

When politicians care about their people:  
“Electoral Competition and Economic Development”

Wilber Baires\*

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**Abstract**

I examine the effect of political competition on economic development, using the novel measure of light density at night (extracted from the NASA’s DMSP-OLS data) as my main proxy for regional economic activity. As a potentially exogenous determinant of political competition in different municipalities, I exploit the interaction of the electoral support for a political party created after the civil war in El Salvador with the historical political ideology of these regions. I strongly argue that the assignment of this instrument, conditional on previous political, religious and geographic characteristic of municipalities, is as good as random because it is not related to past outcomes. I find that more political competition improves economic growth, and that this effect’s magnitude depends on exogenous financial help received by regions. Using instead of light density health, education and public safety outcomes across regions, generates similar conclusions. Finally, I show that in places with more political competition, mayors tend to borrow rather than increase municipal fees and they are more likely to borrow in years close to the elections.

JEL Codes: D72, H41, I1, I2, H7

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\*Instituto de Economía, Facultad de Ciencia Económicas y Administrativas, Pontificia Universidad Católica de Chile, Avda. Vicuña Mackenna 4860, Macul, Santiago, Chile. E-mail: [wsbaires@uc.cl](mailto:wsbaires@uc.cl). Phone Number: +56 9 5067 7812.

# 1 Introduction

There is one line of arguments in which political competition should have positive effects on economic outcomes (Becker, 1958; Stigler, 1972; and Wittman, 1989). Actually, Besley et al (2010) and Alfano & Beraldi (2011) show this is the case for developed countries (US and Italy, respectively). However, this idea is not obvious in the way that political competition can also lead to more populism, clientelism (Bardhan & Yang, 2004), political instability (Acemoglu & Robinson, 2006), among other things that could depress economic performance and could be more plausible in developing countries. In fact, one critic to previous empirical work is that their results have ignored the possibility that the existing institutional underpinnings could play an important role in affecting the whole process (Dash & Mukherjee, 2014). So, the positive effect of political competition on economic performance found in developed countries (with strong institutions) doesn't have to be necessarily the case in low-income countries (without strong institutions)<sup>1</sup>. I formally test this hypothesis here.

I study the effects of political competition on economic outcomes in the context of a developing country: El Salvador. This Central American country has finished a long period civil war just in 1992, closing it with transcendent changes in its electoral system that, later, implied big transformations in the political competition. Although there are many political parties in El Salvador, the electorate is practically shared between two dominant parties. The leftist one, created after the civil war (FMLN, by its acronym in Spanish), currently has near of 35% of all the votes, but its political support varies between 3% and 98% across regions. The rightist party (Arena), on the other hand, has near of 40% of all electorate and its political support varies between 1% and 85% across regions. The rest of the votes is shared by small parties, generally characterized with more neutral ideologies. So, the electoral competition across regions in this country is essentially determined by the two big leftist and rightist political parties.

I preset a theoretical model which shares features of the Holmstrom's career concerns model (principal-agent relationship) and the Besley et al (2010) political model. The main idea is that voters (swing voters) take into account the history to make decisions that will affect their future outcomes. Also, politicians take into account the political competition of the municipality<sup>2</sup> in order to improve performance, so this creates an incentive for the politician to behave better in order to convince the voters that he is of the good type. In addition, there is a feature of the political administration that voters care about, which also affects the way in how political competition impacts outcomes. In the model, this attribute is represented by an exogenous income shocks that the Central Government gives to the regions<sup>3</sup>. This ingredient gives an interesting mechanism in

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<sup>1</sup>In Acemoglu et al (2001) is given the causal link between the strength of State Institutions and the economic development of countries

<sup>2</sup>Here, politicians evaluate the ideology of committed voters interested in non-economic issues and the size of swing voters, which both define the political competition measure according to Besley et al (2010)

<sup>3</sup>In the Salvadoran context, this could be the Municipal Development Fund (FODES, by its acronym in Spanish), which is a monetary transfer from the Executive Power to the municipalities.

the model: more resources lead to relax the budget constraint, so politicians have more leeway to respond to political competition, e.g., with investment projects to boost growth. In effect, the model not only predicts that political competition impacts positively economic outcomes, but that this impact is great in places with better realizations of income shocks.

I face two challenges on the testing the above hypothesis. In first place, as it is common in all developing countries, there are not geocoded high resolution measures about the Salvadoran economic activity at the municipal level. In second place, there are endogeneity issues in a naïve OLS estimation between competition and economic growth. So, to address the first problem, I propose to use the light density at night data reported by the NASA’s “Defense Meteorological Satellite Program’s Operational Linescan System (DMSP-OLS)” as a proxy for economic development. I strongly argue that this variable do well its work for Salvadoran municipalities, showing some exercises as Michalopoulos & Papaionnou (2010) did for African countries and regions. This idea is also consistent with Henderson et al (2009), in where is shown a strong correlation (intra-country) between the density of light and GDP. Even more interesting, Elvidge et al. (1997) and Min (2008) show a strong correlation between the density of light at night and variables such as the provision of public goods, poverty rates and access to electricity. Moreover, they find that this correlation is even more important for low-income countries. As I will see below, the lack of a variable like this has restricted the analysis of some studies in developing countries to use a lower political-territorial division level as unit of measurement (using the states and not the municipalities of the countries, for example).

To address the second problem, I exploit the interaction of the FMLN votes share in 1994 in different areas of El Salvador with the previous to the civil war political ideology (in a nonlinear specification), as a potentially exogenous determinant of political competition. I use this interaction because it’s plausible that more electoral support to the FMLN on historically leftist municipalities could harm the political competition, and could boost it in the rightist ones<sup>4</sup>. I show that assignation of this interacted instrument is as good as random because it is not correlated with previous outcomes and its effects in current outcomes is robust controlling for some plausible predetermined correlates. In particular, I strongly document that the first component of my instrument, the assignation of the FMLN electoral support across the country in 1994, only depended on the regional influence of socialist leaders (commonly religious leaders that embraced the Liberation Theology) who accidentally (or quasi-randomly) came to certain places and not to another ones<sup>5</sup>. I also show that my instrument has not effect on political competition prior to the institutionalization of the

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<sup>4</sup>Given the great number of municipalities identified as rightist previous to the war, as I will shown in table 1, it’s also plausible to think that in the second case, the FMLN effect could be positive up to some cutoff, in where its electoral support is so high that it begins to decrease the political competition. This is the reason why the interaction used as instrument in the estimations will be specified in a nonlinear form.

<sup>5</sup>In this line, one of the two main examples that I present is the case of two similar neighbor municipalities in Morazán. The difference between these two regions is that to one of them has had the precense of a very inclucial socialist priest in the 70’s. Now, this region exceeded by more than three times the neighbor’s electoral support to the FMLN.

FMLN as political party in 1994, but it has a positive and strong effect now. So, this gives more evidence how the direction of the relation between this two variables is.

In order to give more credibility to my results using the light density at night as my proxy for economic growth (or public good provision), I estimate the effect of political competition on another development outcomes related to health, education and public safety. Furthermore, it is given novel interactions effects of political competition on the just mentioned outcomes. On the other hand, unlikely the previous works, I find that Salvadoran politicians do not affect taxes, but the probability of borrowing. To do all this, I estimate the effect of the political competition (measured as electoral margin) on economic growth in a cross-section of municipalities using the last electoral period in El Salvador (2009-2012). Because my results imply that the interaction of the FMLN votes share in 1994 with the previous to the civil war ideology has not effect on economic outcomes before 1994 (even in the first years after the war), I use this instrument as a potentially valid source of exogenous variation in the post-war political competition. I find that once I instrument for the political competition in different municipalities, an increment in 1% of political competition rise by 0.25% the annual growth (approximately 0.75% in the full electoral period). The results using my alternative outcomes to validate my main proxy of economic activity goes in the same direction (but in different magnitudes). Additionally, to check that the results are due to political competition and not to political partisanship, I control in a variety of ways for party strength.

As predicted by the model, the data also gives some evidence of the existence of interaction effects of political competition with exogenous income shocks. Municipalities that receive relatively low central funds transfers, do not react (or do react weakly) to political competition, while in municipalities with high levels of financial resources received, political competition has a strong effect on economic growth (and on the other alternative outcomes). I present a test to evaluate these interaction effects. As previously discussed, the idea behind this result is that when there are more available resources to invest in the municipality, the effects of political competition on economic outcomes are more evident. Finally, I introduce some related to public finances results, exploring the effect of political competition in the administration of municipal finances. As expected, there is not effect neither in the central government funds received by the municipalities or in the taxes revenues (because both can be only modified by the Salvadoran Parliament), but there is a positive and strong effect in the probability of taking loans and, more weakly, in the increasing of the municipality fees revenues (both fixed by the local government of the municipality). I also find that the effect on the probability of borrowing depends on the political cycle.

I contribute to the following streams of the literature. First, I contribute to the empirical literature examining the link between political competition and growth in a developing country context. However, none of these works gives a causal effect of political competition on growth. For example, Ghosh (2010), using a panel data analysis for Indian states (which is the lowest political-territorial division level), explores the impact of political competition on state per capita income and growth, finding positive effects. However, this work uses a non-typical measure for political

competition (the Herfindahl-Hirschman Index, a typical measure for market concentration) and this variable is not treated as endogenous. Dash & Mukherjee (2014), do a similar exercise using a panel data analysis, but this time examining the link between political competition and the Human Development Index (HDI) of the Indian states. They also find a positive political competition effects. Although these authors use a more accepted measure of political competition, they don't address the endogeneity concerns.

Second, I contribute to the empirical literature that estimates a causal effect of political competition on economic growth. To my knowledge, there are only two works (in two countries) exploring a causal effect of political competition on economic performance, and both on developed countries. These correspond to Besley et al (2006, 2010) and Padovano & Ricciuti (2009) papers. In both countries, the authors exploit an exogenous federal government reform as source of variation for political competition. However, these studies embrace a context of countries with strong institutions, so I contribute to this stream of the literature giving a causal effect on a developing country context, which could give a better understanding of this effect in the basis of weak institutions, where adverse effects of political competition are more plausible.

Third, I also contribute to the theoretical literature that models the effect of political competition on economic performance. Besley et al (2006, 2010) present a model in where politicians make promises about the policies that they will implement if they win the elections, and the electorate believe them. However, the fact that politicians make credible promises is not very credible. So, I construct a theoretical model taking some ingredients of the Besley et al (2006) model, and adapting them to a retrospective theoretical model, in where the electorate makes decisions according to the past performance of the politician, not according to promises. This model is more consistent with the idea of political competition as a mechanism of accountability to politicians, in where the past actions of politicians account to the electorate.

Finally, I contribute to the stream of literature in where the world of a median voter is ruled out (Masia, 1998; Brunner & Ross, 2010; Portmann & Stadelmann, 2013; among other works well detailed in Padovano, 2012). In my model, the political offers matter. The electorate make decisions according to the previous observed outcomes as a proxy of the future outcomes, so the policies implemented not necessarily will reflex the preferences of the median voter.

The reminder of the paper is organized as follows. Section 2 briefly presents a theoretical model for framing the empirical analyses of the paper. Section 3 presents the data used in this paper. Section 4 describes the identification strategy. Section 5 presents the results of reduced form regressions using data on economic outcomes before and after the Salvadoran civil war. Section 6 presents estimates of political competition on development outcomes using a cross-section of the 2009-2012 electoral period. Section 7 presents estimates of interaction effects. Section 8 explore how political competition affect the fiscal decision of municipalities, and section 9 briefly concludes.

## 2 Theoretical Framework

This section develops a model that is a mix between the Besley’s political competition model (2010) and the Holmstrom’s career concerns model (well developed in the Acemoglu’s Political Economy Notes). It’s used the first one in order to build a political competition indicator, and the second one to adapt this indicator in a context where decisive voters (or swing voters) take into account the past to make decisions that will affect their future outcomes.

### 2.1 Setup

Consider a context of two periods:  $t = 1, 2$ . There are three types of voters: Leftists, Rightists, and Independents, denoted by  $P \in \{L, R, 0\}$ . Partisan voters (leftist and rightists) make up a fraction  $1 - \sigma$  of the population. Only Leftists and Rightists are organized in parties, which are denoted by  $p \in \{L, R\}$ . Let  $\delta(P, p)$  be the utility gain of a partisan voter  $P$  from having the political party  $p$  in office. It’s assumed that the partisan types  $L$  and  $R$  prefer their respective party because of noneconomic issues: they will ever vote for her preferred party. So we will assume  $\delta(L, R) = \delta(R, L) = 0$  and  $\delta(R, R) = \delta(L, L) = 1$ .

Of these committed voters, a fraction  $(1 + \lambda)/2$  prefers party  $R$  (so, a fraction  $(1 - \lambda)/2$  prefers party  $L$ ). The sign of  $\lambda$  can be positive or negative, but to fix ideas in the model presentation we let the Rightists have the edge among committed voters (this is,  $\lambda > 0$ ). Independent voters ( $P = 0$ ) vote primarily on economic issues and become swing voters. In the remainder of the model, we will assume that the Leftist party is the incumbent party (it could be the Rightist party too).

For independent voters, the economic payoff of having party  $p$  in office depends on the public good ( $g_t$ ) that it offers:

$$U_t = y(1 - \tau) + g_t + \gamma_t \tag{1}$$

Where  $y$  is the income of the independent voter and, for simplicity,  $\tau$  is a fixed tax (to make sure that the only problem is how the tax revenue is spent). Moreover,  $\gamma_t$  is an aggregate popularity shock in favour of the Incumbent Party, and we will assume that this is realized after the incumbent finished his first period (in  $t = 2$ ), so  $\gamma_1 = 0$ . Also, we will assume that politicians only know the distribution of  $\gamma_t$ , and not its realization.

We will assume that the technology for public good provision takes the form:

$$g_t = \eta(\tau\bar{y} - r_t) \tag{2}$$

Where  $\bar{y}$  is the average income and  $r_t$  is the rent that the incumbent politician extracts. We will assume that the politician could extract up to  $\bar{r}$ , and in the especial case of the Incumbent politician, if he extracts  $r_t = r$  in the first period and he is re-elected, he must extract at most  $r$  in the following period <sup>6</sup>. The parameter  $\eta$  will represent a “help” that the Central Government gives

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<sup>6</sup>We will suppose that there is a punishment (a high cost) of extracting a higher rent in the second period if the Incumbent is re-elected. Although swing voters do not know the size of  $r_t$  a priori, if they observe that  $g_{t+1} < g_t$ , then

to the Local Government. This comes to increase the efficiency in how politicians provide the public goods with the available resources. This variable will not depend on the government preferences; it will be exogenously determined by nature every time that a new politician starts to govern the municipality<sup>7</sup>. Let us assume that it is drawn uniformly from the interval  $[1 - 1/2\xi, 1 + 1/2\xi]$ . We adopt the simplifying assumption of the Holmstrom model, that there is symmetric information, so both the politician and the voters are uncertain about  $\eta$  with the same prior.

The utility of the incumbent politician in the two period model is:

$$v_I = r_1 + P_I\beta(R + r_2) \quad (3)$$

With  $0 < \beta < 1$  as the discount factor, and  $R$  is interpreted as non-pecuniary grants from being in power and  $P_I$  is the probability to win the re-election.

The timing of events could be as follows:

- Exogenous history events determines  $\sigma, \lambda$ , crucial parameters to define our competition index.
- Nature determines  $\eta$ .
- Now, knowing  $\eta$ , the politician on power chooses  $r_1 = r$ .
- Observing  $g_1$  (but not  $r_1$ ), voters decide whether to keep the politician. If they elect a new politician, he is drawn randomly from the same distribution. At this time, nature determines  $\gamma_2$  that will affect the second period utility of the voters.
- The politician on power implements  $g_2$ .

Given this structure, the equilibrium could be determined as follows.

## 2.2 Equilibrium

In the second period, the politician will set the maximum  $r_2$  as he can<sup>8</sup>. So, the public good will be:

$$g_2 = \eta(\tau\bar{y} - r_2)$$

If the swing voters appoint a new politician, he will have  $E(\eta) = 1$ , so the expected utility of appointing a new politician for the voters is:

$$U_2^N = y(1 - \tau) + (E(\eta))(\tau\bar{y} - \bar{r}) = y(1 - \tau) + 1 \cdot (\tau\bar{y} - \bar{r}) \quad (4)$$

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they will know for sure that  $r_{t+1} > r_t$ , and because we also could suppose that they hate unjust enrichment, they will establish a punishment in order to avoid this behaviour.

<sup>7</sup>For example, in El Salvador there is a monetary transfer that the Central Government gives to municipalities in order to improve their development through local public investment. This transfer is set in function of variables like the extension of the territory and the population size in 1992 on each municipality

<sup>8</sup>This could be a top  $r$  for the challenger politician ( $\bar{r}$ ), and for the past assumption for the incumbent,  $r_2 = r_1 = r$

And the utility of keeping the incumbent would be:

$$U_2^I = y(1 - \tau) + \tilde{\eta}(\tau\bar{y} - r) + \gamma_2 \quad (5)$$

Where  $\tilde{\eta}$  is their posterior about the “help” that Central Government gave to the Incumbent politician, and  $\gamma_2$  the aggregated popularity shock.

Now suppose that swing voters know that the politician will choose  $r_1 = \tilde{r}$  amounts of rents for himself. Then they can estimate

$$\tilde{\eta} = \frac{g_1}{\tau\bar{y} - \tilde{r}} \quad (6)$$

Thus, using equations (4) and (5), we can obtain the condition in where a swing-voter casts her ballot for the Incumbent party. This is, when the voter’s utility of keeping the Incumbent is greater than the expected utility of appointing a new politician.

**Condition 1** *A swing-voter casts her ballot for the Incumbent party whenever:*

$$\tilde{\eta}(\tau\bar{y} - r) + \gamma_2 \geq \tau\bar{y} - \bar{r}$$

The problem is that  $\tilde{r}$  is an equilibrium choice by the politician. He will try to make this choice in order to ensure that he remains in power if this is beneficial for him. But, first, we will look the probability that the swing voters vote in favor of the incumbent politician and, after, the probability that the incumbent keeps the power. Let  $q_I$  the probability that a swing-voter casts her ballot for the incumbent party. This is:

$$q_I = \text{Prob}[\tilde{\eta}(\tau\bar{y} - r) + \gamma_2 \geq \tau\bar{y} - \bar{r}] \quad (7)$$

Taking into account the  $\eta$  distribution, we can reduce the equation (7) to the result 1, which dictates the probability that a swing-voter casts her ballot for the incumbent party.

**Result 1** *If Condition 1 holds and  $\eta$  is uniform on  $[1 - 1/2\xi, 1 + 1/2\xi]$ , the probability that a swing-voter casts her ballot for the incumbent party is given by:*

$$q_I = 1/2 + \xi \left[ 1 + \frac{(\gamma_2 - (\tau\bar{y} - \bar{r}))(\tau\bar{y} - \tilde{r})}{(\tau\bar{y} - \tilde{r})^2} \right]$$

Now, using all the parameterization, we can obtain the condition for an Incumbent electoral victory. Assuming an interior solution, it could be expressed as the following.



**Condition 2** *There will be a Incumbent electoral victory if and only if:*

$$\sigma\left(\frac{1}{2} + \xi\left[1 + \frac{(\gamma_2 - (\tau\bar{y} - \bar{r}))(\tau y - \tilde{r})}{(\tau y - r)^2}\right]\right) + (1 - \sigma)\left(\frac{1 - \lambda}{2}\right) \geq \frac{1}{2}$$

Alternatively, doing some math, Condition 2 can be rewritten as

$$\gamma_2 \geq -\frac{(\kappa + \xi)(\tau y - r)^2}{\xi(\tau y - \tilde{r})} + \tau\bar{y} - \bar{r}, \quad (8)$$

where  $\kappa = -\frac{1-\sigma}{\sigma} \cdot \frac{\lambda}{2}$ , and it will be our indicator of the municipality political competition, some kind of similar to this shown in Besley et al (2010). We can see from this indicator that an increase in the value of  $\lambda$  (the margin between the two kinds of partisan voters), is translated in lower levels of competition, as we would expect. Also, a greater share of swing voters ( $\sigma$ ) is associated to a greater level of competition.

From the Setup we have that politicians know the distribution of  $\gamma_t$ . So, to further simplify the algebra, let  $\gamma_2$  be uniform on  $[-1/2\theta, 1/2\theta]$ . In this case, the probability of a Incumbent win simplifies to:

$$P_I = \text{Prob}[\gamma_2 \geq -\frac{(\kappa + \xi)(\tau y - r)^2}{\xi(\tau y - \tilde{r})} + \tau\bar{y} - \bar{r}] \quad (9)$$

Applying the distribution properties of  $\gamma_2$  to equation (9), we obtain the result 2.

**Result 2** *If Condition 2 holds and  $\gamma_2$  is uniform on  $[-1/2\theta, 1/2\theta]$ , the probability of a Incumbent win is given by:*

$$P_I = \frac{1}{2} + \theta\left[\frac{(\kappa + \xi)(\tau y - r)^2}{\xi(\tau y - \tilde{r})} - (\tau\bar{y} - \bar{r})\right]$$

Now, the incumbent politician will choose  $r$  to maximize (3), i.e.:

$$\max_r v_I = r + \left(\frac{1}{2} + \theta\left[\frac{(\kappa + \xi)(\tau y - r)^2}{\xi(\tau y - \tilde{r})} - (\tau\bar{y} - \bar{r})\right]\right)\beta(R + r)$$

Where the first-order condition is:

$$1 + \beta\left(\frac{1}{2} + \theta\left[\frac{(\kappa + \xi)(\tau y - r)^2}{\xi(\tau y - \tilde{r})} - (\tau\bar{y} - \bar{r})\right]\right) + \beta(R + r)\left(2\theta(\kappa + \xi)\frac{\tau y - r}{\xi(\tau y - \tilde{r})}\right) \cdot (-1) = 0 \quad (10)$$

Following Acemoglu (in his Political Economy Lecture Notes), equation (10) defines a best-response  $r(\tilde{r})$  by the incumbent. When swing voters expect them to play  $\tilde{r}$ , he would play  $r(\tilde{r})$ . So, the equilibrium has to be a fixed point,  $r(\tilde{r}) = \tilde{r}$ . Substituting this into equation (10), we can obtain the equation that define the equilibrium.

**Proposition 1** *In equilibrium, the incumbent politician extracts the rent given by:*

$$r = \frac{\alpha}{\kappa + \xi} + \frac{1}{3}\tau\bar{y} - \frac{2}{3}R$$

Where  $\alpha$  is a positive constant or a combination of the given parameters ( $\alpha = \frac{1}{3\beta\theta} + \frac{1}{6\theta} + \frac{\tau\bar{y}-\bar{r}}{3}$ ). And the politician keeps power with the probability given by  $P_I$ .

From the Proposition 1, we can represent this equilibrium in terms of the public good provision using the equation (2). This is:

$$g_1 = \left(\frac{2}{3}(R + \tau\bar{y}) - \frac{\alpha}{\kappa + \xi}\right)\eta \quad (11)$$

This last term allows us to study the effect of political competition on economic outcomes. These comparative static exercises are closely related to the empirical analysis in this paper, which uses a potentially valid source of exogenous variation of  $\kappa$ .

**Corollary 1** *In equilibrium, for a given  $\eta$ , an increase in  $\kappa$  implies a great level in  $g_1$ , the provision of public goods. The same implication is true with bigger levels of  $R$ , the non-pecuniary grants of being in power, and  $\tau\bar{y}$ , the fiscal collection.*

Although the Corollary 1 gives more than one prediction, the limitation of our data only allows to testing robustly the effect of political competition. However, it would be easy to see some correlations between tax collection and the provision of public goods.

Finally, Proposition 1 implicitly states that the response of the public good provision to an increase in the political competition  $\kappa$  depends on how big the Central Government help is. Corollary 2 states this result.

**Corollary 2** *In equilibrium, the higher the Central Government help ( $\eta$ ) is, the higher is the effect of political competition ( $\kappa$ ) on the provision of public goods. The same is true for the non-pecuniary grants of being in power and for the fiscal collection.*

The predictions of Corollary 2 are quite intuitive. It could be expected that when politicians receive more financial aid to improve the provision of public goods, whether in terms of efficiency or quantity, politicians will have more leeway to respond to political competition. With this, we will test empirically the interaction effect prediction on political competition too.

### 3 Data

The starting point for collecting data for this work lies at the base of electoral statistics of the Supreme Electoral Tribunal (TSE) of El Salvador, hosted on the website [www.tse.gob.sv](http://www.tse.gob.sv). The data are presented at both national and municipal level, and it has the number of votes obtained by each

political party in each of the 262 municipalities since 1994. In addition, the winner is presented as the party that won with simple majority. This dataset serves to estimate the measure of political competition in this work, which, as usual, is defined as the electoral advantage (or difference in votes) of the winner over the strongest opponent.

It should be noted that these datasets are very limited in the sense that the TSE has no variables available to the public such as the names of the candidates who competed in each of the elections, and in many cases it is omitted the name of the winning candidate at the municipal level. In some way, this restricts the analysis to investigate other possible effects of political competition in other variables of interest, such as the quality of the individual elected as mayor.

On the other hand, since no geocoded high resolution measures about the Salvadoran economic development at the municipal level are available (most likely because of the difficulty and costs involved), satellite data about the density of light at night is going to be used as a proxy for municipal economic activity (in line with Michalopoulos & Papaionnou (2010) and Henderson et al (2009)).

The data on the density of light come from the images reported by the “Defense Meteorological Satellite Program’s Operational Linescan System (DMSP-OLS)”, which are captured at night (between 8 PM and 9:30 PM) at a height of 830 km. The measure is a six bits digital number (0 -63) calculated for each “30-second output pixel” (approximately 0.86 square kilometers in the Equator) that is averaged with respect to the overlapping input pixels and with all of the valid nights in during the year. In this paper, the density of light is built at the municipal level averaging the pixels that lie within each of the boundaries of the country’s political division corresponding to the respective municipalities, which are georeferenced using the computer program ArcGIS.

In works such as Papaioannou and Michalopoulos (2010), Henderson et al (2009), Elvidge et al. (1997) and Min (2008), it has been show that the density of light at night does its job as a proxy of economic activity very well. The first one shows a positive correlation between the density of light at night and the GDP per capita in African countries, and a negative correlation with infant mortality to various African regions. Henderson et al (2009), meanwhile, shows a strong correlation (intra-country) between the density of light and GDP. In the last 2 mentioned works, a strong correlation between the density of light at night and variables such as the provision of public goods, poverty rates and access to electricity is shown. This correlation is even more important for low-income countries (which comes to be the case of El Salvador).

Educational, health and security outcomes like morbidity attentions, grade repetition rates and murder rates, has been obtained in from the web pages of the Salvadoran public entities: Ministerio de Educación, Ministerio de Salud and Corte Suprema de Justicia. Some of this data was solicited to public servants of the respective Information Access Office wing.

To give more strength to the argument that light density at night do wells its work as a proxy of economic activity in Salvadoran regions, figure 1 examines the relationship between the density of light at night and economic development (measured as Income and Income Per Capita) for 50

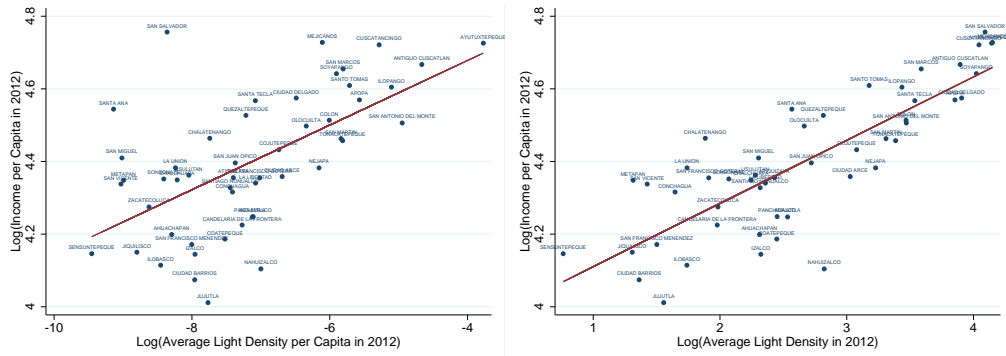


Figure 1: Light density at night vs. Income PC: El Salvador

municipalities in El Salvador<sup>9</sup>. The  $R^2$  is equal to 0.67 when the light at night is compared with the average municipality income, and it is 0.37 adjusting the light at night by the municipality population. Clearly there is a positive correlation between the light density at night and income in Salvadoran regions, and this relationship is stronger not controlling by population (even stronger than that found by Papaioannou and Michalopoulos (2010) in African countries).

Table 1 presents the variables used, the source where each variable was collected, and the descriptive statistics of each variable. It is important to note the difference between the growth of 1992-1994 and 2009-2012. The reason for this is straightforward; the years 1992-1994 included the first electoral period after the civil war in El Salvador (synonym of high investment rates), while the 2009-2012 period covers the negative growth rates following the International Financial Crisis originated in the US in 2008. Another important observation is the high percentage of municipalities with rightist mayors before the Salvadoran civil war. Because I use this variable for the building of my instrument, worth mentioning that municipalities with leftist mayors will make a great effort in the identification strategy.

[Insert Table 1 here ]

## 4 Empirical Strategy

One major challenge for an empirical analysis of the relationship between electoral competition and development outcomes is the potential endogeneity of the electoral competition. In this section, I argue that the interaction of the former party FMLN votes share in 1994 and the previous to the civil war ideology allows me to identify the exogenous variation in the political competition in different municipalities.

I argue that simple OLS relation between political competition and development outcomes will produce downward biased estimates of the causal effect of the municipal political competition on development outcomes. The evidence shown in this paper goes in consonance with these idea,

<sup>9</sup>The 50 self-represented in the Multipurpose Household Survey from 2009.

although the reasons may be many. One potential reason is that if Central Government tends to give more economic/financial help to local governments related to its party (municipalities with large support to the FMLN) in order to pay favors for the support (Lee Lussier, 2013), it would be expected a decrease in the effect of political competition over economic growth (by the implication of a dominant party in the place that receives external help). Another potential reason is that political parties could prefer to compete in municipalities with more previous economic performance, because it could be easy to growth, and this may be increasing political competition (reverse causality). Alternatively, OLS estimates could be biased upward if political competition responds to some unobserved characteristic (to the econometricians) of the municipality that has a positive effect on economic development.

My identification strategy exploits the interaction of the FMLN votes share in 1994 and the previous to the civil war ideology to identify the exogenous variation in the political competition in an area, after controlling for parishes per capita, the (log of) territory latitude and the ideological historical preference of the municipalities for their mayors (the reasons for controlling by these variables are described below). The basic motivation for this identification strategy is straightforward. On the one hand, there are direct effects of the historical support for an important political party in the electoral competition, especially when this is a major political party. Also, as we will see later, the creation of the FMLN brought with itself a structural change in the electoral system of El Salvador with the reforming of some State Institutions, which implied big changes in the basis to promote the electoral competition.

Moreover, it's argued that the magnitude of the effect introduced by this political party in the electoral competition depends on if the municipality was previously characterized as leftist or rightist. Given that the FMLN entered as a new political force in 1994, it is expected that its electoral support positively affect the electoral competition in the historically more rightist municipalities. Also, continuing with this logic, it is expected an opposite effect on the historically leftist municipalities: more electoral support to the FMLN on historically leftist municipalities would harm the competition. In the first case, it's plausible to think that the effect could be positive up to some cutoff, in where the FMLN electoral support is so high that it begins to decrease the competition. So, the interaction used as instrument in the estimations will be specified in a nonlinear form.

Why to use the FMLN support and not another political party? The political support to the FMLN turned so crucial because this leftist movement achieved something that no political party achieved before in all Salvadoran history: after competing for the political power in the fields and city streets via guns, it passed to compete in the polls via votes. So, although there were leftist political parties involved in the electoral system before the civil war, the few resources they had and the repression that the military government made, avoided the strengthening of these movements (CEM "Sarbello Navarrete", 2009). The only one that reached to establish itself as a political force opposing the military government and wining the presidency in the 70's was the PDC (Partido Demócrata Cistiano). However, it was lately infiltrated by individuals related to military

government and, at the end, saw its maximum leader in exile. All these events, combined to a higher support of the URSS via the Sandinist Government in Nicaragua to the leftist movements in El Salvador, were accumulated to the grade that leftist people decided to consolidate a single guerrilla movement (the FMLN) and fight for the political power via war (Tejada, 2009). This armed conflict started in 1980 and finished in 1992 with the creation of the FMLN as a political party.

In addition to the born of the FMLN as one of the major political parties after the civil war, there was a fundamental change in the Salvadoran Electoral System: an independent government agency responsible for the country's elections was created as a FMLN's condition. The extinct CCE (Concejo Central de Elecciones) was the responsible of the Salvadoran Electoral System before 1994, but it had lost credibility by being involved in some fraudulent cases and for not being independent of the central government (Turcios, 1997), so one condition to signing the peace by the FMLN was the abolition of this entity and the creation of a new independent one (The TSE, Tribunal Supremo Electoral). Another condition imposed by the leftist party was the dissolution of the Guardia Nacional, a military government entity in charge of the public security accused to repress and infringe the Human Rights of people (Salvadoran Jesuitas case, Peter - Hans Kolvenbach, 1989). This institution was substituted by the Policía Nacional Civil (PNC), conformed by civils. Overall, the idea of introducing all these changes was to create the basis for competing freely and without estate repression at the polls in the 1994 elections (the first elections in which the FMLN participated).

The electoral support to the FMLN varied widely across Salvadoran municipalities in these elections, with a minimum votes share of 0% and a maximum of 87% in the mayor elections. To answer what determined this wide variation is the goal of the remain of this section.

In first place, it's valid to ask if it was the presence of guerrilla groups across Salvadoran regions the main determinant of the electoral support to the FMLN. According to the forthcoming book of Mario Meléndez (an ex-guerrilla leader who commanded the destruction of the Salvadoran Golden Gate), there were some determinant factors in how the guerrilla was established across the country regions, like features of the terrain (those with mountains where more attractive), the historical support of people to the leftist cause and the intensity of the Catholic Church influence with the liberation theology. Lately, it could be expected that this support to the guerrilla in each municipality was transformed into electoral support to the FMLN in 1994. I show some correlations in table 2, in which the dependent variable is only strongly correlated to the previous to the war ideology of the municipalities (measured by a dummy equal to 1 if the municipality elected a rightist mayor in 1974). However, once I include these potentials determinants as controls in my next section estimations I find that the instrument continues doing well its work.

**[Insert Table 2 here]**

Moreover, given that I find that, conditional on the geographic, political and religious characteristics of the municipalities, the constructed instrument is not correlated with another previous

potential determinant outcomes, like the historical growth of municipalities or the previous political competition, it seems that its assignation is as good as random. But, where this random assignment came from? I argue that the assignment came from "accidental" arrival of leftist (communists) leaders to certain regions in El Salvador, and that the influence of these leaders was the cause that raised the electoral support of these places to the FMLN.

One of the most emblematic cases regarding this argument is the (quasi random) arrival of the revolutionary leader Miguel Ventura to the north of Morazán in 1973 (Rubio & Balsebre, 2009). At present, the electoral support to the FMLN in this region is strong and unconditional.

Ventura came to the town of Torola as a father of the Catholic Church. According to an interview with him, his assignment to that place was not by his own choice, but by decision of the bishop of the diocese of San Miguel. This decision was not based on economic, social or political characteristics of the region to which he was assigned, but on the fact that the bishop wanted to isolate the momentum of the revolutionary ideas of the leader. "The aim of the bishop to send me to Torola was to isolate me, and perhaps banishing me in a very small country. According to the mentality of this bishop, ideas and beliefs about the structural changes needed in El Salvador could be eliminated or blocked by geographical or exile isolation", said Ventura in an interview with me.

However, it is plausible to think that an isolated region could have certain characteristics related to a political ideology, even without the arrival of leftist leader. However, as I will show later, something that refutes this idea is that, when comparing two neighboring municipalities, similar in geographical, economic and social characteristics, but not in the influence received by Ventura, I find the municipality within the jurisdiction of Ventura developed a strong electoral support to the FMLN, while the electoral support of the other municipality has remained null.

The two municipalities mentioned above are Meanguera and Oscicala, two neighboring regions just separated by the Torola River. Hernandez (2014) emphasizes how the influence of Catholic Social Teaching (through the Comunidades Eclesiales de Base -CEB- driven by Ventura in Morazán) reached Meanguera and not Oscicala. In fact, this author describes Oscicala as a historically conservative and conformist municipality regarding the election of their local representatives, where the people does not track the good or bad performance of elected mayors. Otherwise, he describes Meanguera as active in such political processes, attributing this to the influence of Ventura (through the CEB) as one of the most important determinants.

In terms of electoral support to the FMLN in the 1994 elections (the first political elections in which the FMLN participated), the FMLN vote's share in Meanguera was 61%, while in Oscicala was 0% (not a single vote!). On the other hand, the main rightist party won 15% of votes in Meanguera, while in Oscicala 66%. It could be found the same pattern comparing another municipalities adjacent to the Ventura's parish jurisdiction, or doing the same analysis with the influence of another important leaders as in Tecoluca, Chalatenando and San Salvador, regions with great historical electoral support to the FMLN.

So, I exploit the exogenous variation generated by these events using the FMLN votes share

in 1994 interacted with the previous to the civil war ideology as the main instrument for political competition in different areas after the war period. The motivation to use this interaction, as before mentioned, is straightforward too. It is expected that the influence of the leftist leaders will affect the political competition (through electoral support to the FMLN) of rightist municipalities in a different way that it would do it in the leftist ones: If there were so much rightist people in a municipality previous to the war, the introduction of leftist leader would generate more competition. In the opposite case, leftist municipalities would see its competition contracted with the introduction of more leftist influence. My specifications, as mentioned previously, include nonlinear functions. The next section empirically studies the validity of this identification strategy.

## 5 Reduced form estimates

To validate the identification strategy discussed in the previous section, I need to show that the my instrument, the FMLN votes share in 1994 interacted with the previous to the civil war ideology in an nonlinear form, is not related to past economic growth neither to previous political competition, but related to current economic growth. One way to represent my instrument is  $\text{Municipal\_ideology\_70's} * f(\text{FMLN\_votes\_share1994})$ , where the functional form of  $f(\cdot)$  it have been argued to be quadratic. Columns (1)-(2) in Table 3 presents the basic evidence supporting this identification strategy, using two proxies for economic growth in two different old periods. Column (1) uses the growth of light density at night in the last electoral period without the participation of the FMLN as political party, and column (2) uses the urbanization rate growth in the period 1930-1960. It can be seen that the instrument is not correlated with any of these variables. Additionally, column (3) uses as dependent variable the (log of) number of agrarian workers per capita at municipal level as a proxy of economic activity in 1970, when the Agricultural sector represented near 40% of GDP. Again, there is no correlation between the instrument and this variable..

[Insert Table 3 here]

I also test if the instrument is related to electoral competition before the creation of FMLN as political party (before the war's ending). In column (4) I present evidence that there is not effect of the instrument in the previous to the war's ending political competition, but in the actual one as shown in column (5). Finally, in column (6) I explore the relation between my instrument and economic growth in the electoral period of 2009-2012, the reduced form of the main regression in the following section. It could be seen that the instrument is correlated with this variable, although with less statistical significance than the correlation with political competition.

Overall, these results demonstrate the claim that instrument only is correlated with economic outcomes after the creation of the FMLN, and they confirm the rationale presented in the previous section.

One potential concern for my identification strategy is that my instrument may have affected economic outcomes through other channels than political competition. In this context, I study



whether the political ideology (leftist or rightist) of the municipalities' mayors is correlated with my instrument. If this is the case, then an alternative explanation may be that the determinant of the growth of the municipality is explained by the political affiliation of governors. Using the FMLN's winning probability as proxy of the municipality ideology, in table 4 is shown that this variable is only (strongly) correlated with the electoral support that this political party had in its first political elections. Column (1) uses as dependent variable a dummy that is equal 1 if the FMLN won the election in the 2009-2012 electoral period, and 0 in another case. Column (2) uses the electoral support (votes share) that the FMLN obtained in same the electoral period.

[Insert Table 4 here]

Given these results, I will use the 1994 FMLN political electoral support as an included instrument in all my following estimations in the way to control for the mayor's political identity. Additionally, in the following section I do some exercises in which I substitute the political competition variable with the FMLN winning probability to explore whether there is an effect of my instrument on economic growth via the political ideology channel. The results support my exclusion restriction.

## 6 Main Results

In this section, I present the results of regressions using information on economic growth from a cross-section of municipalities in the last electoral period. This approach has some additional advantages over the reduced form estimates. First, I have detailed information on the degree of political competition in the municipalities where political parties compete. Second, I have a more direct measure of development outcomes (like health, educational and public safety variables) than in the previous exercises (urbanization rate, light density), which allows me to estimate more precisely the effect of political competition on economic development. Third, I am able to study whether the interaction effects predicted by the model are supported by the data. Since the results in the previous section suggest that the interaction between the FMLN electoral support in 1994 and the historical ideology of municipalities only affect economic outcomes after the war (in the present time), this interaction is a valid instrument for political competition after the creation of the FMLN. thus, I estimate the impact of electoral competition on economic growth by running a regression of the form:

$$growth_i = \beta_1 \chi_i + Y_i' \beta_2 + M_i' \beta_3 + r_i + \epsilon_i \quad (12)$$

Where  $growth_i$  is the economic growth of municipality  $i$  (in the 2009-2012 electoral period),  $\chi_i$  is our measure of political competition,  $Y_i$  is a vector including the religious, political and geographic controls mentioned above (previous to the war political ideology, maximum altitude and parishes per capita of municipalities),  $M_i$  is a vector including exogenous or historical variables (political participation of FMLN in 1994, (log of) population in 1960 or urbanization rate in 1960),  $r_i$  are regional fixed effects and  $\epsilon_{1i}$  is the municipality-specific error term.

In line with the model presented in Section 2, I use the electoral winning margin in the recent elections as my measure of political competition ( $\chi_i$ ) at the municipality level. I estimate the last equation using the FMLN votes share in 1994 interacted with the previous to the civil war ideology of municipalities in an nonlinear form as my instrument for  $\chi_i$ . In fact, the first stage of my identification strategy is given by:

$$\chi_i = Municipality\_ideology\_70's_i \cdot f(FMLN\_votes\_share1994_i) + Y_i'\gamma_1 + M_i'\gamma_2 + r_i + \mu_i \quad (13)$$

Where, by the arguments exposed in the previous section, I assume an quadratic functional form for  $f(\cdot)$ . The variable *Municipality\_ideology\_70's<sub>i</sub>* is a dummy that is equal 1 if the municipality had a rightist mayor previous to the Salvadoran war, and 0 in another case, *FMLN\_votes\_share1994<sub>i</sub>* is the electoral support to the FMLN in its first elections measured by the votes share that this political party obtained in every municipality *i*, and  $\mu$  is the error term. The other vector variables are the same as in the second stage.

## 6.1 Economic growth regressions

I first estimate equation (12) using the complete sample of municipalities in the 2009-2012 electoral period dataset. Table 5 presents OLS estimates (columns 1-3) and IV estimates (columns 4-6) using the FMLN votes share in 1994 interacted with the previous to the civil war ideology in an nonlinear form as my instruments for  $\chi_i$ . In each case, I present first a parsimonious representation of the regression without including controls. Next, I include municipality-level controls.

[Insert Table 5 here]

The IV estimates are larger than the OLS estimates as previously suggested. The IV estimates are always stable, positive and significant. These results imply that the effects of political competition on economic growth (or public good provision) are also economically relevant. An increase of one percent in the electoral competition (margin) in a municipality is associated with an increase in economic (light) growth of between 0.86 % and 0.70 % (these numbers encompass the three year -electoral period duration- growth).

All point estimates for other variables included in the regression are near zero, and none is statistically significant. This indicates, for example, that neither political-ideological characteristics nor religious features of municipalities influence economic growth. The same is true with demographic and geographic characteristics like the population size and altitude of the municipalities.

The estimates of the effect electoral competition on economic (light) growth are quite different to these found in previous studies for developed countries. In the US, Besley et al (2010) found that an increase of 10% in political competition imply an increase of 0.5% in the annual economic growth, meanwhile Padovano & Ricciuti (2009) found that this increase in economic growth is near 0.2%. These two estimates are very similar if we compare them to our coefficient of the last column of table 5, which indicates that an increase of 10% in political competition imply an increase of

2.3% in the annual economic growth of municipalities, more than four times the effect found in the US.

These results go in consonance with the idea presented in section 1: we would expect different results in countries with more weak institutions like El Salvador. Moreover, a greater coefficient in this developing country is consistent with the rationale that political competition could play a more important role as accountability mechanism to the politicians when the judicial system is as poor as the country. So, in the US or Italy, more strong judicial institutions may bring down the relevance of political competition as an accountability mechanism and this could explain this difference.

To give more robustness to my IV results, I include additional controls to the equation (12) in table A1. The variables included are past economic growth, past (log of) light density and economic growth of neighbors (in an effort to control for some “overglow” effect, as suggested by Abraham et al, 2014). As we can see, the political competition coefficient remains stable along the inclusion of all these variables. In column (1) I control by the economic growth in the just previous electoral period (this coefficient has the expected sign), and I have a similar result when controlling by an more old electoral period economic growth. In Column (2) I control by an initial level of economic performance (log of light density in 2009), although not statistically significant, the sign obtained here goes against the convergence theory: Municipalities with more level of economic activity (measured by the light density) are growing more. My coefficient for the political competition also remains stable when I control for the neighbors growth in column (3). Finally, in column (4) I include all these variables at the same time, but the coefficient practically does not change. Overall, these results give more robustness to the results in table 5.

Finally, one concern in my estimations is that my instrument affect economic growth via another channel rather than political competition. For example, it could be think that my instrument affect the political ideology, and, at the same time, this political ideology affect the way in how politicians implement economy policies, observing different growth outcomes in different municipalities according its ideology. I show that this is not the case in Table A2, in where I use the winning probability of FMLN as proxy of the municipality ideology in the actuality. In column (1) I present the main result obtained in table (5), and in column (2) I instrument the winning probability of FMLN with the same instruments. The coefficient of interest is not statistically significant, and the magnitude of the point estimate is because the high correlation between this variable and the electoral support (or winning probability of FMLN in its first elections on 1994). When I exclude the FMLN electoral support in 1994 in column (3) in order to overcome this problem, the coefficient remains statistically insignificant and the point estimate falls to near zero. Furthermore, we can see in Panel B that the only variable strongly explaining the actual political ideology of municipalities, is the FMLN electoral support in 1994.

In column (4), in a last intent to demonstrate that my identification strategy meets the exclusion restriction, I use the last result given by column (3) to instrument the actual political ideology of

municipalities, and I use my interacted instrument (FMLN electoral support in 1994 and previous to the war ideology of municipalities in a nonlinear specification) to instrument the actual political competition. I find that the political competition coefficient remains practically similar and, again, the coefficient of the political ideology is not statistically significant and the point estimate is near zero.

## 6.2 Educational, health and security outcomes regressions

In this subsection I estimate the impact of political competition in another outcomes of the municipality, in where the mayors have an important role providing public goods to improve them. The main variables included are related to public safety, education and health outcomes. The estimations are presented in table 6.

[Insert Table 6 here]

In column (1) is presented the same result obtained in column (6) of table 5, using the light density growth as a proxy of economic activity (or public good provision). Column (2), on the another hand, uses the growth in the homicide rate (in the 2009-2012 electoral period) as dependent variable. The coefficient indicates that an increase of 10% in political competition, reduce in 6% the annual homicide rate of municipalities. Columns (3) and (4) uses the growth of children morbidity visits and the growth of the grade repetition grade in the same electoral period (2009-2012), respectively. The estimates have the expected sign, in the way that more political competition is associated to decrease the levels of morbidity and the bad educational results, however, these estimates are not statistical significant.

The reason why some coefficients are significant and another not, could be related to the importance that the local government gives to the provision of some public goods versus another ones, given the financial resources of the municipality. For example, the violence is one of the most relevant problem in El Salvador, and one of the major topic ever discussed in the electoral campaigns. Also, the public infrastructure (like roads, public markets and illumination at night, this last one related to the first problem too) is another issue of first order for the mayors, and it's plausible to think that the light density at night is more related to these kind of outcomes than those related to education or health.

Given this, and according to Corollary 2, I argument that it is only when local governments have a more relaxed budget constrain when they react more to political competition, in the way that politicians have more leeway to respond to this accountability mechanism, e.g., with greater investment in public projects related to development areas different to the public safety or public infrastructure ones. I test this prediction in the following section.

## 7 Estimating interaction effects

In this section, I expand the previous analysis by studying one implication of the model in section 2, that there should be interaction effects. This is, municipalities response to exogenous changes in electoral competition depends on how much financial resources they receive from the Central Government. Corollary 2 predicts that the effect of political competition on the public good provision is smaller for municipalities that have low levels of external monetary transfers. If this is the case, local government could meet minimum budget constraint more easily, and it could be expected to see weak (or non) effects of political competition on economic outcomes (as in table 6). I test this prediction against the data using a proxy for the financial external help received from the Central Government by the Local Government. I interpret these characteristics as the degree of softness of the municipality budget constraints.

Using this proxy, I study whether differences in these variable affect the response of municipalities to political competition. To do so, I split the sample in municipalities that received FODES (Central Government unconditional transfers) above and below the median. As introduced at the end of section 6, I expect the effect of political competition to be larger in the samples in which FODES are relatively big. I explore this in table 7

[Insert Table 7 here]

Table 7 uses the same variables as in table 6, but with two samples divided by the median FODES. I find that in the sample of municipalities with a FODES above the median, the effect of political competition on light, safety, health and education outcomes is economically and statistically significant<sup>10</sup>. But in the sample with low FODES, this coefficient is lower or near to zero. Hence, at first impression, these results give suggestive evidence of interaction effects.

To control for potential selection bias in my previous estimates, I use the territorial size of municipalities to identify the variation in the FODES received by local governments. The “Ley de creación del FODES”, implemented in 1988 and last modified in 2014, established the size of the territorial extension of municipalities as one of the main determinant of the resources received by local governments from the central government. So, I study the effects of the territorial extension of municipalities on my proxy for the degree of softness of the municipality budget constraints in the context of a selection model of the form:

$$P_i = \mathbf{1}(\theta \text{territorykm}2_i + Y_i' \vartheta_3 + M_i' \vartheta_4 + r_i + \varepsilon_i) \quad (14)$$

Where  $P_i$  is an indicator function that takes a value of one if the municipality has a FODES transfer above the median, and  $\text{territorykm}2_i$  is the (log of) the territorial extension of the municipalities in squared kilometers. I exclude this variable from equation (12) and include each variable separately, as well as the estimated inverse of the Mills ratio in equation (12). Table 8 presents my

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<sup>10</sup>The variables that was not statistically significant at the conventional levels in the previous section, are significant in the sample of municipalities with FODES above the median.

marginal probit estimates of equation (14), indicating in the first row that the territorial extension of municipalities play a important role in determining receiving more or less FODES.

**[Insert Table 8 here]**

Table 9 presents estimated interaction effects including selection correction. To make it easier to compare, the first 4 columns of table 9 include the same coefficients as in table 7, and in the last 4 columns I present the results with the selection correction. All regressions include the usual controls, but I omitted the coefficients to save space. Panel A include the sample of municipalities receiving FODES above the median, and panel B include municipalities below the median. Results in both cases are qualitatively similar. The coefficient of the mills ratio is low and not statistically significant, giving evidence that the selection bias is not a big problem in these estimations.

**[Insert Table 9 here]**

Finally, in table 10 I present some exercises testing the equality of the coefficients of political competition on each subsample for the four outcomes considered. In columns (1), (2) (3) I present these coefficients of each subsample and the differences between them, respectively. In column (4) I present the p-value of the test whether these differences are distinct from zero (a two-tailed test). Although I have low p-values (in squared brackets) for each difference in this column, I can not reject at the conventional levels for each variable that the difference between the coefficients of each subsamples is different from zero. However, assuming that the effect in the sample of municipalities with FODES above the median goes only in one direction in relation to municipalities with FODES below the median (this is, the effect of political competition is always greater in municipalities with big FODES than in municipalities with low FODES), I can run a one-tailed test. By doing this, I find that each of the differences between the coefficients of the two samples are statistical different at the conventional level (with p-values below 0.1).

Furthermore, in column (6) I show that, jointly, all coefficients differences are different from zero (by testing the respective joint null hypothesis that the vector of the differences are distinct from the zero vector).

**[Insert Table 10 here]**

Overall, these results give evidence that the proxy for the bindingness of the budget constraint affect the degree of response of municipalities to political competition, as predicted by the model, and support the existence of heterogeneous effects of political competition on municipalities. These results are hard to reconcile with alternative explanations for the positive effects of political competition.

## 8 The fiscal effects of political competition

Municipalities could not affect the FODES that they receive from the Central Government because it is fixed by Parliamentarian Laws on exogenous municipalities characteristics, like these ones previously discussed. Here I explore the effects of political competition on another fiscal variables at the municipal level, in order to answer the question: Does political competition affect the way in how mayors obtain their financial resources? I study this in table 11.

[Insert Table 11 here]

In table 11, columns (1) and (2) include two variables that could be modifiable by mayors, and column (3) and (4) include another two variables that could not be altered by mayors. I expect to see zero effects in the last ones. Column (1) includes as dependent variable the probability of borrowing of the municipality, represented by a dummy that is equal to 1 if the mayor made a loan in its electoral period, and 0 in another case. I find a positive and significant effect of political competition on this probability of borrowing, giving evidence that mayors tend to search for money in competitive contexts. A less precise effects on municipal fees growth (column 2) is found, indicating that this is not the main funding source for more competitive municipalities. This difference between these two variables is potentially explained by the fact that the second one variable affects directly to the electorate (traded to a political cost in the next elections). As expected, I find no effects of political competition on FODES growth (column 4) neither on taxes growth (column 3), both established by the Salvadoran parliament. Both variables are different from the first two variables in the way that they are not manipulable by the municipality.

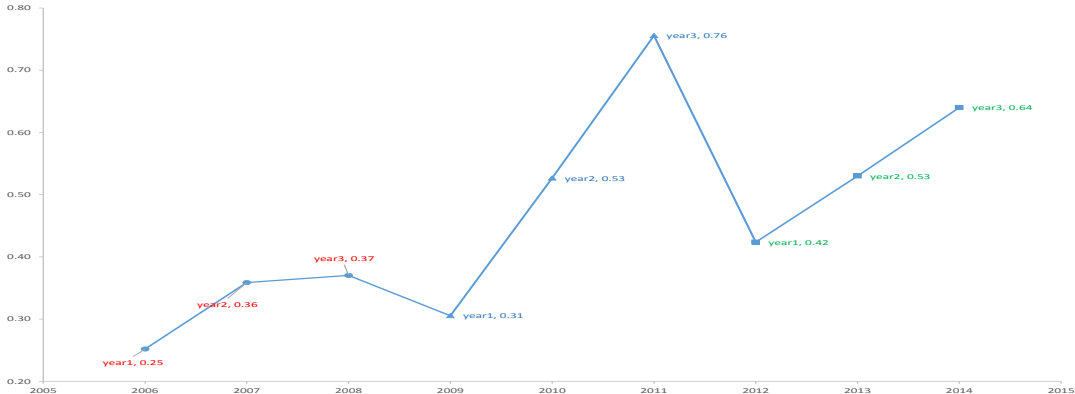


Figure 2: Municipal borrowing probability by political cycle year

Once I found that political competition affects the probability of borrowing in municipalities, it's valid to think whether the magnitude of this effect is the same along the 3-years electoral period of mayors. In figure 2, for example, I show that the fraction of municipalities incurring in some kind

of financial obligation or debt increases monotonically as we approach to the next elections date, and this falls back again in the beginning of the new election period<sup>11</sup>. Particularly, this pattern is more evident in the 2009-2012 electoral period, years of the boom of a particular borrowing facility called “titularizaciones”<sup>12</sup>. The boom was so high, that in 2013 the FMLN promoted in Parliament a bill that sought to impose limits on this type of debt (Mejía, 2013).

[Insert Table 12 here]

Having established that mayors borrow more in years closer to the elections, I explore in table 12 if mayors react more (with borrowing) to political competition according to the political cycle. Column (1) only includes the period of study of this paper (2009-2012), that coincides with the period of the boom of “titularizaciones”. The political competition variable is interacted with years dummies (establishing the first year as basis), and I find that in the second and third year, the probability of borrowing is higher than in the first year. Moreover, the effect on the probability of borrowing in the first year is negative, possibly indicating a strategic behavior of mayors in competitive municipalities: They tend to borrow in the last year to finance public projects in order to leave a more fresh memory on the electorate.

Column (2) includes the following period (but the cycle effect of political competition is lowered), maybe because the tensions surged between the Local Governments and the Central Government explained above with the boom of “titularizaciones”, or maybe because “titularizaciones” at this time was so mainstream that non-competitive municipalities started to adopt the same strategic behavior of competitive municipalities related before. Column (3) includes the period before this boom, and the effect is reduced even more for obvious reasons. But, regardless the statistical significance, a pattern is observed in each sample: The effect of political competition in the probability of borrowing increase in the nearest years to the mayor elections.

## 9 Concluding Comments

The potential effects of political competition economic outcomes has been discussed since a long time ago, but just recently it has been tried to give a formal answer to the question of what effects to expect. My study on the context of the Salvadoran electoral system, which has experimented big structural changes after the civil war in 1992, can help us to understand better the effects of political competition on economic outcomes. Previous research has been underpinned the institutional context of the developed countries used to calculate the effect or has been stymied by endogeneity problems in developing countries. I argue that the interaction of the electoral support to a political party created after the Salvadoran civil war and the previous political ideology across regions, allows me to identify the effects of political competition on economic, health, safety and

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<sup>11</sup>The differences between the ratios of the first and the last year in any electoral period are statistically significant.

<sup>12</sup>The “titularización” or Securitization is a financial instrument through which public institutions can acquire debt giving as collateral assets or future income.



educational outcomes. I document that my instrument is not correlated with economic outcomes neither political competition in the past (pre-war or war period) and is correlated with economic outcomes and political competition outcomes in the present (post-war period).

I find that once I instrument for the the interaction of the electoral support to a political party created after the Salvadoran civil war and the previous political ideology across Salvadoran municipalities, an additional increase by 10% in the political competition (this is, a 10% reduction on the winning electoral margin) increases the annual economic growth (or growth of public good provision) by 2.3%. The magnitude of this effect is quantitatively higher than these founded in previous works for the US and Italy (the only ones that used a valid identification strategy), giving some evidence that in the context of a country with more weak institutions, the political competition as a mechanism of accountability to politicians do a greater job than in countries that probably have a better Judicial Institutions. I found that my results are robust even controlling by past economic performance of municipalities.

My estimates of the effects of political competition on economic outcomes are greater for municipalities that face less binding budget constraints, measured using as proxy a monetary transfer that Central Government gives to the Local ones. So, municipalities with more available resources to public investment react more to political competition, as predicted by the theoretical model presented in this paper. So, instead of reducing the autonomy of municipalities in the way they manage their funds (like trying to limit the borrowing), a better policy could be to increase the monetary transfers from the Central Government to the Local Governments.

Finally, I found that politicians tend to react to political competition with debt rather than with increasing municipal fees or taxes, and that this behavior follow a pattern according to a political cycle: Politicians react to political competition borrowing more in years close to the following elections, possibly to finance public projects in order to leave a more fresh positive memories of their management to the electorate.

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Table 1: Descriptive Statistics

Variable	Obs	Mean	Median	Std. Dev.	Min	Max	Source
Light Growth in 2009-2012	261	-0.01	0.01	0.30	-1.24	1.82	DMSP-OLS
Medical disease visits growth in 2009-2012	262	-0.08	-0.11	0.42	-0.86	4.41	MINSAL
Grade repetition rate growth in 2009-2012	262	0.01	0.01	0.02	-0.08	0.09	MINED
Homicide rate growth in 2009-2012	262	-0.30	-0.28	0.73	-3.43	1.95	FGR
Rightist municipalities in 1974	260	0.92	1.00	0.27	0.00	1.00	DIARIO OFICIAL
Log(Latitude of municipality)	261	6.68	6.73	0.65	3.04	7.74	<a href="http://www.diva-gis.org/">http://www.diva-gis.org/</a>
Parishes per 10K inhabs. in 1970	261	0.83	0.38	1.27	0.00	11.33	III ANUARIO ECLESIASTICO
Log(Population in 1960)	261	8.68	8.57	0.90	6.06	12.45	III CENSO NACIONAL DE POBLACIÓN
Light Growth in 1992-1994	261	0.16	0.13	0.27	-0.98	1.92	DMSP-OLS
Political competition in 2009	262	-0.13	-0.10	0.14	-0.98	0.00	TSE
FMLN Votes Share 1994	262	0.17	0.14	0.13	0.00	0.87	TSE
FODES received in 2009-2012 (USD\$)	262	2905578	2465574	1706936	799992	11200000	ISDEM
FODES received in 2009-2012 pc (USD\$)	262	273.74	243.30	169.40	24.01	1335.16	ISDEM
Growth of FODES in 2009-2012	262	0.28	0.28	0.00	0.28	0.28	ISDEM
Growth of Municip. Taxes in 2009-2012	259	0.27	0.18	0.84	-3.70	3.28	MINISTERIO DE HACIENDA
Municipalities with Debt in 2009-2012	262	0.58	1.00	0.50	0.00	1.00	MINISTERIO DE HACIENDA
Growth of Municip. Fees in 2009-2012	262	0.40	0.35	0.47	-1.04	1.99	MINISTERIO DE HACIENDA

Note: Detailed definitions of each variable appear in the main text

Table 2: FMLN vs previous potential determinants  
 FMLN Votes Shares in 1994 as dependent variable

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
A. Main controls							
Rightist municipalities in 1974	-0.14*** (.03)			-0.12*** (.03)	-0.12*** (.03)	-0.07** (.03)	-0.07* (.03)
Log(Latitude of municipality)		0.03** (.01)		0.03** (.01)	0.02* (.01)	0.02* (.01)	0.02 (.01)
Parishes per 10K inhabs. in 1970			0.01** (.01)	0.01* (.01)	0.01* (.01)	0.01 (.01)	0.01* (.01)
B. Some additional controls							
Log(surface area in km2)					0.00 (.01)		0.01 (.01)
Log(Population in 1960)					0.01 (.01)		0.01 (.01)
Fixed regional Effects	No	No	No	No	No	Yes	Yes
R2	0.07	0.02	0.02	0.10	0.10	0.15	0.17
Obs	260	261	261	260	260	260	260

\*, \*\*, \*\*\*, significant at 10%, 5% and 1%

Standard Errors in parenthesis

Table 3: Municipal level regressions for growth and electoral competition before and after the war  
Multiple outcomes as dependent variable

	(1)	(2)	(3)	(4)	(5)	(6)
	Light growth 1991-94	Urba. Rate growth 1930-60	Log (Agrarian workers pc 1970)	Polit. Compet. 1991	Polit. Compet. 2009	Light growth 2009-12
Rightist municip. *FMLN Votes '94	0.40 (.62)	-0.31 (1.97)	-0.21 (1.21)	-0.06 (.39)	1.67*** (.29)	1.13* (.71)
Rightist municip. *FMLN Votes '94 <sup>2</sup>	-0.10 (.46)	-0.33 (1.44)	0.23 (.89)	-0.12 (.28)	-1.1*** (.22)	-1.21** (.51)
FMLN Votes Share 1994	-0.56 (.54)	0.71 (1.70)	-0.13 (1.05)	0.13 (.34)	-1.24*** (.26)	-0.53 (.62)
Rightist municipalities in 1974	-0.11 (.17)	0.17 (.55)	0.32 (.34)	0.05 (.11)	-0.29*** (.08)	-0.15 (.20)
Log(Latitude of municipality)	-0.03 (.03)	-0.02 (.09)	0.01 (.06)	0.00 (.02)	0.00 (.01)	0.06** (.03)
Parishes per cap. in 1970	0.00 (.01)	-0.01 (.04)	-0.01 (.03)	0.01 (.01)	0.01 (.01)	0.01 (.01)
Log(Population in 1960)	0.03 (.02)	-0.04 (.06)	0.77*** (.04)	0.02 (.01)	0.02*** (.01)	0.00 (.00)
Regional Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
R2	0.04	0.24	0.65	0.01	0.24	0.05
Obs	259	259	258	259	259	259

\*, \*\*, \*\*\*, significant at 10%, 5% and 1%

Standard Errors in parenthesis

*Table 4: The instrument and the political ideology of municipalities' mayors  
Multiple outcomes as dependent variable*

	(1)	(2)
	FMLN winnig probability in 2009	FMLN votes share in 2009
Rightist municip.*FMLN Votes '94	-0.88 (1.07)	-0.22 (.30)
Rightist municip.*FMLN Votes '94^2	0.48 (.79)	0.05 (.22)
FMLN Votes Share 1994	1.66* (.93)	0.87*** (.26)
Rightist municipalities in 1974	0.04 (.30)	-0.06 (.08)
Log(Latitude of municipality)	-0.02 (.05)	-0.02 (.01)
Parishes per cap. in 1970	0.01 (.02)	-0.01 (.01)
Log(Population in 1960)	0.04 (.03)	0.02** (.01)
Regional Fixed Effects	Yes	Yes
R2	0.170	0.430
Obs	259.000	259.000

\*, \*\*, \*\*\*, significant at 10%, 5% and 1%

Standard Errors in parenthesis

Table 5: Growth vs competition (OLS and IV regressions)  
 Dependent variable: Growth (Light density)

	(1)	(2)	(3)	(4)	(5)	(6)
	OLS			IV		
<b>Panel A: Second Stage</b>						
Polit. Compet.	0.27**	0.23*	0.26**	0.86***	0.84**	0.70**
	(.11)	(.13)	(.12)	(.27)	(.33)	(.31)
FMLN 1994		-0.06	-0.06		0.10	0.06
		(.17)	(.17)		(.21)	(.20)
Pre-Ideology		0.02	0.07		-0.01	0.04
		(.05)	(.05)		(.05)	(.05)
Altitude		0.00*	0.00		0.00	0.00
		(.00)	(.00)		(.00)	(.00)
Parishes/10k inhab.		0.00	-0.01		0.00	-0.02
		(.01)	(.01)		(.01)	(.01)
Population 1960		0.00	0.00		0.00	0.00
		(.00)	(.00)		(.00)	(.00)
Regional FE	No	No	Yes	No	No	Yes
<b>Panel B: First Stage</b>						
Pre-Ideology*FMLN 94				0.58***	1.71***	1.8***
				(.15)	(.62)	(.59)
Pre-Ideology*FMLN 94^2				-1.29***	-1.2***	-1.23***
				(.26)	(.27)	(.27)
FMLN 1994					-1.22**	-1.26**
					(.60)	(.57)
Pre-Ideology					-0.3*	-0.31**
					(.16)	(.15)
Altitude					0.00	0.00
					(.00)	(.00)
Parishes per cap.					0.01	0.01
					(.01)	(.01)
Population 1960					0.00	0.00
					(.00)	(.00)
F-Stat. Exclud.				13.37	11.92	11.21
Sargan Stat. (p_val)				0.60	0.29	0.45
R2	0.02	0.03	0.13			
Obs	261	259	259	261	259	259

\*, \*\*, \*\*\*, significant at 10%, 5% and 1%

Robust Standard Errors in parenthesis



Table 6: Security, education, health and competition

Dependent variables: Growth on light, homicide rate, children medical disease visits and grade repetition rate

	(1)	(2)	(3)	(4)
	Light-growth	Homicide rate	Children medical disease visits	Grade repetition rate
<b>I. Second Stage</b>				
Polit. Compet.	0.70**	-1.8*	-0.31	-0.02
	(.31)	(.92)	(.40)	(.04)
FMLN 1994	0.06	-0.49	-0.16	0.00
	(.20)	(.44)	(.20)	(.01)
Pre-Ideology	0.04	0.07	0.00	0.00
	(.05)	(.18)	(.09)	(.01)
LN(altitude)	0.00	0.02	-0.03	0.00
	(.00)	(.07)	(.04)	(.00)
Parishes/10k inhab.	-0.02	0.06*	0.02	0
	(.01)	(.03)	(.02)	(.00)
Population 1960	0.00	-0.02	0.07*	0.00
	(.00)	(.06)	(.04)	(.00)
Regional FE	Yes	Yes	Yes	Yes
<b>II. First Stage</b>				
F-Stat. Exclud.	11.21	11.21	11.21	11.21
Sargan Stat. (p_value)	0.45	0.31	0.48	0.32
Obs	259	259	259	259

\*, \*\*, \*\*\*, significant at 10%, 5% and 1%

Robust Standard Errors in parenthesis

Table 7: Growth, education, health and competition

Dependent variables: Growth of light, children medical disease visits, grade repetition rate and homicide rate

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Growth of:	Light density at night		Homicide rate		Children medical disease visits		Grade repetition rate	
	>50% FODES	<50% FODES	>50% FODES	<50% FODES	>50% FODES	<50% FODES	>50% FODES	<50% FODES
<b>I. Second Stage</b>								
Polit. Compet.	1.31**	0.56*	-2.96**	-0.82	-3.42***	0.24	-0.07***	0.01
	(.52)	(.29)	(1.30)	(.75)	(.87)	(.26)	(.03)	(.05)
FMLN 1994	0.21	0.02	-1.69**	0.27	0.46	-0.09	-0.02*	0.01
	(.31)	(.24)	(.70)	(.50)	(.43)	(.18)	(.01)	(.02)
Pre-Ideology	0.07	-0.08	-0.10	0.06	0.04	-0.11	-0.01*	-0.01
	(.07)	(.09)	(.20)	(.29)	(.13)	(.11)	(.00)	(.02)
LN(altitude)	0	0	-0.05	0.02	-0.13*	0.00	0*	0.00
	(.00)	(.00)	(.10)	(.12)	(.07)	(.05)	(.00)	(.00)
Parishes/10k inhab.	-0.02	-0.02	0.08	0.03	0.16*	-0.01	0.00	0.00
	(.03)	(.01)	(.08)	(.03)	(.09)	(.01)	(.00)	(.00)
Population 1960	0	0	0.02	-0.08	0.11*	-0.01	0.00	0.00
	(.00)	(.00)	(.09)	(.12)	(.06)	(.06)	(.00)	(.01)
Regional FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>II. First Stage</b>								
F-Stat. Exclud.	15.09	54.27	15.09	54.27	15.09	54.27	15.09	54.27
Sargan Stat. (p_val)	0.6309	0.6034	0.6442	0.106	0.1143	0.3363	0.2194	0.1756
Obs	130	129	130	129	130	129	130	129

\*, \*\*, \*\*\*, significant at 10%, 5% and 1%

Robust Standard Errors in parenthesis

*Table 8: Proxies for FODES received in Municipalities*  
*Marginal Probit Estimates*  
*Dependent variable: 1(municipality FODES>median)*

	(1)	(2)
Log(Municipality Surface in km2)	1.27 *** (.15)	.72 *** (.20)
FMLN 1994		-2.19* (1.23)
Pre-Ideology		-0.23 (.62)
Log(Altitude)		-.60*** (.21)
Parishes/10k inhab.		0.06 (.12)
Log(Population 1960)		1.84 *** (.28)
N	247	245
Pseudo R2	0.3526	0.5412

\*, \*\*, \*\*\*, significant at 10%, 5% and 1%

Robust Standard Errors in parenthesis

Table 9: Growth, health, education and crime vs competition by central funds  
 Dependent variable: Growth (Light density)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	I. Second stage estimates <b>without selection correction</b>				II. Second stage estimates <b>with selection correction</b>			
	Light at night	Homicide rate	Deseases atent.	Gr. Repetition	Light at night	Homicide rate	Deseases atent.	Gr. Repetition
<b>Panel A: Municipalities With Above-Median FODES</b>								
Competition	1.31 ** (.52)	-2.96** (1.30)	-3.42*** (.87)	-.07*** (.03)	1.34 *** (.52)	-2.70** (1.21)	-3.34*** (.82)	-.07*** (.02)
Mills ratio					0.02 (.06)	-0.01 (.22)	-0.10 (.14)	0.00 (.00)
N	130	130	130	130	130	130	130	130
<b>Panel B: Municipalities With Below-Median FODES</b>								
Competition	.55 * (.30)	-0.82 (.75)	0.25 (.25)	0.01 (.05)	.61 * (.32)	-0.95 (.78)	0.35 (.30)	0.02 (.05)
Mills ratio					0.00 (.00)	0.00 (.00)	0.00 (.00)	0.00 (.00)
N	129	129	129	129	129	129	129	129

\*, \*\*, \*\*\*, significant at 10%, 5% and 1%

Robust Standard Errors in parenthesis

All regressions include controls and fixed regional effects used in previous results.

Table 10: Growth, health, education and crime vs competition by central funds  
 Multiple growth outcomes coefficient and their differences between FODES samples

	(1)	(2)	(3)	(4)	(5)	(6)
	Sample with:		Difference between coef.	P_value:		
	>50% FODES	<50% FODES		Two-tailed test	One-tailed test	H0: All Differences=0
Dependent variable:						
Light at night	1.31 (.52)	0.55 (.30)	0.76 (0.60)	[0.19]	[0.10]	[0.001]
Homicide rate	-2.96 (1.30)	-0.82 (.75)	-2.14 (1.50)	[0.15]	[0.08]	
Child Deseases atent.	-3.42 (.87)	0.25 (.25)	-3.66 (0.90)	[0.00]	[0.00]	
Grade Repet. Rate	-0.07 (.03)	0.01 (.05)	-0.09 (0.05)	[0.09]	[0.05]	
Obs.	130	129	-	-	-	-

Robust Standard Errors in parenthesis

P\_values in squared brackets

*Table 11: Municipality incomes and competition*  
*Dependent variables: Growth of income taxes, income fees, FODES and Prob. Of borrowing*

	(1)	(2)	(3)	(4)
	Prob. of borrow	Fees revenues	Tax revenues	FODES
<b>I. Second Stage</b>				
Polit. Compet.	1.29***	0.70	0.10	0.00
	(0.45)	(0.53)	(0.87)	(0.00)
<b>II. First Stage</b>				
F-Stat. Exclud.	11.21	11.21	11.21	11.21
Sargan Stat. (p_value)	0.47	0.22	0.54	0.37
Obs	259	259	259	259

\*, \*\*, \*\*\*, significant at 10%, 5% and 1%

Robust Standard Errors in parenthesis

All regressions include controls and fixed regional effects used in previous results. Not reported to save space.

Table 12: Competition vs Municipality debt  
 Dependent variable: Prob. Of borrowing

	Period of interest: 2009-2012	Last 2 periods: 2009-2015	All periods: 2006-2015
<b>I. Second Stage Estimates</b>			
Polit. Compet.	-1.11* (.59)	-0.27 (.39)	-0.08 (.29)
Polit. Compet. *2nd year	1.46 * (.79)	0.34 (.56)	0.25 (.42)
Polit. Compet. * 3rd year	1.77 ** (.72)	.84 * (.51)	0.49 (.40)
<b>II. First Stage</b>			
F-Stat. Exclud.	20.65	43.99	69.05
Sargan Stat. (p_val)	0.7243	0.965	0.8195
Obs	777	777	777

Regular controls, regional and time fixed effects are included in all regressions. First year is set as base.

\*, \*\*, \*\*\*, significant at 10%, 5% and 1%

Robust Standard Errors in parenthesis

Table A1: Growth vs competition (Robustness checks on IV regressions)  
 Dependent variable: Growth (Light density)

	(1)	(2)	(3)	(4)
<b>Panel A: Second Stage</b>				
Polit. Compet.	0.70** (.34)	0.70** (.34)	0.73** (.36)	0.72** (.35)
Growth in t-1	0.27* (.14)			0.26 (.18)
Log(Light density in t-1)		0.04 (.03)		0 (.04)
Growth of neighbors			0.14 (.13)	0.12 (.11)
Regional FE	Yes	Yes	Yes	Yes
<b>Panel B: First Stage</b>				
F-Stat. Exclud.	11.1	10.62	10.94	10.32
Sargan Stat. (p_val)	0.53	0.46	0.37	0.45
Obs	259	259	259	259

All regressions includes all the controls used in table 4

\*, \*\*, \*\*\*, significant at 10%, 5% and 1%

Robust Standard Errors in parenthesis



Table A2: Testing the exclusion restriction: Growth vs political identity  
 Dependent variable: Growth (Light density)

	(1)	(2)	(3)	(4)
<b>Panel A: Second Stage</b>				
Polit. Compet.	0.70** (.31)			.72 * (.37)
Prob. FMLN win 1994		-3.71 (6.14)	-0.23 (.24)	0.08 (.34)
FMLN votes share 1994	0.06 (.20)	2.40 (4.20)		
Pre-Ideology	0.04 (.05)	-0.35 (.70)	0.06 (.06)	0.05 (.06)
Altitude	0 (.00)	-0.04 (.14)	0.03 (.03)	0.03 (.03)
Parishes/10k inhab.	-0.02 (.01)	-0.04 (.05)	-0.01 (.01)	-0.02 (.01)
Population 1960	0 (.00)	0.09 (.12)	0.02 (.02)	-0.01 (.03)
Regional FE	Yes	Yes	Yes	Yes
<b>Panel B: First Stage</b>				
Instrumented variable	Pol. Comp.	Pr. FMLN	Pr. FMLN	Pr. FMLN Pol. Comp.
Pre-Ideology*FMLN 94	1.8*** (.59)	-.22*** (.05)	-0.22 (.36)	-0.22 (.36) 1.74 *** (.57)
Pre-Ideology*FMLN 94^2	-1.23*** (.27)	.36 * (.21)	0.05 (.21)	0.05 (.21) -1.14*** (.28)
FMLN 1994	-1.26** (.57)	.87 *** (.33)	.87 *** (.33)	.87 *** (.33) -1.27** (.56)
Pre-Ideology	-0.31** (.15)	-0.06 (.10)	-0.06 (.10)	-0.06 (.10) -.30** (.14)
Altitude	0.00 (.00)	-0.02 (.01)	-0.02 (.01)	-0.02 (.01) 0.00 (.01)
Parishes per cap.	0.01 (.01)	-0.01 (.01)	-0.01 (.01)	-0.01 (.01) 0.01 (.01)
Population 1960	0.00 (.00)	.02 ** (.01)	.02 ** (.01)	.02 ** (.01) 0.02 (.01)
F-Stat. Exclud.	11.21	0.18	49.20	10.98 37.24
Sargan Stat. (p_val)	0.45	0.35	0.16	0.44
Obs	259	259	259	259

\*, \*\*, \*\*\*, significant at 10%, 5% and 1%

Robust Standard Errors in parenthesis