



Political competition and *pork-barrel* politics in the allocation of public investment in Mexico

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Abstract. This paper examines the effect of political competition in local elections in regional allocation of public investment. The study employs data on Mexican elections covering the period 1990–95, characterised by an increase in electoral competition and coupled with increasing demands for decentralisation throughout the states. Empirical evidence supports the hypothesis that regional allocation of public investment by central government was driven by ‘political opportunism’ and ‘local pork-barrel politics’. A positive relationship was found between the regional allocation of public investment and support for the central ruling party. This might indicate that local spending inefficiencies were partially explained by the specific support for the incumbent party.

1. Introduction

The local political spectrum in Mexico during the early 1990s offers a unique example for public choice analysts to examine the effects of the introduction of political competition in the allocation of public investment, particularly in view of the ‘exclusive’ form of political competition found there. The Polity III data set on democracy catalogued Mexico as the least democratic country throughout virtually all of the twentieth century. A single political party, the *Partido Revolucionario Institucional* (Institutional Revolutionary Party, PRI), dominated the political spectrum for more than 70 years. However, the political outlook changed during the 1980s and 1990s with an ongoing decentralisation process (Molinar and Weldon, 1994; Rodriguez, 1999). The warm decentralisation process brought political stability to central government by providing an institutional basis through which opposition groups might bargain in the absence of competitive political competition (World

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Bank, 1999).¹ The question that underlies this feature is whether this special sort of 'informal political competition' resulting from the decentralisation process in Mexico lead to a specific allocation of public investment that favoured the party in power.

Generally speaking, political competition is a non-co-operative arrangement whereby candidates compete by influencing the voter's political preferences in order to govern with public consent.² However, the party in power – unlike the opposition candidates – has the possibility to influence public policy in order to affect support for their party. Support for a political party may be seen as the outcome whereby candidates' policies might be compared with a hypothetical voter's ideal policy. Hence, regional political support might be the result of some specific allocation of public investment being closer to their 'ideal allocation', e.g., the maximum feasible allocation. This results from the extent that public investment influences the way individuals – and localities perceive the 'net outcome' of central government policies. Similar interpretations can be found in Ordeshook (1997), Coughlin (1982, 1984), and Enelow and Hinich (1984).

A number of theoretical and empirical studies have found a positive link between political competition and government size (Buchanan and Wagner, 1977; Mueller, 1989; Rogers and Rogers, 2000). A stylised fact that those studies highlight is that political competition rises public expenditure in response. Nevertheless, the mechanisms aren't yet fully understood under the perspective of a centralised government. In a centralised setting, a rise in political competition – by allowing some regions not to support the incumbent party – might influence the way public investment funds are allocated, especially if regions have no specific power on increasing public investment. Mexican public investment allocation decisions have always been taken by the central government alone (Katz, 1999). Did the government, following a re-election objective, reward support for the incumbent party using location-specific public investment projects?

In an attempt to test the hypothesis of pork-barrel politics in Mexico, this paper aims at empirically examining whether the emergence of political competition influenced the regional allocation of public investment. We argue that the rise of political competition brought the central government to allocate funds to certain regions in order to prevent loss of support on the part of the incumbent party (PRI). Therefore, the (in)efficiency of the regional allocation of public investment might be substantially explained by differences in support for the incumbent party.

The structure of the paper is as follows. The next section briefly reviews the conceptual background of political competition and fiscal decentralisation, particularly to provide a framework through which to examine this

particular empirical evidence. Section 3 explores the most relevant issues emerging from the decentralisation process in Mexico. Section 4 describes the empirical analysis undertaken; we define the measure of political competition used and examine the data employed. Section 5 provides results from the study and, finally, Section 6 offers some conclusions.

2. Political competition and the allocation of public investment

In a democratic system, political decisions are the outcome of a competitive battle to obtain people's votes, which in turn implies that individuals have the ultimate 'power to decide, move and remove leaders from power' (Schumpeter, 1942). Those gaining power through the existent democratic system have incentives to adapt their behaviour to the rules of the democratic game (Katz, 1986). Political competition is meant to favour the electorate by increasing individual welfare in several ways e.g., the 'accomplished' promises of benefits to segments of population or regions during the political campaign. However, if certain decisions are made exclusively on the basis of maximisation of votes it might result prejudicing social welfare (Mueller and Murrell, 1986). Assuming that the failure to re-elect incumbent governments acts as a mechanism by which to signal disapproval, then one might expect a rise in political competition to significantly orient the allocation of public investment resources.

2.1. Why might public investment increase with political competition?

Politicians in power may have an interest in using the public expenditure under their control in order to shift individual's political preferences. Consequently, larger rises in public investment might arise the greater the perceived repercussion on the probability of re-election of the incumbent party (Enelow and Hinich, 1984). A typical of the former refers to expenditures associated with activities in the public welfare sector.³ In this competitive setting the incumbent party directs public policies on its pursuit of electoral success (Mueller and Murrell, 1986). The allocation of public investment is determined by its effect on an individual's welfare and their resulting vote. Thus, actions taken by rational politicians will be 'accommodative', that is, aimed at maximising the net benefits of a certain groups whom the politician perceives as being more prone to change their political preferences in accordance with the benefits they receive from the government. In the Mexican example during the 1990s, this group would correspond to those localities where support for opposition parties was larger. We suggest here that regional policies under the Mexican representative democracy of the 1990s can be

explained using interest group theory as a means to facilitate public investment transfers to sections of the population that might change their voting behaviour as a result of such policies (Becker, 1983).⁴

2.2. *What drives individuals political preferences?*

In an influential paper, Nordhaus (1975) proposed a trade off between elections and rates of unemployment and inflation, naming the process Political Business Cycle. Among the key assumptions there is one that voters are ignorant of macroeconomic trade-offs. Voters ignore the performance of policy makers relative to achievable possibilities. The lack of information leads individuals to rely on (recent) past experiences of government action in order to evaluate government performance, e.g., deterioration in real income will be blamed on the governing party. Thus, the government will use their disposable budget at the onset of the term in office with austerity, but then increase expenditure in the lead up to elections.⁵ Opportunistic behaviour of incumbent parties is observed when the government favours policies aimed at maximising their votes, without considering past political or ideological references, economic results, or even the party's political platform (Nordhaus, 1989).⁶ Its occurrence is not, however, an isolated phenomenon, but it appears to be associated with the nature of the political decisions. A tight electoral battle will increase the likelihood of the party in power undertaking self-beneficial actions. However, opportunistic behaviour may well fail to meet its objectives if the demands of individuals are badly interpreted, or when other unpredictable external factors come into play. Besley and Coate (1993) show that US governors that were ineligible to stand for re-election expended and raised taxes the most.

A similar conclusion would be reached employing the Buchanan and Wagner (1977) theory of fiscal illusion. According to that theory, individuals overestimate the net benefits of public expenditure increases due to the higher visibility of the benefits of that expenditure compared to the associated costs, the latter being tax increases or future tax liabilities arising from escalating debts. Thus, as the expansion of regional public expenditure programmes influences the political support for a government, regional policy is adapted to favour the incumbent political party. Political competition can therefore influence the allocation of public investment through the promotion of regional policies that benefit the incumbent party.

2.3. *Why does decentralisation influences the regional allocation of public investment?*

Modern theory on federalism assigns specific tasks to each level of government as a means to achieve economic efficiency in the delivery of public goods and services.⁷ Specific functions are traditionally related to particular government levels in federal systems (Oats, 1968; Musgrave, 1969).⁸ The federal structure must be consistent with efficiency criteria, and the degree of centralisation of government decisions depends on the negotiations between central and local governments. An excessive reliance on the grant transfer system with central control may be harmful to the extent that it can provoke inefficient outcomes (Oates, 1990). But the government can also be viewed as an aggregate centre of power, competing in the delivery of public goods and services (Breton, 1996). Vertical competition implies specialisation of functions at each level of government, generating efficiency through the rules of co-operation and satisfying a demand for public goods that it is revealed through the electoral process.

Breton's arguments credit to interregional resource mobility, rather than competitive politics where, the benefits of competitive federalism, fail to address the incidence of central government intervention. In a competitive federalism 'vertical competition' across regions takes places especially in the electoral arena where regions might 'rationally expect' to receive a reward if the incumbent party is re-elected. Vertical competition is described in Migué (1997) as the existence of different levels of government competing for the same pool of voters when supplying similar services to territories. Both suppliers seek to win over more voters by being the first to implement public policies. As the central government has significant monopoly power by offering the potential for political benefits, it may experience greater losses if an unrestricted political competition is to be implemented. The homogeneity of services might be considered by local administrators to be a forced commitment to restrain competition with federal programmes. Therefore, local administration may be coerced to embark upon national programmes in which the central government formulates the financing arrangements.

In this environment, negotiation can play a central role. If negotiation depends on who controls each centre of power, the fiscal terms obtained should reflect the political structure of that particular time. In that sense, under a unitary government the fiscal arrangements between the centre and the regions might respond to intra-party negotiations. On the other hand, as opposition parties gain access to local government, negotiations become more complex. The opposition groups look for support and accountability, for which fiscal autonomy is required. In this case, central government – which is likely to be restricted by an independent central bank in its spending and the political

capital that can be gained from it –⁹ can use imperfect decentralisation and regional allocation of public investment in order to win more votes in the quest for power control.

The political argument for public investment allocation was outlined by Hirschman (1958), who in his study on the allocation of public investment at regional level suggested that the switching of policies might have a political motive. In this case, the allocation of public investment is seen as an auction process in which the central government assigns more investment to localities represented by the same political party to substantially increase campaign voters. In addition, the local government may not generate more pressures on increasing federalism, as they have to subordinate to the central government political affiliation and thus the pattern of federalism that they dictate. These localities may be rewarded with more resources than areas where opposition parties hold power, behaviour that might be seen as opportunistic.

3. Mexican federalism: ‘centralising the decentralised’

Mexico comprises 31 states and the Distrito Federal encompassed in a federal constitutional system. Centralisation has always been the norm until the 1980s when central government initiated a process of decentralisation by drop-counter. The current system of Mexican federalism can be seen to be the result of a series of central reactions to political and economic crises occurring over the last two decades, which have led to a process of ‘decentralisation’.¹⁰ Furthermore, the winning of states and municipalities by the opposition was related to a loss of credibility on the part of the PRI during economic and financial crises.¹¹ Subsequently, the first half of the 1990s brought a rapid change in Mexico’s ‘electoral geography’. As argued by Aguilar-Camin and Meyer (1993), the consequences of the crisis during De la Madrid’s term in office translated into electoral losses for the PRI. This change in the relationship between government and opposition parties should be framed in terms of the developments in the international context and the transformation of Mexican society in the previous quarter of the century, which led to a changing context for Mexican policy after 1982 (Loeza, 1995).

This loss of power accelerated dramatically in 1994 and 1995. In 1991 the PRI controlled 97 per cent of the 31 states, in addition to the Federal District (Mexico City). Under the traditional system, the mayor was appointed directly by the president. By 1995 it had lost just seven per cent of the states. But the major change in the ‘electoral geography’ took place throughout the municipalities. The percentage of municipalities governed by the PRI dropped from 71 per cent in 1993 to 55 per cent in 1995. This displays a

striking change in the way local politics were being carried out. In a few years the PRI had lost control of nearly half of the municipalities, after decades in which the opposition had battled to gain a foothold in local politics.

According to Rodríguez (1999), the PRI governments of De la Madrid and Salinas aimed to ‘centralise by decentralising’, that is, to decentralise in order to maintain the balance of power. The fiscal redistribution mechanisms remained centralised, while decentralising other aspects of government when they served the purpose of distributive politics. Public investment transfers to municipalities were left to political discretion. (Rodríguez, 1999). However, decentralisation helped to stabilise the political system because it allowed opposition parties to access government, moving away from the pay-offs of a traditionally zero sum electoral game (Lujambio, 1995).¹²

During the decentralisation reforms the PRI was reluctant to cede fiscal autonomy. It did so by fixing central transfers that were tied to specific programmes to be executed by the states and municipalities. As opposition parties gained access to real government, demand for autonomy rose. As expected, electoral competition enhanced a change in the fiscal co-ordination between the levels of government. The reason is that opposition parties become accountable for their actions to the constituents who elected them, while the official party governments are accountable to the party hierarchy. The co-operative relationship between local policy-makers and the incumbent party is similar to what has been found in other countries (Limosani and Navarra, 2001) however, in Mexico redistributive policies were undertaken by a the long standing incumbent party within a *sui generis* decentralisation process bringing competitive governments with higher demands for autonomy. If such demands were satisfied, the result that one would expect is a redistribution of public investment in response.

4. Empirical analysis

4.1. *Data and summary statistics*

This study collects data for the 32 Mexican federal units from 1990 to 1995. The only region excluded was the *Distrito Federal* (DF), as the mayor of the city was not directly elected, but rather appointed by the president of Mexico. In a data appendix we provide description and sources of variables. Data were extracted from the statistical annexes to the Presidential Address to the Nation, for various years. The data on public investment corresponds to the total public investment effectively spent by central government in real pesos (1994 = 100). Table 1 shows the summary statistics of the variables such as the expected effects according to the revised literature.

Table 1. Description of the variables, expected effects and summary statistics

Variable	Source	Mean (s.e)	Expected effect on g_j	Expected effect on π_{Aj}	Definition
g_j	A	5.99 (0.053)		+	The log of federal public investment per capita realised in each state. The definition of public investment comprises social investment, infrastructure and other investment.
π_{Aj}	C	0.62 (0.08)	+		The share of votes in the municipalities received by the PRI in each state
POP_i/POP	A	0.03 (0.001)	+/-	+/-	The share of the population of each state to the national.
GOV	A	0.048 (0.015)	+	+	A dummy variable for states governed by a political party different from the PRI.
OIL	B	0.06 (0.01)	+		A dummy variable in which a value of 1 is assigned to Campeche and Tabasco, 0 otherwise.
S	A	1.87 (0.01)	+	-	The log of average years of schooling of population aged 15 and over
RUR	A	0.31 (0.01)		+	The percentage of population living in rural areas in each state
INE	A,B	-0.10 (0.06)	+		A measure for the relative position of each state on the income scale. It is calculated as: $V_i=(y_i-y)/S$. Where y_i is the per capita GDP for each state, y is the national average per capita GDP and S is the standard deviation for the whole set of regions.

A. Statistical Annexes of the Presidential Address to the Nation (various years)

B. Instituto Nacional de Estadística, Geografía e Informática (INEGI).

C. Banamex. Economic Studies Department.

4.2. *The empirical model*

We now turn to the explanation of the empirical model employed. In the interest of clarity, the letter j denotes states (or regions) and i refers to the time subscript. According to the theoretical analysis, we aim at testing the role of local level political competition in central government's regional assessment of public investment.

Let us model the distribution of public investment as follows:

$$g_j = \pi_{Aj} + Z_j \quad (1)$$

where g_j refers to the real per capita public investment allocated in state j ; π_{Aj} is the share of local municipalities affiliated to central government's party in state j . Z is a set of characteristics of state j . An equivalent empirical relationship was used in Molinar and Weldon (1994) to determine the relationship between electoral politics and the National Solidarity Programme in Mexico. However, as hypothesised here, a rise in political competition leads the central government to re-direct the federal programmes to either increase or maintain its political affiliation. In this empirical study, we employ the total amount effectively spent by the central government in each region as a way to proxy the number of programs implemented in each region. However, on the other hand, individual voters, in order to reward or penalise the political party in power, might take into account the programs implemented in a specific region. Therefore, there is a simultaneous relationship between the two variables. Let us define the determinants of participation as:

$$\pi_{Aj} = g_j + X_j \quad (2)$$

where X_j is a set of additional characteristics that may affect the decision to vote for the party already in power. Thus, the local support for the governing party is driven by public investment in the region and a number of other characteristics. As a consequence, we may parameterise the model as a system:

$$\begin{cases} \pi_{Aj} = g_j + X_j \\ g_j = \pi_{Aj} + Z_j \end{cases} \quad (3)$$

where X_j and Z_j are a set of exogenous variables.

The specification (in logarithmic form) of the system of equations (3) in a simultaneous equation system, given that as derived from (4), the OLS regressions applied to either π_{Aj} or g_j are inappropriate (i.e. biased or inconsistent) estimators for the unknown parameters. Taking logs and expanding the sets Z and X :

$$\begin{cases} \pi_{Ajt} = \alpha_0 + \alpha_1 g_{jt} + \alpha_2 S_{jt} + \alpha_3 RUR_{jt} + \alpha_4 g_{jt-1} + \alpha_5 GOV + \alpha_6 \frac{POP_t}{POP} + \lambda_t + \varepsilon_{jt} \\ g_{jt} = \beta_0 + \beta_1 \pi_{Ajt} + \beta_2 GOV_{jt} + \beta_3 INE_{jt} + \beta_4 OIL + \beta_5 g_{jt-1} + \beta_6 \frac{POP_t}{POP} + \lambda_t + \mu_{jt} \end{cases} \quad (4)$$

where j denotes the state, t the year, λ time effects and ε and μ are error terms. Variable construction and their respective sources are explained in Table 1. Additionally, Table 1 provides the expected effect of each variable included in the model. π_{Aj} represents the share of municipalities held by the central governing party, the PRI. If the sign of the coefficient of variable π_{Aj} is positive and significant in explaining the amount of regional funds allocated to a regions g_j , we might conclude that there is some degree of *regional opportunism or pork barrel effect*. If the sign of the coefficient for variable g_j , is positive when determining π_{Aj} we can reinforce the hypothesis of ‘opportunistic voting’. Additionally, we have included a lag of the public investment g_{t-1} to test for myopic policies. If the effect of this variable turns out to be not significant this implies that voters are ‘myopic’. That is, constituents lack long term memory and, consequently they take into account those projects undertaken under the election period when evaluating incumbent candidates. Additionally, the lag of public investment was considered when dealing with serial correlation. It was found first order autocorrelation the Durbin Watson for panel data (Bhargava, Franzini and Narendrahathan, 1982)¹³ as explained in the results section.

We employed a variable to capture whether the government of the state (GOV) was of the PRI. This variable refers to a dummy variable taking the value of 1 if where an opposition party ruled the state. The core assumption is that governors might ‘lobby ‘ to favour the candidates of their party in local elections. This variable was treated as endogenous when used as a covariate to explain π_{Aj} , was treated as exogenous (and capturing the pork barrel effect) when explaining the allocation of public investment (g_j).

The rest of variables are taken as exogenous. We consider schooling (S) as a determinant of political choice. More educated people are rationally expected to vote according to a long-term perspective, considered evaluation of government policies, rather than a myopic view. OIL is a dummy variable for Campeche and Tabasco, states receiving large quantities of public investment due to the oil field exploitation, and thus its inclusion in the system helps to avoid overstatement in other variables.

The percentage of rural population in each state (RUR) is employed to introduce the effect of the so called ‘green vote’ that acted in support of the PRI for a long time, and so would show a positive coefficient. The variable INE reflects the relative position of each state on the income scale, so that those states with a positive sign are economically advantaged, and states with neg-

ative sign are economically disadvantaged. A negative sign of the coefficient determining public investment would suggest a redistributive effect in public investment. Additionally schooling might interact with rural placing a non linear effect in both equations. As a result, we have introduced in our model an interaction term. The variable $\frac{POP_i}{POP}$ has been included to account for the hypothesis of political support for PRI being greater when they control a small number of very populous municipalities than when they win in a set of scarcely populated ones.

5. Results

We have estimated the equations in system (4) separately using OLS, GLS – to account for possible heterocedssticity – in Table 2 and, we used the Prais-Winsten method – to account for both heterocedasticity and contemporaneous order one autocorrelation – in Table 3. Results were quite robust and significantly invariant to the technique used to adjust the model. Three Stage Least Squares results are presented Table 4 to account for simultaneity between public investment allocation and support for the incumbent party.

Regressions (1–5) in Table 2 show several specifications of the support for the PRI. Specifications differ in the following way. (1) would be the complete model, (2) drops schooling to account for the influence of education, (3) examines how the models changes when GOV is removed as might be endogenous, (4) was estimated by OLS for comparative reasons and finally (5) treated GOV as endogenous where lags of public investment and time effects where instruments. The most important result to be reported is that regardless of the model, there is always a *robust and positive effect of public investment* on the support for PRI. Interestingly, the lagged value of the same variable, although with a negative sign, is never significant. This suggests that public investment was useful in increasing support for the PRI and provides positive evidence of pork barrel politics as determining public investment. Consistently with the hypothesis of ‘myopic voting’ past public investment does not exert a significant effect in pushing up public investment. Additional lags were equally non-significant at the usual five per cent level. This suggests that the higher the per capital public investment allocated in a specific state, the greater the control of localities by the incumbent party.

The effect of schooling attainment (S) is negative and significant. As education might be associated with a preference for political turnover, we find that the more educated the population in the state, the lower the local support for the incumbent party. Consistently, the share of rural areas in the state has a positive sign, although it is not significant unless schooling is dropped from the equation. This variable is highly correlated with schooling,¹⁴ which

Table 2. Determinants of local support for the PRI

Variable	(1) GLS π_{Aj}	(2) GLS π_{Aj}	(3) GLS π_{Aj}	(4) OLS π_{Aj}	(5)G2SLS π_{Aj}
g_i	0.041*** (0.013)	0.057*** (0.015)	0.040** (0.013)	0.06*** (0.02)	0.049*** (0.13)
g_{jt-1}	-0.019 (0.014)	-0.023 (0.016)	-0.018 (0.014)	-0.02 (0.02)	-0.020 (0.014)
POP _i /POP	-1.05* (0.58)	-0.317 (0.590)	-1.06* (0.611)	-0.68** (0.30)	-1.05* (0.614)
S	-0.57** (0.20)	–	-0.62*** (0.20)	-0.09 (0.14)	-0.57*** (0.097)
RUR	0.83 (0.91)	0.272** (0.101)	0.71 (0.93)	1.30** (0.58)	0.83 (0.09)
GOV	-0.075** (0.038)	-0.085** (0.043)	–	-0.15*** (0.03)	-0.075** (0.038)
RUR*S	-0.66 (0.48)		-0.591 (0.494)	-0.76 (0.31)	-0.14 (0.10)
CONSTANT	0.72*** (0.46)	0.352*** (0.119)	1.816*** (0.455)	0.64** (0.30)	2.02*** (0.26)
R ²	0.405	0.34	0.40	0.33	0.41
Wald Test	96.98	32.66	93.38	–	88.07
N	186	186	186	186	186
Hausman χ^2_6			57.6	–	
Sargan Test	21.12	21.02	22.2	–	23.76

***Significant at 1%; **Significant at 5% and *Significant at 10%.

Standard errors in parentheses. Time effects not reported.

Note: Equation (4) treats GOV as endogenous, where instrument were rural, schooling and inequality.

may cause it to be non-significant. When we excluded schooling in the regression in (2), we found that while results for other variables are similar, the variable proxying rural areas becomes highly significant and its coefficient increases almost fourfold. This reinforces the so-called ‘green vote’ hypothesis explaining support for the PRI in Mexico. This hypothesis established that the incumbent party support relied on rural votes, which in turn meant those of less-educated and lower-income individuals, and therefore easy subjects for political control. There is also a negative and significant effect of the governor of the state being of a different political affiliation to the PRI.

Table 3. Determinants of public investment allocation (AR(1))

Variable	(6) GLS g _i	(7) GLS g _i	(8) GLS g _i	(9) GLS OLS	(10) g _i	(11) PW
π_{Aj}	0.98*** (0.27)	–	1.00*** (0.31)	1.05*** (0.26)	1.00*** (0.31)	1.10*** (0.30)
INE	0.04 (0.042)	0.03 (0.04)	0.05 (0.04)	0.22 (0.04)	0.38 (0.06)	0.18 (0.15)
POPROP	–2.04** (0.24)	–2.67** (1.26)	–1.94 (1.30)	–2.02* (1.23)	–1.94 (1.29)	–6.55*** (0.65)
S	–	–	0.30 (0.64)	–	0.47 (0.63)	0.21 (0.85)
RUR	0.83 (0.91)	0.27** (0.10)	2.55 (2.57)	–	1.35 (2.5)	–0.06 (2.79)
GOV	–0.042 (0.014)	0.20 (0.14)	–0.19 (0.15)	–	–0.04 (0.15)	–0.19 (0.10)
RUR*S	–	–	0.30 (0.64)	–	–0.60 (1.36)	0.33 (1.45)
OIL	0.59*** (0.14)	0.64*** (0.15)	0.61*** (0.16)	0.65*** (0.15)	0.60*** (0.16)	1.35*** (0.22)
CONSTANT	0.57*** (0.40)	2.15 (0.37)	0.57*** (1.34)	1.54 (0.38)	0.57 (1.34)	4.87*** (1.74)
R ²	0.702	0.68	0.68	0.68	0.69	0.85
Wald Test	431	394	459	383		1319
N	186	186	186	186	186	186
d _p	2.17	2.16	2.10	2.08		2.03
Sargan Test	23.27	21.35	16.01	24.65		23.45

***Significant at 1%; **Significant at 5% and *Significant at 10%.
(standard error into parenthesis)

The variable GOV, was always significant at a 5% level, even when it was treated as endogenous in equation 5. When the variable is deleted it places a negative influence in public investment. This might be seen as an evidence of the lobbying process that increases the pork barrel effect under political competition settings. Finally, the variable accounting for population share shows a negative coefficient. This suggests that support for PRI was mainly concentrated in low populated areas where the likelihood of obtaining high support was higher.

Table 4. Determinants of local support for the PRI and public investment (3SLS)

3SLS	(12)		(13)	
	π_{Aj}	g_i	π_{Aj}	g_i
π_{Aj}		1.11** (0.58)		
g_j	0.12** (0.052)		0.13*** (0.05)	
g_{jt-1}	-0.07* (0.04)	0.63** (0.057)	-0.08** (0.04)	0.64*** (0.58)
INE		0.071** (0.04)		0.06** (0.03)
POP _i /POP	-0.44 (0.33)	-1.82 (1.26)		-2.55** (1.24)
S	-0.10 (0.14)		0.35** (0.09)	
RUR*S	-0.60* (0.34)		0.41 (0.33)	
RUR	1.06* (0.061)		-0.07 (0.09)	
GOV	-0.03 (0.18)	0.25 (0.16)		-0.65** (0.13)
OIL		0.48*** (0.14)		0.55*** (0.14)
CONSTANT	0.53* (0.28)	1.50* (0.49)	1.02*** (0.21)	2.14*** (0.37)
R ²	0.48	0.70	0.28	0.68
$\chi^2 X$	58.77	442.34	52.18	420.07
Prob $\chi^2 > 0$	0.00	0.00	0.00	0.00
N	186	186	186	186

***Significant at 1%; **Significant at 5% and *Significant at 10%.
Standard error in parentheses. Time effects not reported.

Regarding diagnostics statistics we find that the explanatory power is reasonable, the R^2 being around 0.40 when explaining π_{Aj} except when an OLS approach is used to estimate the model. However, there might other unobservable variables not captured in the regression and are explaining support for the incumbent party. These variables – for which we have no data – include

popularity of the party and candidates, idiosyncratic features of the voters, etc.

Along similar lines, models (6–11) in Table 3 display the determinants of per capita public investment allocated in each state assuming autocorrelation defined by AR (1). Models 6–9 refer to different specifications of the model that account for the influence of schooling (6) and support for the incumbent party (7). And both schooling and the governor being from a different party than the PRI (GOV). All of them were estimated by GLS. Finally model 10 refers to the OLS estimate for comparative reasons and model 11 is a panel corrected standard error estimated by Prais-Winsten (PW) regression as noted before. When the PW method was used, the influence of support for PRI was larger and the explanatory power increased substantially. The Sargant test suggests that the model is well specified.

We found the variable accounting for the share of the municipalities held by the PRI to be a highly significant and having a positive value. This result confirms theoretical explanations. Moreover, reinforces the findings for regressions (1–5). Thus, the more constituencies held by the PRI, the greater per capita public investment allocated in a specific state. A possible concern when examining public investment is the presence of serial correlation, in such a case the nonstationarity should be treated by taking first differences. Bhargava, Franzini, and Narendranathan (1982) provide a test for serial correlation in panel data sets. The (d_p) serial correlation tests at the critical value 5% level, show that once correcting by a AR(1) process is stationary.

The variable accounting for regional inequalities, measured as the relative position of a state on the income scale (INE) is positive, although non-significant. Although the diverse National Development Plans have highlighted the need to allocate public investment to help backward regions to catch up, empirical evidence here confirms that income inequality was not a significant determinant in the allocation of public spending at the regional level. In contrast to what one might expect, the governor of the state being of a different political affiliation to the PRI does not show a significant relationship, although it does display a negative sign. As shown, the negative coefficient is the result of the influence of π_{Aj} in equation (7) when π_{Aj} was dropped, the variable was a positively signed although still insignificant. The oil states (Campeche and Tabasco) receive higher amounts of public investment, this the result of the development strategy that Mexico follows. Finally two additional influential variables were: the share of the population (reducing the flow of public investment that some states receive) and the rurality of the area. The first was sensible to the inclusion of schooling in the model and, in the latter it was influenced by the presence of autocorrelation in the residuals.

Finally, an additional concern in the causal relationship between public investment and localities controlled by the PRI, is that residuals of both equations might be correlated with π_{Aj} and g_j in such a way that the OLS set of coefficients would be biased and inconsistent. To account for this, we employ the three-stage least square (3SLS) estimation method for the simultaneous equation system in (4). Table 4 contains regressions (12–13) that correspond to the system of equations discussed in Tables 2 and 3. The two models differ in the inclusion of Π_{Aj} . The exclusion of the variable π_{Aj} did not lead to the variable GOV to be significant. What can be noted from the results is that in general they follow a similar trend, with some discrete differences that rise up the coefficients. However, the effect of political competition on public investment increased significantly in about three times. The coefficient for support for the PRI (π_{Aj}) as determining public investment remains highly significant. Another point is that the variable for the state's position on the income distribution scale (INE) becomes significant and displays a positive sign, reinforcing previous findings that public investment has a regressive effect (e.g. Rodriguez-Oreggia and Costa-Font, 2001). That is, such investments benefit high-income states more than their low-income counterparts.

Previous findings, although limited due to the aggregation level of the data provide supportive evidence for the hypothesis that public investment was allocated in areas where political affiliation to the incumbent party was high. The political objective of these public investment assessment criteria for the incumbent party was to control localities, which in turn might also enable the central government to determine its own pace for decentralisation.

6. Conclusion

Mexico offers a unique example of the economic impact of political competition when the incumbent party has the monopoly on public funds distribution. A single political party dominated the political arena from 1929 at all levels of the government. However, the changing political and economic environment during the end 1980s led to a decentralisation process – where the central government kept the power of allocating public investment to regions – and consequently a rise in political competition. This feature has had strong policy making consequences, especially in influencing governmental decisions regarding the distribution of public funds at the regional level. Policies during this period explicitly set equity as well as efficiency as policy targets although have been significantly ambiguous.

This paper has shown that the allocation of public investment between regions did not respond solely to redistribution objectives as the national plans had suggested. As a pork-barrel politics model would predict, the rise

in political competition lead to the use of public investment as rewarding support for the incumbent party. The central government spent more, on the whole, in localities where the PRI had greater political support, at least retaining political spaces, which allowed central government to establish the pace of decentralisation. These results are consistent with models of political competition in several jurisdictions in the USA as outlined in Besley and Case (1995). Public investment has a positive influence on the proportion of localities where the majority party has greater support. A possible concern here is whether the geographic distribution of voters matters. Although voters were more mobile between regions in the 1970s and part of the 1980s, migration was not notable during the period analysed and, consequently, would not influence results. However, the significance of regional dummies in explaining regional allocation of public investment when mobility is low may be explained by the different weights that different regions are assigned by the ruling party in terms of their utility function, as in Petchey (2000).

Our findings are consistent with the hypothesis that public investment was used as a way to enhance support for the incumbent party. That is, public investment can be seen as the reward to local governments for not transferring their vote to the opposition party. These results, however, have been interpreted in a broad context of regional decentralisation. Decentralisation, as noted, being the natural consequence of the lack of political competition at the central level. As expected, decentralisation has increased in a context in which there has been increasing political and electoral competition. Nevertheless, the central government has apparently used the control of local governments to impose a drop-counter decentralisation process.

Notes

1. Examples of this in Mexico were the decentralisation programmes conducted by De la Madrid (1982–88) in the 1980s, which allowed opposition parties access to some local governments; the channelling process of fiscal funds to municipalities developed under Salinas (1988–1994) and the consolidation and fiscal co-ordination undertaken by Zedillo (1994–2000).
2. This framework is built upon the Schumpeter (1942) approach where a political party is envisaged as a group in which members act in concert in a competitive battle to maximise their votes. That is, a team seeking to control the governing apparatus by means of electoral success, which implies some level of agreement on policy goals (Downs, 1957).
3. If this is confirmed in empirical exercises, one might find a rise in the intensity of party competition to be associated with an increase in welfare expenditure (Dawson and Robinson, 1963).
4. Becker (1983) posited a theory of pressure group competition in which such competition leads to the least-cost pattern and amount of transfers.

5. In the Nordhaus model of 'myopic voting', 'voters' recollections of economic issues decline over time, therefore recent events are more important than earlier problems. Under this backward looking behaviour the voter's evaluation only covers the length of the electoral period.
6. In a rationalistic model, political business cycles take a short-run form, in which politicians find more rewarding to manipulate policy instruments around election (Alesina, Cohen, and Roubini, 1991).
7. Economic efficiency in federalism can be better understood as the capability of each level of government to internalise certain externalities caused to a particular region by the actions of another. See Stevens (1993).
8. For example, macroeconomic stabilisation is assigned to national governments, because they have a greater capacity to influence the output and income of the community as a whole. Following the same line of thinking, distribution policies are better performed by national governments in order to prevent the migration of individuals to satisfy their preferences in terms of taxes and public services (Tiebout, 1956). It could also be argued that local governments are better suited to delivering public goods and services, as they are in a position to collect more information and understand local preferences.
9. Some studies have found an inverse relation between central bank independence and inflation (Cukierman, 1992) as central banks tend to be more inflation averse than politicians (Kyland and Prescott, 1977; Barro and Gordon, 1983). This also can be seen as a tool through which politicians with conservative inclinations seeks to constrain left wing policies that generate expansion in budgets and inflation (Persson and Svensson, 1989; Alesina and Tabellini, 1990), based on partisan models of business cycles, as in Hibbs (1977, 1987).
10. Indeed, the origins of decentralisation in Mexico can be traced back to the early 1980s, when opposition parties were allocated a proportion of Congress seats.
11. This trend towards the loss of political space on the part of the PRI reached its peak in 2000 when the right wing Partido Accion Nacional (PAN) won the presidential elections.
12. Furthermore, it provided an institutional environment that allowed for co-operation among parties and represented a move away from the exclusive presidential system.
13. The approach follows has been to treat each group of observations as a sample in itself so that the $\varepsilon_{it} = \rho\varepsilon_{i,t-1} + v_{it}$ if its produced by an AR(1) process.
14. The spearman correlation coefficient between both variables is -0.825 , with 1% significance.

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