historic remittances is ruled out, since subsequent migration is likely to have been influenced by the amount of money sent in previous periods. Be it in its role to ease potential migrant's credit constraints or as an additional incentive for other households to send a migrant.

The obvious alternative is to clearly state the other potential channels through which migration might affect the outcome and run the model including valid proxies for them. One of those alternatives, the possibility of social learning, has already been mentioned in the introduction. Another candidate would be a variant of Tiebout (1956) model which lets migrants vote with their feet. This might force an extractive government to lower its capture of tax revenue and open up politically. A robustness section at the end of the paper will directly test for these two alternative explanations.

## 4 Data

The data used comes from a number of different sources. Most of the independent variables were computed using the Mexican year 2000 census, partly from the dataset on municipal characteristics SIMBAD (which shows municipal level data for the entire population) and partly from the household level ten percent public use micro data sample which applied an extended questionnaire. All data sources so far discussed can easily be found on the webpage of the Mexican statistical Institute INEGI <sup>8</sup>. The data on federal elections were taken from the Federal Electoral Atlas (Atlas Electoral Federal de Mexico), published on CD-Rom by the Mexican Federal Electoral Institute (IFE) <sup>9</sup>. The dependent variable of opposition victories was constructed using a database on municipal

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<sup>8</sup>See [www.inegi.gob.mx](http://www.inegi.gob.mx)

<sup>9</sup>See [www.ife.gob.mx](http://www.ife.gob.mx)

elections since the year 1980, which is provided by the Mexico City based think tank CIDAC (Centro de Investigacion para el Desarrollo) and can be accessed through its webpage <sup>10</sup>. The same source was used to construct the variable of the winning margin used in the robustness test section. Finally, the instrument was constructed with the help of a Mexican Railroad timetable dating from 1905, a map of the railroad network in 1942 and the interactive map of Mexico on the INEGI homepage. These were then used to determine the distance one had to travel by rail from each municipality to the principal point of entry into the United States.

#### 4.1 Dependent variable

Since different states hold local elections in different years, with a municipal legislature always lasting three years, one has to treat three consecutive years as one electoral process. The dependent variable will therefore denote the electoral outcomes of municipal elections conducted in the years 2000, 2001 and 2002. The corresponding right hand side variables, discussed below, were collected from February 7th-18th 2000.

The dependent variables is binary, taking a value of one if a candidate other than the one supported by the PRI wins in the mayoral elections and zero otherwise (a candidate only needs a simple majority to be elected). It is not necessary to further distinguish the political affiliation of that candidate for two reasons. First and foremost, the aim is to explain the emergence of electoral competition which manifests itself in the positive probability of an opposition party to win an election. From that point of view it is analytically irrelevant which opposition party that is. Working out how remittances influence party preferences would be a different paper.

The second reason is that the Mexican regional landscape is highly divided with regard to the strength of opposition parties. The PRI is the only political party with a strong presence in the entire country, running against one relatively strong opposition party in every place. That opposition party is usually the conservative National Action Party (PAN) in the north, west and parts of the center regions (with the exception of the states of Zacatecas and Baja California Sur). In the center and south the main opposition party is the left wing Party of the Democratic Revolution (PRD). In a few cases some smaller parties run against the PRI in some municipalities, but places with strong support for more than two parties are rare.

#### 4.2 Independent variables

The independent variables of interest that will be reported in the output tables are the logarithm of the (probably endogenous) amount of average remittances

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<sup>10</sup>See <http://www.cidac.org>

per household in each municipality and the dummy variable for the outcome of the federal elections. In addition, estimations will be conducted with three different sets of control variables: First no controls at all are included, followed by a set of basic controls taking into account the election year (either 2000, 2001 or 2002), the direct distance from the border and its square (the importance of the latter two will become clear when the instrumental variable is discussed). Finally, a battery of municipal level controls is included: Economic characteristics are controlled for by mean labor income, its dispersion, the relative importance of various sectors and the unemployment rate. Other socioeconomic controls are the illiteracy rate and the share of indigenous people. In order to take into account the role the size of a municipality might play, I also control for the total population. In a more detailed manner:

Variables of interest:

- **Remittances:** The variable of interest, measured in logarithms. Constructed as the logarithm of the average remittances per household plus one due to the presence of municipalities in which no household reports the receipt of remittances. This variable was created from the census 2000 public use micro data sample as a weighted average at the level of the municipality.
- **Federal Election:** A binary variable taking on a value of one if an opposition party received the highest vote share in the municipality for the lower house of the federal legislature in the year 2000 general elections.

Basic control variables:

- **Distance Border:** Distance to closest point along the border with the United States. Measured at the direct distance between the administrative seat of each municipality and the closest such seat of a municipality bordering the United States.<sup>11</sup>
- **Distance Border Squared:** The squared value of the distance to the US border.
- **Cycle1, Cycle2:** Dummy variables denoting elections held in the years 2001 and 2002 respectively.

Additional control variables:

- **Laborincmean:** The logarithm of the average labor income per household. Created from the census 2000 public use micro data sample as a weighted average at the level of the municipality. It might have some endogeneity issues if a local PRI government is systematically related to lower or higher labor incomes. A robustness check shows that its exclusion (together with its standard deviation) doesn't alter the results.

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<sup>11</sup>These distance measures were constructed using longitudinal and latitudinal data which can be found on the INEGI homepage and under a flat earth assumption (the distance between the longitudes was held constant at the level of Mexico City).



- **Laborincstdv:** The standard deviation of labor income at the household level within each municipality (not the deviation of the logarithm).
- **Emplmin:** The share of economically active and occupied population working in the extractive sector in the year 2000. This variable, like the following ones, was created from INEGI's SIMBAD.
- **Emplagri:** The share of economically active and occupied population working in the primary sector in the year 2000.
- **Emplmanu:** The share of economically active and occupied population working in manufacturing in the year 2000.
- **Emplturi:** The share of economically active and occupied population working in the hotel and restaurant sector in the year 2000.
- **Unempl:** The municipal unemployment rate in the year 2000, understood as the proportion of economically active individuals who are not occupied. Data is taken from INEGI's SIMBAD.
- **Illit:** The municipal illiteracy rate for individuals 15 years of age or older in the year 2000. Data is taken from INEGI's SIMBAD.
- **Indig:** The proportion of a municipality's inhabitants 5 years of age or older who speak an indigenous language in the year 2000. Data is taken from INEGI's SIMBAD.
- **Poptot:** Total population of municipality in the year 2000. Data is taken from INEGI's SIMBAD.

### 4.3 Instrumental Variable

As already explained in section 3.1 it is to be expected that remittances are endogenous. In order to find a suitable instrument it helps to think of the average remittances per household as consisting of the level of migration and the amount of money each migrant sends. Unfortunately, the available instruments affect remittances only through their impact on the total level of migration. This makes a separate identification of the effect of the number of remittance receiving households and the amounts remitted impossible.

Several authors have already faced the problem of finding instruments for migration and have come up with a series of valid solutions. Munshi (2003) uses rainfall patterns in his work on migrant networks. The most common approach is possibly to use historic migration flows which will influence current flows through the importance of social interactions (see, for example, Massey and Espinosa (1997)), but are far enough back in time not to influence the outcome variable. This approach was taken by McKenzie and Rapoport (2007) to identify the effect of migration on inequality, using data on border crossings at the state level from the year 1924. At the beginning of the 20th century

migration from Mexico to the United States increased sharply as a result of labor shortages north of the border during World War I. Mexican workers were recruited by contractors following the rail lines leading into Mexico from the border, with El Paso, Texas being the principal point of entry. For that reason, in their work on micro enterprises in Mexico, Woodruff and Zenteno (2007) used distance from one of the three principal north-south lines at the state level as their instrument of choice. A strategy similar to theirs will be followed here too, albeit with a more granular instrument.

Using external shocks, such as rainfall data, wouldn't be appropriate in the present case since they are likely to also affect the political outcome. Nor would using actual historic migration data. Remember that one reason for potential endogeneity was the existence of unobserved municipal characteristics. Unless we can be certain that these were not already present several decades ago, one would be stuck with the same endogeneity problem.

Instead, a measure for the travel distance to Ciudad Juarez, Chih, El Paso's sister city across the border in Mexico, was constructed. Travel distance means the distance by rail from Cd. Juarez to the station closest to the municipality. I used a 1905 timetable for the Mexican railroad network, which also provides distance between stations in kilometers, to establish which lines were already present at that point in time. With the help of two maps, one railroad map dating from 1942 and an interactive map on the INEGI homepage which allows the identification of the territorial expansion of each municipality, I then determined which municipalities had a railroad connection and at which distance from Ciudad Juarez. Those not directly connected by railroad were matched with the closest municipality that is.<sup>12</sup>

A small degree of ambivalence is unavoidable in such an exercise, but most likely it will only add noise to the estimates without biasing them in any significant way. The distance measures were computed finding out, first of all, if the municipal seat had a station. If that was the case that station's distance was used; if not I tried to determine the station closest to it; and if that failed I used the station which appeared to have the most central location given the territorial extension of the municipality.

The biggest concern regarding the instrument's exogeneity is that it might just capture the effect of geographical closeness to the United States and hence be correlated with the error term in equation (8). This is addressed by adding the direct distance to the US border and its square as control variables. As will be seen, their inclusion has almost no effect on the results. It could also be argued that even after controlling for the distance to the border the instrument still captures how well a municipality is connected to the US and could therefore be correlated with a number of unobserved characteristics which are influenced

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<sup>12</sup>Using direct distance, measured in the same way as the distance to the US border

by that connectedness. In this regard, it has to be kept in mind that the instrument measures access to the US labor market *at the beginning of the 20th century*. Once roads transportation became widely available the importance of the instrument in determining access to the border was significantly diminished. It is therefore unlikely to be a determinant of any unobserved contemporaneous characteristics. To give further support to this argument a number of additional socio-economic variables (described above) will be included and shown not to alter the results. It is also important to note that the instrument dates from a moment in time before the PRI dominated political system even emerged and hence cannot be the product of any relevant political characteristics.

The distance to one particular point of entry, instead of to any border crossing accessible by rail, is used due to the paramount importance of El Paso in attracting migrants. Even though hard data on detailed migration flows for the time before and during the Mexican Revolution are hard to come by, there exists a general agreement that El Paso functioned as the main point of entry. In his detailed account of Mexicans in the city Mario T. Garcia describes it as the largest port of entry and states that “El Paso symbolized what New York had represented to European immigrants” (Garcia (1981), pg.2). At a later point he quotes an American government official in 1908 as saying that more Mexicans enter the United States through El Paso than at all other points combined (pg.36). Other authors who make similar points include Ricardo Romo who states that “the greatest number of Mexicans streamed through the border station at El Paso” (Romo (1975), pg.176) and Davis Spener describing El Paso as “the biggest center for Mexican labor contracting on the border” (Spener (2005), pg.10).

El Paso’s importance derived almost entirely from Ciudad Juarez, across the Rio Grande River, being the northern terminus of the Central Mexican Railroad, linking it to Mexico City and the central states. It was the first rail line to connect Mexico City directly with the border (Spener (2005), pg.5), the best connected to the American rail network (Woodruff and Zenteno (2007); Spener (2005) pg.5) and up until the late 1920’s the westernmost and northernmost point of entry to be reached by rail from the Mexican interior.

Two other lines were completed a few years later reaching the border at Piedras Negras and Nuevo Laredo (Spener (2005), pg.5). None of them provided important additional connections to the US labor market beyond Texas itself. The first one provided connections to El Paso and San Antonio, the second one to San Antonio only. Even though during the first bracero program in 1917-1918 San Antonio became an important center for labor contracting, it didn’t reach the same degree of importance as El Paso did (Spener (2005), pg.19). But according to a study conducted in the late 1920’s migration into Southeastern Texas was “overwhelmingly a short-range movement from adjacent states of Northeastern Mexico” (Taylor 1930). In a sample of Mexican laborers from Dimmit and Zavala counties in Texas 71.5 percent came from

the two neighboring states of Coahuila and Nuevo Leon (Taylor 1930a). Given, among other concerns, such idiosyncratic migrations patterns in the border regions, municipalities located in the northern region of Mexico will be excluded from the estimation <sup>13</sup>.

While to the east of El Paso migratory movements were hence restricted to the Texan market for contract labor and originated mostly in places in close proximity to the border, to the west the only other important point of entry was Nogales, Arizona. During the first bracero program most workers crossed the border in El Paso or Nogales (Alanis-Enciso 1999), but it wasn't connected to central Mexico by rail up until 1927 (Reisler 1976). As of 1905 the line reached only as far south as Guaymas, Sonora. Since, as already mentioned, the northern states will be excluded from the analysis, migrants from the rest of the country would need to travel via El Paso to reach the labor markets in Arizona, California and further up north. Reporting the state of origin of a sample of migrant workers in Imperial Valley, California in 1926/27, Paul S. Taylor finds a much more even distribution than for the case of Texas. The close border states, Baja California and Sonora, made up only 29.4 percent of the sample. As Durand (1994) points out, in 1882, two years before the Central Mexican Railroad was completed, the US Congress prohibited the immigration of Chinese labor to the United States. This created severe labor shortages in the American Southwest and especially in California which subsequently were filled with Mexican labor, creating a high level of demand in precisely those regions which for most Mexicans could only be reached by way of El Paso.

As already mentioned El Paso provided the largest amount of rail connections; not only to the American Southwest, but also to the Midwest via Kansas City and St. Louis (Romo (1975), pg. 176). Its geographical position also made it the closest border crossing to these places. This matters given that it seems reasonable to assume that migrants would rather cross the border at the point closest to their place of work than to their place of origin in order to minimize the length of their travel inside the United States. In this context it is also important to mention the relative decline in importance of Texas as a migrant destination in comparison to the rest of the country and, above all, California (Romo (1975), pg. 174). United States census data for the period 1900-1920 (Census-Office (1901); Census-Bureau (1913); Census-Bureau (1922)) shows that Texas's share of the Mexican born population living in the US declined from 68.7 percent to 51.8 percent, while that of California increased from 7.8 to 18.2 percent. Within Texas El Paso county alone could increase its share from 11.8 to 15.5 percent. In the United States as a whole the Mexican born population increased from 103,445 to 486,418. The biggest part of the migrants making up this increase had to pass through El Paso.

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<sup>13</sup>I use the definition common in official documents according to which the northern regions consists of the following states: Baja California, Baja California Sur, Coahuila, Chihuahua, Durango, Nayarit, Nuevo Leon, San Luis Potosi, Sinaloa, Sonora, Tamaulipas, and Zacatecas

## 4.4 Summary Statistics

Finally, table 2 provides the summary statistics for all variables used (without applying logarithms). In the year 2000 Mexico had 2443 municipalities of which complete data on local elections is available for exactly 1985. The difference is mainly explained by the 418 municipalities in the state of Oaxaca which don't hold party based elections, but are governed according to their own local traditions (*usos y costumbres*). All of them are very small towns with an almost exclusively indigenous population. The remaining 40 missing values are due to municipalities for which the electoral results weren't observed in the period of interest or in the preceding elections. This can be either because the municipality was just incorporated or elections were annulled.

As already mentioned, doubts regarding the validity of the instrument for municipalities located in the northern region are justified. Their proximity to the border did not only influence their historic migration patterns, but also their demographic development over the last few decades. Most of them were very thinly populated at the beginning of the 20th century, but have since grown into sizable cities with a strong export oriented manufacturing base. Instead of sending migrants north of the border those cities attract themselves internal ones from other parts of Mexico. This provides another reason for their exclusion from the estimations. Lastly, two municipalities in Chiapas were missing some of the variables discussed above. This leaves us with a total of 1511 observations.

(Table 2 about here)

## 5 Estimation Results

Tables 3-12 present the estimation results for different specifications. The first six tables (up to number 8) present the principal results while the remaining four show a series of robustness checks. Tables 3-5 contain the results of a simple probit estimation for the entire sample (table 3) and conditional on whether the PRI has been continuously in government since 1980 (table 4) or not (table 5). The following three tables (6-8) show the instrumental variable probit results for the same specifications. The estimation was carried out in Stata with the *ivprobit* command, using conditional maximum likelihood. In all cases I allowed for the error terms to be clustered at the state level.

Each of the first six tables shows six different specifications. The first distinction is with respect to the included control variables: Specifications 1 and 2 don't contain any control variables at all; the following two columns contain as basic controls the election year (*Cycle1*, *Cycle2*) and the distance from the border and its squared value (*Distance Border*, *Distance Border Squared*); columns 5 and 6 contain all the control variables described above. The goal is to show that the estimates are not altered by the inclusion of potentially omitted

variables. The variables of distance to the border and its square, even though omitted from the output presented, have throughout the expected sign (negative for the first and positive for the second), but are only significant at the 5% level in a few specifications. In addition, in each case estimations are conducted including and excluding the results from the year 2000 federal elections (*Federal Elections*).

Different tables report results for different groups of municipalities. Tables 3 and 6 report results for all 1511 municipalities, tables 4 and 7 for the group of continuously PRI ruled ones and tables 5 and 8 for those which already had had at least once some other party winning an election since 1980. It is worth noting that the two groups are almost equally sized, which makes their results very comparable.

At this point it is worth to repeat the identification strategy followed: It is claimed that an effect of remittances on the quality of democratic institutions can be identified by the hypotheses outlined in section (3.2). That is, one expects a significantly positive impact of remittances on the probability that an opposition party wins an election even after controlling for the federal election result in continuously PRI governed municipalities. In addition, this effect should be more pronounced in elections won by a small margin. In municipalities which already had an opposition government at some point since 1980, on the other hand, one does not expect to identify such an effect once the federal election result is taken into account.

Instead of the actual parameter estimates, which wouldn't be easily interpretable, the tables report the expected change in the probability of observing an opposition victory when moving from the first to the third quartile of the variable in question, with all the remaining variables evaluated either at their mean or at zero if they are binary. In the case of the control for federal elections the tables report the expected change of a move from zero to one. These numbers provide a better measure of the magnitude of the causal relationship than marginal effects would, especially when taking into consideration that the available measure for remittances is likely to be an underestimate.

All tables report, apart from the number of observations, the first stage parameter estimates of the instrument and its p-value. This is only meant to be an additional measure of instrument validity and doesn't form part of the actual estimation which didn't apply a twostep procedure. Furthermore, the p-value for the regression based test on endogeneity is reported (This tests for the significance of the inclusion of the residuals from the first stage regression in the probit model), as well as two measures of instrument weakness. The first one is a partial R square measure for the linear model proposed by Shea (1997), the second measure is the Cragg-Donald Statistic which following Stock, Wright, and Yogo (2002) has an application in testing for weak instruments.

This last statistic requires some additional explanations. It is important to note that it was proposed for linear two stage least squares (2SLS) and not for non-linear models. To my knowledge the still emerging literature on weak instruments has so far not produced any applicable test for probit models. I therefore believe that the statistic for linear 2SLS is at this point the best option available and will still contain important information. The Cragg-Donald statistic, which was originally developed to test for underidentification, has to be compared to a set of critical values derived for its application to weak instruments. Stock, Wright and Yogo defined instruments to be weak if the 5 percent Wald test has an actual size that could exceed a certain worst case threshold, denoted by  $r$  (the worst case limiting rejection rate). The critical values of the Cragg-Donald Statistic for different values of  $r$  are for our case of one endogenous variable and one instrument:  $r=0.1$ : 16.38,  $r=0.15$ : 8.96,  $r=0.2$ : 6.66 and  $r=0.25$ : 5.53. In all specifications presented here, including the robustness checks, the statistic is well above those thresholds.

## 5.1 Probit results

Tables 3-5 present the result of the simple probit estimation. Overall, average remittances are mostly insignificant, except for the sample including all 1511 municipalities. Once federal elections are controlled for any significance disappears for the variables of interest. As far as point estimates are concerned, there doesn't seem to exist a big difference between towns that have already elected an opposition government and those that didn't.

(Table 3 about here)

(Table 4 about here)

(Table 5 about here)

## 5.2 IV results

Tables 6-8 form the very gist of this paper, presenting the results of the instrumental variable probit estimation. A few general results are worth pointing out. Firstly, the estimated effect of remittances increases and becomes highly significant in the most important specifications. This points to a strong negative bias in the probit results, probably due to more authoritarian communities producing more migrants. Secondly, weak instruments don't seem to be a concern under any specification, and finally, the first stage results for the instrument (*Distance Juarez*) are highly significant.

In table 6 the results for the whole sample of 1511 municipalities are shown. The general pattern is that remittances are positively significant at the 1%-level if federal election results are not controlled for, but that they turn insignificant once that control is included. The conclusion would be that more than 10% of the estimated 17%-19% increase in the probability of an opposition victory

when moving from the first to the third quartiles are explained by changes in party preferences, leaving the remainder insignificant.

(Table 6 about here)

When the municipalities are divided into those which already have been opposition governed at some point and those which were not a much clearer picture emerges. As a reminder, the idea is that if I observe an opposition government it can be safely concluded that local elections had to be competitive. If the municipality has been continuously ruled by the former state party, on the other hand, no conclusion with respect to the electoral process can be drawn, but all municipalities with non-competitive elections need to be part of that group. I would therefore expect my results to turn insignificant in the first group, but to uphold (or improve) in the second.

Tables 7 and 8 show that this is indeed the case. In the group of municipalities with continuous PRI governments the results are similar to the ones for the whole sample and even slightly stronger for the specification excluding federal election results. For the other group the estimated effect is much weaker with a lower point estimate and much lower significance. This in itself strongly suggests an effect on institutional quality. Once federal election results (as a proxy for party preferences) are taken into account the results are confirmed. In the continuously PRI ruled group the additional variable, even though highly significant and with a higher estimate than in the other group, barely changes the results on remittances. In the first two specifications a move from the first to the third quartile (of all municipalities) of average remittances per household increases the likelihood of an electoral victory by an opposition party in a municipality which has never experienced one by 16%. Once the whole set of controls is included that number rises to 23%. These numbers can be interpreted as an estimate of the probability that such a municipality develops competitive elections.

(Table 7 about here)

In places that were already opposition governed at some point since 1980 (table 8) remittances are only significant as long as federal elections results are excluded. Their inclusion results in complete insignificance of remittances and even a negative point estimate. This implies that in the group of municipalities which already had an opposition government, remittances work their entire effect through political preferences, while in the continuously PRI ruled group remittances don't appear to be correlated with preferences at all (even though federal elections explain a higher percentage of the local outcome than in the other group). This result is consistent with the idea that preferences favoring the opposition don't have any detectable effect unless an institutional change takes place first. Taken together, the results presented here confirm all the hypotheses outlined above and it can therefore be concluded that remittances have a significant impact on the quality of democratic institutions at the local level.



(Table 8 about here)

### 5.3 Robustness Checks

I will now present a series of additional specifications to lend further support to the results presented. First I will take into account the winning margin in each election. Second I will directly control for alternative explanations why migration might have the identified effect, other than through remittances.

In the results presented above the specification which includes all control variables showed consistently higher point estimates and lower p-values. Given that the inclusion of a large number of additional controls always increases the potential sources of bias, and keeping in mind their possible correlation with the error term pointed out in section, the stronger results in the last two columns of each table should be interpreted with some caution. Robustness checks will therefore be performed using the second specification, which only includes the basic control variables. Apart from the endogeneity issues, this has the added advantage of using the slightly weaker results to determine overall robustness.

### 5.4 Conditioning on the winning margin

As discussed in section (3.2) a corollary to the argument put forward here is that vote buying should play a more decisive role in places with closely fought elections. If an election is won narrowly by either party one would usually expect the outcome (i.e. which party wins) to be largely random. This implies that within a narrow band of the winning margin the independent variables should be largely insignificant and the binary outcome have a probability of roughly one-half to be equal to one. If, on the other hand, a narrow margin significantly favors one of the contenders it can be concluded that some institutional imperfection must be in play. A significant independent variable is likely to play a role in that imperfection. In this context, Snyder (2005) uses a similar strategy in detecting manipulation in US elections for Congress.

To this end I computed the margin of the winning party with respect to the party that came second (which in the case of an opposition victory is almost exclusively the PRI). In addition, a dummy variable taking on a value equal to one if the margin is equal or lower than 5% was created. The model was then run separately for municipalities with a low and a high margin. Ideally, one would like to use a still smaller margin of around 1%, but the limited number of elections analyzed here makes that infeasible.

Tables 9-11 show the results of this exercise. As before each table shows the results for one group of municipalities. The first two columns of each table contain the results when the winning margin (*margin*) is included as an additional control. Columns 2 and 4 of each table run the model for municipalities in which the margin was smaller than 5% and columns 5 and 6 for those in which

it was larger. The inclusion of the electoral margin doesn't alter the previous results in any significant way. In tables 9 and 10 the margin is significant and negative, while in table 11 it turns insignificant. This is probably the result of the PRI still winning elections by large margins in the places where it is deeply entrenched. The important result here is that in table 10 remittances gain in significance and the magnitude of their effect in the group low margin municipalities, while they turn insignificant in high margin ones. At the same time they remain insignificant in table 11 for the group of low margin municipalities. This result confirms the last hypothesis stated in section (3.2) and lends further support to this paper's central claim.

(Table 9 about here)  
(Table 10 about here)  
(Table 11 about here)

Tables 9-11 contain two additional results worth mentioning. The first is that the control for federal election results becomes much less significant in the group of small margin municipalities and insignificant in tables 10 and 11. This would be expected by the reasoning above (that the outcome at very low margins is random) and makes the increased significance for remittances in the same columns in table 10 all the more striking. The second is that remittances are highly significant in column 5 of table 11, that is in high margin municipalities which had already had an opposition government. But this significance all but disappears once federal elections are controlled for. This points to a strong effect of remittances on party preferences in places where the opposition has become the dominant political force.

#### 5.4.1 Examining alternative explanations directly

Given that it is empirically not possible to disentangle the effects of remittances and alternative mechanisms through which migration might affect political institutions, the only possibility to test for those alternative mechanisms is by controlling for them directly. I will do this here for two possible channels: Firstly, that migration is a form of people voting with their feet, which forces the government to reform politically in order not to lose all its constituents. Secondly, that migration enhances the flow of information and new ideas to formerly very isolated places, which could contribute to their political opening.

In order to control for the first possibility I construct a variable measuring the magnitude of domestic migration to cities with more than 100,000 inhabitants. This variable was constructed using a massive 50% sample of the year 2000 census variable asking for the place of residence five years before. It should therefore be an excellent measure of the proportion of inhabitants which migrated internally over the five year period 1995-1999. Regarding the second alternative explanation, if flows of information and ideas played an important

role, one would expect them to be further enhanced by return or circular migration. This is controlled for by calculating the ratio of the proportion of households with return migrants over the proportion of households which sent a migrant over the 1995-99 period. It has of course to be pointed out that the interest here is only to examine whether the inclusion of these additional variables changes the previous results. Given that both variables are likely to be endogenous themselves no conclusions will be drawn with regard to their own significance.

Table 12 shows the results for continuously PRI ruled municipalities only, given that these are the most important results. Presenting those for the entirety of municipalities and opposition governed ones is of no interest in this context. The inclusion of the additional controls barely changes the estimated magnitude of the effects, but adds some additional noise which shows up in the slightly lower significance levels (which nonetheless remain below 5%).

(Table 12 about here)

## 6 Conclusions

This paper presented evidence that the substantive inflow of remittances significantly improved the quality of democratic institutions at the local level in Mexico. A simple political economy argument was developed to show how the existence of an additional non-taxable household income (such as remittances) can restrain the incumbent government in its effort to hold on to power by distributing public funds in exchange for votes.

The empirical evidence largely supports this argument. I estimated an instrumental variable probit model to determine the probability of an opposition victory. Using the rail distance to the main entry point into the United States in the early 20th century as an instrument, I found that the average amount of remittances significantly increase the probability of an opposition victory. This is robust to the inclusion of results from the federal elections as a control for political preferences, when restricting the sample to municipalities in which the PRI has been in power without interruptions since 1980. In places that have already had an opposition party in power remittances are significant at first, but not after controlling for federal election results. Taken together this points to remittances having some effect on party preferences and, more importantly, provides strong evidence for their role in the improvement of democratic institutions at the local level. The probability of observing a democratic transition when moving from the first to the third quartile of the average remittances measure has been estimated to increase by around 16%.

This result was confirmed when municipalities were further subdivided according to whether the winning margin in the elections was or small. The role

played by remittances became even stronger in the group of continuously PRI governed ones with a low winning margin, while it became insignificant in high margin places and stayed insignificant in municipalities which had already been opposition ruled before. This result would be expected, given that vote buying becomes decisive when winning margins are small.

Nonetheless, it has to be admitted that international migration might affect the outcome variable through channels other than remittances. Given the strong correlation between remittances and overall migration it is unfortunately not possible to identify their respective effects separately with the data currently available. Some of these concerns were addressed in the form of robustness checks. I showed that internal migration doesn't have the same effect as the international sort, which rules out the argument that the observed results are driven by people voting with their feet and hence force the government to reform. The possibility that migration changes local institutions by means of flows of information and new ideas was addressed by the inclusion of a proxy for return migration, which didn't change the previous results in any significant manner either. This test is conclusive if one accepts the assumption that return migrants should enhance the importance of such flows. Future research should focus on further testing such alternative explanations.

# Appendices

Figures and Tables

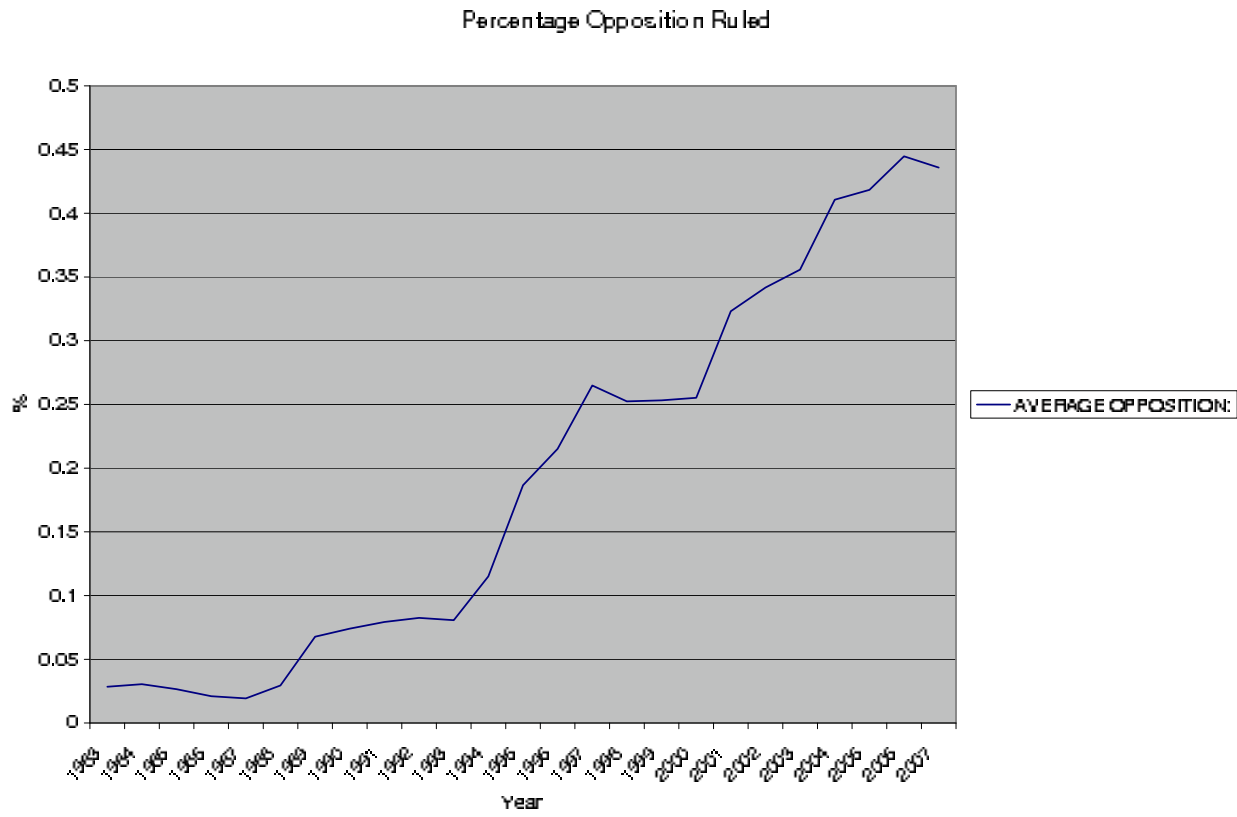


Figure 1: Percentage of opposition (non-PRI) ruled municipalities since 1983)

Table 1: Average remittances per household received in municipalities electing PRI and opposition party in 2000-2002, all municipalities and by results in 1997-1999. Percentages in bold italics are significant at the 1% level.

<b>ALL MEXICO</b>	<b>PRI Elected 2000-02</b>	<b>Opposition Elected 2000-02</b>	<b>Difference</b>
Average Remittances	119.24	161.37	<b>35.33%</b>
PRI 1997-99	114.37	171.53	<b>49.97%</b>
Opposition 1997-99	135.61	146.51	8.04%

Table 2: Summary Statistics

	Obs	Mean	Std Dev	Min	Max
<b>opposition</b>	1511	0.4335	0.4957	0	1
<b>opposition incumbent</b>	1511	0.3058	0.4609	0	1
<b>opposition since80</b>	1511	0.5076	0.5001	0	1
<b>migration</b>	1511	0.1151	0.1221	0	0.6257
<b>remittances</b>	1511	128.55	313.80	0	8075.71
<b>federal00</b>	1511	0.2793	0.4488	0	1
<b>laborincmean</b>	1511	2215.61	1666.53	86.96	26948.09
<b>laborincstd</b>	1511	6424.77	12475.20	525.25	196657.80
<b>emplmin</b>	1511	0.0048	0.0143	0	0.2500
<b>emplagri</b>	1511	0.4127	0.2297	0.0015	0.9514
<b>emplmanu</b>	1511	0.1416	0.1094	0.0023	0.7979
<b>emplturi</b>	1511	0.0283	0.0252	0	0.3350
<b>unempl</b>	1511	0.0096	0.0070	0	0.0877
<b>illit</b>	1511	0.1887	0.1138	0.0148	0.7179
<b>indig</b>	1511	0.1837	0.2981	0	0.9962
<b>poptot</b>	1511	40602.03	110354.26	442	1646319
<b>distance border</b>	1511	762.54	177.84	328.90	1357.53
<b>cycle 1</b>	1511	0.4990	0.5002	0	1
<b>cycle 2</b>	1511	0.1112	0.3145	0	1
<b>distance juarez</b>	1511	2227.96	352.79	1159	2917



Table 3: Regular Probit results for entire sample. Dependent variable: Opposition victory in 2000-02.

	1	2	3	4	5	6
<b>Remittances</b>	0.07 (0.034)**	0.02 (0.478)	0.07 (0.028)**	0.02 (0.379)	0.05 (0.090)*	0.02 (0.516)
<b>Federal Elections</b>		0.37 (0.000)***		0.37 (0.000)***		0.35 (0.000)***
<b>Observations</b>	1511	1511	1511	1511	1511	1511
<b>Basic Controls</b>			YES	YES	YES	YES
<b>All Controls</b>					YES	YES

Table 4: Regular Probit results for continuously PRI governed municipalities. Dependent variable: Opposition victory in 2000-02.

	1	2	3	4	5	6
<b>Remittances</b>	0.05 (0.271)	0.03 (0.441)	0.04 (0.315)	0.03 (0.462)	0.03 (0.547)	0.03 (0.45)
<b>Federal Elections</b>		0.40 (0.000)***		0.42 (0.000)***		0.41 (0.000)***
<b>Observations</b>	744	744	744	744	744	744
<b>Basic Controls</b>			YES	YES	YES	YES
<b>All Controls</b>					YES	YES

Table 5: Regular Probit results for municipalities which had an opposition government since 1980. Dependent variable: Opposition victory in 2000-02.

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>Remittances</b>	0.05 (0.147)	-0.01 (0.803)	0.06 (0.105)	0.00 (0.916)	0.04 (0.284)	-0.01 (0.818)
<b>Federal Elections</b>		0.32 (0.000)***		0.32 (0.000)***		0.30 (0.000)***
<b>Observations</b>	767	767	767	767	767	767
<b>Basic Controls</b>			YES	YES	YES	YES
<b>All Controls</b>					YES	YES

Table 6: IV Probit results for entire sample. Dependent variable: Opposition victory in 2000-02.

	1	2	3	4	5	6
<b>Remittances</b>	0.18 (0.000)***	0.07 (0.166)	0.17 (0.002)***	0.04 (0.36)	0.18 (0.017)**	0.05 (0.378)
<b>Federal Elections</b>		0.35 (0.000)***		0.37 (0.000)***		0.35 (0.000)***
<b>First Stage:</b>						
<b>Distance Juarez</b>	-0.0027 (0.000)***	-0.0025 (0.000)***	-0.0036 (0.000)***	-0.0035 (0.000)***	-0.0028 (0.000)***	-0.0028 (0.000)***
<b>Endogeneity</b>	0.005	0.249	0.015	0.563	0.042	0.494
<b>Partial R2</b>	0.27	0.23	0.25	0.23	0.19	0.18
<b>Cragg-Donald</b>	546.88	454.90	519.97	450.87	322.20	289.66
<b>Observations</b>	1511	1511	1511	1511	1511	1511
<b>Basic Controls</b>			YES	YES	YES	YES
<b>All Controls</b>					YES	YES

Table 7: IV Probit results for PRI continuously PRI governed municipalities. Dependent variable: Opposition victory in 2000-02.

	1	2	3	4	5	6
<b>Remittances</b>	0.20 (0.000)***	0.16 (0.002)***	0.18 (0.011)**	0.16 (0.008)***	0.22 (0.006)***	0.23 (0.004)***
<b>Federal Elections</b>		0.36 (0.000)***		0.40 (0.000)***		0.40 (0.000)***
<b>First Stage:</b>						
<b>Distance Juarez</b>	-0.0027 (0.000)***	-0.0026 (0.000)***	-0.0039 (0.000)***	-0.0038 (0.000)***	-0.0029 (0.000)***	-0.0029 (0.000)***
<b>Endogeneity</b>	0.002	0.008	0.007	0.018	0.010	0.012
<b>Partial R2</b>	0.22	0.22	0.19	0.19	0.14	0.14
<b>Cragg-Donald</b>	215.69	206.24	175.97	173.80	100.31	100.80
<b>Observations</b>	744	744	744	744	744	744
<b>Basic Controls</b>			YES	YES	YES	YES
<b>All Controls</b>					YES	YES

Table 8: IV Probit results for municipalities which already had an opposition government since 1980. Dependent variable: Opposition victory in 2000-02.

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>Remittances</b>	0.13 (0.036)**	-0.02 (0.718)	0.13 (0.053)*	-0.02 (0.711)	0.12 -0.145	-0.04 (0.652)
<b>Federal Elections</b>		0.32 (0.000)***		0.32 (0.000)***		0.30 (0.000)***
<b>First Stage:</b>						
<b>Distance Juarez</b>	-0.0026 (0.000)***	-0.0024 (0.000)***	-0.0033 (0.000)***	-0.0032 (0.000)***	-0.0026 (0.000)***	-0.0026 (0.000)***
<b>Endogeneity</b>	0.137	0.801	0.200	0.621	0.280	0.693
<b>Partial R2</b>	0.29	0.25	0.29	0.26	0.22	0.20
<b>Cragg-Donald</b>	314.41	253.78	327.27	280.19	202.10	175.93
<b>Observations</b>	767	767	767	767	767	767
<b>Basic Controls</b>			YES	YES	YES	YES
<b>All Controls</b>					YES	YES

Table 9: Results taking the winning margin into account, entire sample.

	1	2	3	4	5	6
<b>Remittances</b>	0.17 (0.001)***	0.04 (0.318)	0.05 (0.487)	0.02 (0.786)	0.23 (0.000)***	0.04 (0.454)
<b>Federal Elections</b>		0.36 (0.000)***		0.13 (0.037)**		0.47 (0.000)***
<b>Margin</b>	-0.10 (0.001)***	-0.09 (0.001)***				
<b>First Stage:</b>						
<b>Distance Juarez</b>	-0.0036 (0.000)***	-0.0035 (0.000)***	-0.0036 (0.000)***	-0.0036 (0.000)***	-0.0036 (0.000)***	-0.0034 (0.000)***
<b>Endogeneity</b>	0.012	0.489	0.772	0.972	0.002	0.534
<b>Partial R2</b>	0.25	0.23	0.25	0.24	0.26	0.22
<b>Cragg-Donald</b>	517.57	450.09	167.68	157.26	356.53	295.15
<b>Observation</b>	1511	1511	443	443	1068	1068
<b>Basic Controls</b>	YES	YES	YES	YES	YES	YES
<b>All Controls</b>	NO	NO	NO	NO	NO	NO
<b>Sample</b>	Total	Total	Small Margin	Small Margin	Large Margin	Large Margin

Table 10: Results taking the winning margin into account, continuously PRI governed municipalities.

	1	2	3	4	5	6
<b>Remittances</b>	0.17 (0.011)**	0.15 (0.026)**	0.26 (0.001)***	0.26 (0.001)***	0.14 (0.105)	0.10 (0.301)
<b>Federal Elections</b>		0.37 (0.000)***		0.12 (0.133)		0.52 (0.000)***
<b>Margin</b>	-0.14 (0.000)***	-0.13 (0.001)***				
<b>First Stage:</b>						
<b>Distance Juarez</b>	-0.0038 (0.000)***	-0.0038 (0.000)***	-0.0039 (0.000)***	-0.0039 (0.000)***	-0.0038 (0.000)***	-0.0038 (0.000)***
<b>Endogeneity</b>	0.007	0.014	0.008	0.013	0.086	0.213
<b>Partial R2</b>	0.19	0.19	0.21	0.21	0.19	0.18
<b>Cragg-Donald</b>	175.08	173.22	71.61	71.70	108.74	106.73
<b>Observations</b>	744	744	213	213	531	531
<b>Basic Controls</b>	YES	YES	YES	YES	YES	YES
<b>All Controls</b>	NO	NO	NO	NO	NO	NO
<b>Sample</b>	Total	Total	Small Margin	Small Margin	Large Margin	Large Margin

Table 11: Results taking the winning margin into account, municipalities which already had an opposition government since 1980.

	1	2	3	4	5	6
<b>Remittances</b>	0.13 (0.051)*	-0.02 (0.723)	-0.08 (0.419)	-0.11 (0.274)	0.22 (0.003)**	0.01 (0.861)
<b>Federal Elections</b>		0.33 (0.000)***		0.10 (0.173)		0.42 (0.000)***
<b>Margin</b>		-0.02 (0.529)				
<b>First Stage:</b>						
<b>Distance Juarez</b>	-0.0033 (0.000)***	-0.0032 (0.000)***	-0.0035 (0.000)***	-0.0034 (0.000)***	-0.0033 (0.000)***	-0.0031 (0.000)***
<b>Endogeneity</b>	0.193	0.621	0.306	0.249	0.084	0.847
<b>Partial R2</b>	0.29	0.26	0.28	0.27	0.30	0.26
<b>Cragg-Donald</b>	327.22	280.18	92.36	84.38	233.98	193.42
<b>Observations</b>	767	767	230	230	537	537
<b>Basic Controls</b>	YES	YES	YES	YES	YES	YES
<b>All Controls</b>	NO	NO	NO	NO	NO	NO
<b>Sample</b>	Total	Total	Small Margin	Small Margin	Large Margin	Large Margin



Table 12: IV Probit estimation for continuously PRI ruled municipalities, controlling for alternative explanation. Basic controls only. Dependent variable: Opposition victory in 2000-02.

	1	2	3	4
<b>Remittances</b>	0.18 (0.012)**	0.17 (0.022)**	0.16 (0.027)**	0.15 (0.044)**
<b>Internal Migration</b>	-0.0043 (0.126)		-0.0061 (0.304)	
<b>Return Migration</b>		0.0211 (0.217)		0.0167 (0.378)
<b>Federal Elections</b>			0.40 (0.000)***	0.40 (0.000)***
<b>First Stage:</b>				
<b>Distance Juarez</b>	-0.0038 (0.000)***	-0.0037 (0.000)***	-0.0038 (0.000)***	-0.0037 (0.000)***
<b>Endogeneity</b>	0.008	0.017	0.013	0.024
<b>Partial R2</b>	0.19	0.18	0.19	0.18
<b>Cragg-Donald</b>	175.97	160.32	173.80	158.84
<b>Observations</b>	744	744	744	744
<b>Basic Controls</b>	YES	YES	YES	YES
<b>All Controls</b>	NO	NO	NO	NO
<b>Sample</b>	PRI	PRI	PRI	PRI

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