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CONDITIONAL POLITICAL BUDGET
CYCLES IN ARGENTINE PROVINCES

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Conditional Political Budget Cycles in Argentine Provinces

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Abstract

This paper presents evidence of electoraly-motivated changes in the budget balance, public expenditures, composition of public expenditures and provincial revenues in Argentine provinces. The empirical study is made using panel data analysis for 22 provinces during the period 1985-2001. Unconditional results show that conditioning on the alignment of provincial and federal executives (same political party in power) there is evidence of systematic changes in fiscal policies around elections. The observed changes support the predictions of rational opportunistic models of PBC. In election years, total provincial expenditures increase in aligned provinces, without affecting the fiscal balance, because to the increased discretional transfers from the federal government supporting the provincial incumbent federal revenues. By contrast, deficit increases for unaligned provinces. In addition, expenditure shifts toward current spending and away from capital spending for unaligned provinces in electoral years.

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I. Introduction

In this paper, we investigate the presence of electoraly-motivated manipulations in fiscal outcomes in Argentine provinces. We empirically address two main questions:

i. Are political budget manipulations present in executive election periods in Argentine provinces?

ii. Are there any systematic differences in the size and composition of expenditures and revenues in provinces politically aligned with the federal executive?

The political budget cycles literature relates elections and policy makers' behavior conjecturing that by rising public expenditures in election periods the incumbent can increase his chance of reelection. The first generation studies were based on the idea of adaptive expectations, assuming that in the future the voter will act partly based on what happened in the past. Thus, he or she can systematically be deceived. Later on, following the trend in economic analysis, rational expectations were introduced in formal models. Rational voters builds conjectures related to the competency of the politician and by increasing spending the incumbent can signal his level of competence. Regarding the incumbent motivations, there is a division between opportunist politicians and partisan politicians; namely, those who want to rule for the sake of power itself and those who want to do so in order to put their preferred policies into practice.

In Argentina, the literature has not yet deeply analyzed the phenomenon of budget cycles in election times. Meloni (2001) explores this issue by analyzing the change in provincial current expenditure and its correlation with the votes obtained by the governing party. However, this study was not explicitly performed within the framework of the political budget cycle theory.

In a recent study, Rumi (2008) analyzes electoral cycles explaining how the Argentine national government allocates in-kind and cash budgetary discretional transfers between the subnational governments. The electoral manipulation is present in the allocation of different kinds of transfers to the subnational jurisdictions. The federal government allocates more cash transfers to the politically affiliated subnational jurisdictions; more in-kind transfers to political competitors at the subnational jurisdictions, and more transfers in general to politically affiliated provinces.

Considering the federal organization of Argentine provinces, it might seem relevant to sort out evidence about the existence of cycles in subnational fiscal variables that may represent some kind of opportunist behavior on the part of the incumbent looking for reelection. This paper empirically analyzes the evidence of cycles in fiscal balance, expenditures and revenues in 22 Argentine provinces during the period between 1985 and 2001, using econometric methods for panel data. We consider the executive election date as the main explanatory variable for budget cycles. The rest of this paper is structured as follows. The next section briefly summarizes the theoretical framework on political budget cycles. Section III presents the data set. Section IV describes the empirical specification and econometric techniques. The empirical results and discussion are reported in section V. Finally, Section VI concludes.

II. The Political Budget Cycle

A. Previous Literature

The first models that formalize the political behavior that generates cycles in economic variables in relation to the electoral calendar can be separated into two different views. One of them, called `Opportunistic Political Business Cycle´ makes emphasis on the opportunistic nature of the politician. This means that they have no

other preference but to hold office, for which reason they act in such a manner to maximize the chances of being re-elected. The pioneering work of Nordhaus (1975) is within this trend, depicting the politician as a manipulator of pre-electoral outcomes. Lindbeck (1976) also follows this line.

There is another branch of the literature, the one in `Partisan Political Business Cycle´ that stresses the partisan nature – as an ideological aspect- of the incumbent (Hibbs 1977). In this case, cycles in economic variables are originated in the ideological preferences of the politician.

First generation models assumed adaptive expectations. This behavior is sometimes called `myopic´ (or irrational) on the part of the voter since, once the politician adopts expansive policies, the voter does not remember or does not take into account those recessive policies adopted by the incumbent in the past that they are likely to repeat in the future. It is worth noting that these models are based on the assumption of a negative relation between unemployment and inflation; that is, the possibility of exploiting a `Phillips curve´.

Models based on rational expectations (Kydland and Prescott 1977; and Barro and Gordon 1983) started to appear in the 80s. During the 90s -as well as in the present work- emphasis is made on fiscal policy rather than on monetary policy as the generator of cycles. Among the papers that are representative of this period are those by Rogoff and Sibert (1988) and Rogoff (1990). Here, the opportunist politician manipulates the expenditure policy during electoral years with the sole purpose of showing that they are competent, thus increasing their chances of winning the elections.

Recently, the literature has explored not only the level effect on fiscal variables but also the so-called composition effect; that is, how expenditure components (such as

consumption and investment) change during this cycle of electoral origin. Among the contributions on this subject, those of Schucknecht (2000) and Block (2002) are important. Research into how institutional variables can impose (or relax) constraints on the cycle is not less relevant. That is, how strong institutions should temper the cycle and how, on the other hand, weak institutions would make way for the opportunist politician to distort policies. This kind of study, based on the exploration of institutional variables and their effects on the level and composition of the cycle can be seen in Shi and Svensson (2002) and in Block (2002).

This paper follows the line of models called `opportunist –rational´ that, according to the definition by Alesina, Rubini and Cohen (1997), present the following distinctive characteristics:

        (i)   Short-term manipulation of fiscal or monetary policy.

        (ii)   Strengthening of policies after the elections.

        (iii)   Non-systematic effects on unemployment.

        (iv)   Politicians struggling for re-election.

B. Theoretical Framework

According to the Rogoff (1990) approach, opportunistic politicians generates cycles in the economic variables while trying to show their competency, which cannot be directly observed by the voter. In this way, they are trying to increase their chances of being re-elected. One of the main issues is asymmetry in information: if the voters were able to directly observe the capacity or ability of the politician, their decision would be obvious.

The fact is that if ability is not easily observable then there is some possibility that the politicians manipulate fiscal policy in such a manner that they might seem to have

more competency than the one they really have, thus augmenting the chances of winning the election.

Rogoff´s model could be outlined as follows: the politician produces a public good using two inputs, taxes and their competency. The latter can be thought of as a parameter of productivity, since capable incumbents need fewer resources to make more things and vice-versa.

The voters observe taxes and expenditure (which have different grades of visibility) and use that information to make inferences about the politician's capacity, which is not directly observable since other factors also influence elections vote is probabilistic and, there is some likelihood q that the politicians might be re-elected, and $(1-q)$ that might not. This information is known by them, for which reason they are tempted to take political steps so as to augment their chances for re-election q.

Rogoff concludes that given the informational asymmetries regarding the politician's capacity, expenditure will be increased by competent politicians - particularly the most clearly perceived by the voter- so as to pretend to be the most capable politician. In equilibrium, this behavior increases reelection chances of competent politicians.

Some aspects of visible and non-visible expenditures are worth noting. We have so far only referred to biases in expenditure towards its most visible components. Which type of expenditure are the most visible is not a clear-cut classification. Rogoff states that at election times, expenditure biases towards current expenditure, and this means an increase in current expenditure as a percentage of total expenditure. This point of view is not universally shared and empirical evidence appears divided.

Schuknecht (2000) assumes that the bias in expenditure in developing countries is towards capital goods. He states that starting great public works right before the elections, and then bringing them to a halt immediately after seems to be easier than

increasing current expenditure, since the latter can entail short and long term commitments.

In the same vein, Krueger and Turán (1993) -when analyzing the electoral process in Turkey- argue that there are pre-electoral increases in both investment and infrastructure programs.

The empirical analysis in Schuknecht´s study is performed using relative per capita levels of expenditures. Current expenditure and capital expenditure (as percentage of per capita GDP), both increase before elections. Nevertheless, the composition effect, that is, the current (or capital) expenditure as a percentage of total expenditure is not directly analyzed. Consequently, what is in fact found out that total expenditure increases before elections. However, nothing clear can be stated regarding the bias of the composition effect. Similarly, the work by Krueger and Turán does not test the composition effect either.

On the other hand, Block (2002) follows Rogoff´s line of thought and argues that the bias in the composition effect moves towards current expenditure. However, he admits that the evidence accounting for his hypothesis becomes stronger when only the richest countries in the sample – controlling by per capita GDP– are taken into account.

In this paper we follow the approach presented by Block (2002) using current expenditure as percentage of total expenditures in order to test the possible bias in the expenditure composition ("composition effect") in election periods.

The idea that electoral budget cycles can be found at a sub-national level lies in the federal organization of Argentina. The Argentine Constitution, under sections 122 and 123 states: `*The provinces provide their own local institutions and are governed by them. They choose their governors, legislators and the rest of the provincial officers,*

without intervention of the Federal Government´ and `*each province writes its own constitution....regulating its scope and content in the institutional, political, administrative, economic and financial orders´.*

The fiscal autonomy of provinces from the federal government is an element that allows the potential existence of electoral budget cycles at a local level.

III. Data

We construct a panel data set to test the existence of electoral cycles in provincial fiscal variables. Our data set includes data on provincial government budget balance, spending and revenues, political data on provincial executive election dates and political party in power, per capita Gross Geographic Product (GGP) and GGP growth. Our database has annual observations for 22 provinces for the period between 1985 and 2001, averaging four provincial executive elections.

Two provinces were excluded from the original sample. First, the City of Buenos Aires is excluded from the analysis since it was only in the year 1996 that the elections for Chief of Government (i.e. governor) were held. Up to that moment, the City Mayor was directly appointed by the national executive power. Second, the province of Corrientes is the other exception, because it had to undergo two federal interventions during the 90s. The first one, in 1991, was due to disagreement between the provincial electors; and the one in 1999 was due to serious social disturbances. Both provinces were excluded from the database to perform the econometric estimation.

The source of the fiscal data is the Ministry of Economy (*"Dirección Nacional de Coordinación Fiscal con las Provincias, Secretaría de Hacienda del Ministerio de Economía y Producción de la Nación").* Geographic Gross Product (GGP) estimates

were taken from Mirabella (2002), who approach the provincial GGP using residential electricity consumption.

The electoral budget cycle is analyzed through the variables fiscal balance, total expenditure, expenditure composition[1], total provincial revenue, revenue from provincial taxes and revenue from the federal government[2]. The period of analysis ranges from 1985 to 2001. Table 1 presents the variables used for the estimates and Table 2 presents descriptive statistics of the dependent fiscal variables.

< please see Table 1 and Table 2>

IV. Empirical Analysis

The theoretical and empirical literature on political budget cycles suggests that the timing of elections should influence fiscal outcomes. The relationship between a fiscal variable, y_{it}, and the electoral cycle can be stated as follows:

$$y_{i,t} = \alpha + \Sigma^k_{j=1} \beta_j y_{i\,t-j} + \Sigma^m_{j=1} \gamma_j x_{j\,i\,t} + \delta_1 e + \eta_i + \varepsilon_{it} \qquad (1)$$

for i = 1..N, t = 1...T, j= 1 ...k, where **e** is a binary election variable indicating if an election took place in province i during the year t; *x* is a vector of control variables that in our estimations include per capita Geographic Gross Product (GGP) and the growth rate of the Geographic Gross Product (GROWTH).

This specification represents a standard dynamic panel, where the dependent variable is a function of its own lagged levels, of set of controls (x_j), of the time when elections

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[1] Ratio of current expenditure relative to total public expenditure. The most important component of current expenditure are salaries of provincial public servants. On the other hand, construction is the most important item of capital expenditure.

[2] Provincial revenues from federal revenue sharing ("coparticipation federal") plus special (discretionary) transfers from federal government ("Aportes del Tesoro Nacional" – ATN).

take place and of a specific effect per province (η_i). The term ε_{it} is a random error that is assumed iid.

Assuming that the unobserved province-specific effects are identical across provinces, that the error term is not serially correlated, and that the explanatory variables are strictly exogenous then it is possible to estimate this relation consistently through OLS. However, these assumptions may not hold in the panel, particularly the assumption of equality of the unobservable effects per province. This being so, then OLS estimates are inconsistent since the lagged dependent variable is correlated to the error term $w_{i,t} = \eta_i + \varepsilon_{it}$.

It is possible to control the specific effects using the panel data Fixed Effects (FE) estimator. However, the transformed error term will still be correlated with the lagged dependent variable. The bias will depend on T (the length of the panel); and provided T tends to infinite, the FE estimator of the coefficients will be consistent.

Considering these problems, the Generalized Method of Moments (GMM) designed for dynamic models by Arellano and Bond (1991) is performed in the estimations. The Arellano-Bond strategy consists in the differentiation of the equations to eliminate the specific effects and solve the inconsistency using the lagged values of the dependent variable as instruments. Assuming the error term is not serially correlated, the dependent variable lagged two periods or more constitute valid instruments for the new dependent variable in differences. Likewise, the same can be said for the control variables.

It will be assumed in our particular case, that the vector from variables x_{jit} is slightly exogenous or predetermined; that is to say, it is not correlated with future realizations of the error term. The elections variable will be considered strictly exogenous.

Estimates are performed using three methods: OLS, Fixed Effects and GMM Arellano-Bond for dynamic panel data. The GMM method seems to be preferable due to the characteristics previously mentioned. Nevertheless, since it makes use of the lagged values of the variables as instruments, the set of observations available is smaller. For this reason and for comparative purposes, results from the three methods are reported.

The political cycle is modeled including the binary variable ELE that assumes value 1 in election years, and 0 in the rest of the years.

As usual in the empirical literature, the variable PBC (Political Budget Cycle) is also used, taking value 1 during the election year, -1 in the following year and 0 in the remaining ones. This variable imposes the restriction that the pre-electoral increase in spending or deficit is equivalent in magnitude to the posterior contraction.

Additionally, we also run the non-restricted regressions with the election dummy ELE and the post election dummy ELE+1, and test the validity of the restriction imposed by the use of PBC.

Our analysis includes six fiscal outcomes as dependent variables to test the electoral manipulation, its origins and consequences:

- Ratio of provincial budget balance to GGP (DEF)

- Ratio of total public expenditure to GGP (TE)

- Current public expenditure relative to total public expenditure (CE)

- Total provincial revenue relative to GGP (TR)

- Revenue from provincial taxes relative to GGP (PTR)

- Provincial revenues from federal revenue sharing, plus transfers from federal government relative to GGP (FR).

Two basic controls will be included in the regressions: the

- Per capita geographic gross product (GGP)

- GGP Growth rate (GROWTH).

V. Unconditional Budget Cycles

This section presents the empirical analysis of electoral cycles in fiscal variables, focusing on the provincial budget surplus, expenditures and revenues. We first present the unconditional results of elections over the fiscal variables. We then look at the conditional results, controlling for the alignment between the provincial and federal executives.

A. Budget Balance

Table 3 shows the main unconditional results with respect to the provincial budget balance (deficit); that is equation (1) including the election dummies ELE and PBC and using as controls the GGP and the growth of GGP per capita[3].

     <please see Table 3>

 In the columns 1 to 3, with the three different estimation methods, ELE has the expected negative sign, although is not statistically significant in any case.

In columns 4, 5 and 6 the results are obtained making use of the variable PBC as a regressor for the elections. In this case, the coefficients estimated by OLS, Fixed Effects (FE) and GMM are significantly negative, suggesting that the level of electoral cycle –defined as the increase in deficit during the election year and the contraction in the following- is approximately 0.6% of GGP. For GMM estimation the Sargan test is reported, where the null hypothesis is that the instrumental variables are uncorrelated with the residuals. In addition, the serial correlation test is presented,

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[3] Full econometric estimation results presented in the Data Appendix.

where the null hypothesis is the absence of second order serial correlation in the first-difference residuals. Estimates satisfy both tests (no rejection of null hypothesis).

The PBC variable is meant to capture both pre and post-electoral effects. However as Persson and Tabellini (2002) remark, pre and post electoral effects may differ, so we check if the restriction that the coefficient estimate of ELE is equal to the coefficient estimate of minus ELE in *t+1,* is not rejected by the data. Estimate results are presented in Table 4.

\<please see Table 4\>

Table 4 shows that the electoral dummy ELE is non significant and the post electoral dummy ELE+1 is positive and significant. In all estimates, the F test soundly rejects the restriction imposed by the PBC variable, that the post-electoral contraction in the budget surplus as a percentage of GGP is of the same size as the pre-electoral expansion. We can interpret the results as follows: a) there is no evidence of surplus falling in election periods, b) the restriction that surplus falls below its trend, and then jumps above it, is not supported by the data and, c) the significant effect of PBC is driven by the jump of surplus in post electoral periods.

B. Expenditures: Total and Composition

Tables 5 and 6 show the effects of the electoral cycle over total public expenditure in the provinces, measured as a proportion of GGP.

\<please see Table 5 and Table 6\>

In the OLS and GMM regressions, the coefficients are positive and significant for ELE, with a value indicating that the expenditure over GGP increases approximately one percentage point during the year of elections. We found a short run cycle in spending, approximately of 0.6-0.8 percentage points of GGP, in the OLS, FE and GMM regressions with PBC as explanatory variable.

Results in Table 6 also suggest that the PBC significance is due to reductions in expenditure in the post election years, and the F tests does not reject the null hypothesis of equality between ELE and -ELE+1.

Tables 7 and 8 shows the estimates performed to evaluate the "composition effect" in provincial expenditure around elections.

<please see Table 7 and Table 8>

The dependent variable CE represents the expenditure in consumption goods as a proportion of total provincial expenditure. None of the estimates present statistically significant results to provide evidence supporting the hypothesis of a shift in spending towards consumption goods or investment goods in election years. The case of the PBC shows similar results, even though the coefficient estimated by GMM shows some evidence of a slight bias towards capital goods in electoral years and towards consumption goods in post electoral years.

C. Revenues: Total, Federal and Provincial

To track the possible changes in fiscal revenues around elections Tables 9, 10, 11, 12, 13 and 14 present the estimates considering as dependent variables total provincial revenue (TR) and its components: revenue from federal sources (FR), that includes federal tax sharing and other federal transfers (mostly discretionary) and revenue from provincial taxes (PTR).

<please see Tables 9, 10, 11, 12, 13 and 14 >

Tables 9 to 12 show the results with total revenue (TR) and federal revenue (FR) as dependant variables. The electoral years are related to a significant tendency of revenues to go up, explained by the increase in federal revenue, and is important to note that federal revenue is 90% of total provincial revenues.

The PBC variable is non significant in all regressions, so there is no evidence of cycles around elections. The most significant effect is the revenue increase in election years, and the discretional transfers from the federal government could explain that. The federal tax sharing is mostly determined by fixed coefficients and cannot be easily manipulated.

Results in Tables 13 and 14 show non significant manipulations in provincial taxes; in all regressions revenue from this source is not sensitive to the election and PBC dummy variables. This seems reasonable, because in most provinces local taxes are a very small part of total revenues. Changes (reductions) in this variable may have a non relevant effect over the voter's perceptions about competency of the incumbent, reducing his incentives to engage in electoral manipulations over provincial taxes.

VI. Conditional Findings: Political Alignment Between Provincial and Federal Executives

The results reported in the previous section suggest that there are some systematic increase in expenditures and federal revenues in electoral years, but no electoral or cyclical effects were detected over the budget balance. Decisions over spending are clearly taken at provincial level, but the federal revenues are not a decision variable for the provincial executive. If this is so, how can the provincial executive manipulate at the same time expenditures and federal revenues? What can explain this pattern?

In this section, we will focus on explaining these facts, looking for differences in the behavior of incumbents conditioning for the political alignment between the provincial and federal executive. Our conjecture is that when both executives are members of the same political party (political alignment), the more probable the federal executive increases the discretional transfers to the province, allowing the

provincial executive to increase spending without significant effects over the budget balance.

When both executives (provincial and federal) are not aligned, and with an aligned candidate running for the provincial election, the federal government is not interested in increasing the discretional transfers to the incumbent. On the contrary, probably the federal government can reduce the transfers, rending spending manipulations more difficult to the provincial executive and inducing budget deficits.

We then look at the sensitivity of the previous results when conditioned to political alignment between provincial and federal executives. The conditional election variables ELE_UNAL, ELE_AL and the conditional cycle variables PBC_UNAL, PBC_AL are now included in the regressions to estimate the differential effect of political alignment.

A. Budget Balance

Table 15 presents the results with the budget balance as the dependent variable.

<please see Table 15>

In columns 1 to 3 the coefficients estimates for the conditional election variable are presented. The coefficients associated to the unaligned provinces are all negative and significant at 10% in OLS and GMM regressions and marginally significant (11%) in FE. The election year has no significant effect over fiscal balance in aligned provinces.

The regression results indicates that while the election increases the deficit between 0.8 to 1.0 percentage points in unaligned provinces, the election effect is not relevant in aligned provinces.

The conditional PBC coefficient estimates, columns 4 to 6, result in all cases negative and significant for aligned and unaligned provinces. These results are driven mostly by an increase in budget surplus in post electoral years in both aligned an unaligned provinces, and are consistent with those obtained in the unconditional regressions.

B. Expenditures: Total and Composition

Table 16 shows the effects of the conditional electoral variables over total public expenditure.

<please see Table 16>

Results in columns 1 to 3 show that in electoral years, when the province is politically aligned with federal government spending rises significantly. Depending on estimation method, the increasing in spending ranges between 0.8 to 1.4 percentage points of GGP. For unaligned provinces the estimates are non-significant in all regressions.

The estimated coefficients for the conditional PBC variable are significant, but the effect is driven, as in the unconditional estimates, by the spending contraction in the post electoral period in both, aligned and unaligned provinces (see Tables 2A and 2B).

Regarding the composition of expenditures, Table 17, in columns 1 to 3, shows a positive and significant increase in current spending in electoral years for unaligned provinces. However, there are no significant effects over spending composition in aligned provinces.

<please see Table 17>

The coefficients associated to the conditional cycle variable, in columns 4 to 6, are non significant in all specifications.

These results suggest that an important shift happens in the expenditure composition towards current goods in unaligned provinces during electoral years. The magnitude of the shift is approximately 1.9 percentage points of total expenditure, reassigned from investment to consumption goods.

C. Revenues: Total, Federal and Provincial

Tables 18, 19 and 20 present the conditional estimates considering as dependent variables the total provincial revenue (TR), revenue from federal source (FR) and revenue from provincial taxes (PTR).

<please see Tables 18, 19 and 20 >

There is a strong positive relationship between elections in aligned provinces and federal revenues in the data, independent of the estimation technique. In politically aligned provinces, a positive and significant effect over revenues is present in electoral years, explained by the increase in discretional federal revenues. The magnitude of the effect is important, from 0.8 to 1.6 percentage points of GGP of increase in federal revenues depending on the estimation technique.

By contrast, for the conditional election dummy in unaligned provinces, the estimated coefficients are non significant in all cases.

The conditional cycle dummy is non significant in all regressions, suggesting that there is no evidence of cycles around elections, independently of political alignment.

Results in Table 20 are similar to those obtained in the unconditional regressions. For aligned or unaligned provinces, in all regressions revenue from provincial taxes is not sensitive to the election dummy or the PBC dummy.

To sum up, the findings reported above fit the conjectures about the behavior of federal and provincial governments considering the political alignment. If the

provincial executive is aligned with the federal government, the discretional transfers from this source are bigger in electoral years, and the provincial incumbent is able to increase the total expenditures proportionally, without increasing the fiscal deficit. Our empirical results show that discretional transfers from the federal governments allows the provincial incumbent to increase the spending in 0.8 – 1.4 percentage points of GGP.

On the other side, if the provincial executive is unaligned, the federal transfers remain approximately constant. With constant revenues from provincial taxes, if the incumbent increases the spending he also increases the fiscal deficit, but in this case he is constrained by the borrowing alternatives. The other alternative action available to the incumbent is to change the expenditure composition, from investment goods to more visible consumption goods. Our empirical results suggest that this last alternative appears to be the more relevant discretional decision for unaligned provincial executives. Estimates show that the redirection of spending toward consumption goods in electoral years is about 1.9 percentage points of total expenditure for unaligned provinces.

VII. Conclusions

This paper presents empirical evidence of systematic effects in fiscal balance, public expenditures and revenues in Argentine provinces as a function of elections and political alignment. Our findings are consistent with the predictions of the theoretical literature on rational opportunist political cycles: there are fiscal policy manipulations during elections, and there is a strengthening of the policies after elections.

The data also reveals that there are important systematic differences between provinces in the size and composition of the electoral manipulations, depending on

the political alignment with the federal executive. Specifically, the political alignment between provincial and federal executives implies more discretional transfer of federal revenues[4] and increases the election induced provincial spending without increasing the fiscal deficit. Politically unaligned provinces are constrained by constant federal transfers and fiscal deficits are more frequent in election years. In addition, an important spending switch from capital goods to consumption goods is present in election years for unaligned provinces.

Finally, we believe that our conditional findings fit the predictions of the theoretical models of opportunistic rational behavior and reveals that the institutional and political features are important issues to explain the electoral motivated policy cycles. It is highly likely that further work in the identification of institutional control variables as the effective division of powers and institutional development of the provinces could contribute to study the quantitative effects of electoral cycles more in depth.

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[4] A similar result is reported in the Rumi (2008) study

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Appendix

Table 1: Definition of Variables

Dependent Variables (fiscal variables). (All values expressed in constant 1993 Argentine Pesos deflated by the combined prices index -wholesale-consumer- from INDEC)

DEF_{it}: Fiscal Balance [Deficit (-) Surplus (+)] divided by provincial GGP in province i year t

Source: MECON

TE_{it}: Total Public Expenditure divided by GGP from province I

in year t. Source: own elaboration based on Ministry of Economy (MECON)

CE_{it}: Current Expenditure divided by public total expenditure in province i in year t. Source: MECON

TR_{it} : Total Provincial Revenue divided by GGP in the province i in year t (includes revenue from provincial taxes, federal revenue sharing –"coparcicipación federal"- and other federal transfers –"aportes del tesoro"- Source: MECON

PTR_{it}: Revenue from Provincial Taxes divided by provincial GGP in province i in year t. Source: MECON

FR_{it} : Provincial revenues from federal revenue sharing ("coparticipation federal") plus transfers from federal government divided by provincial GGP in province i in year t. Source: MECON

Control Variables

GGP_{it} : Natural log of per capita Geographic Gross Product of province i during year t

Source: Mirabella (2002) and National Institute of Statistics and Census (INDEC)

$GROWTH_{it}$: GGP Growth rate in the province i between the year t and the t-1

Source: Mirabella (2002).

Election Variables

ELE_{it}: Election dummy. Binary variable that assumes value 1 if in province i elections were held during the year t and 0 otherwise.

Source: own elaboration based on "Guia Electoral".

$PBC_{i,t}$: Political Budget Cycle dummy. Variable assuming value 1 if $ELE_{i,t}$ is equal to 1; −1 if $ELE_{i,t-1}$ is equal to 1 and 0 otherwise. Source: own elaboration based on "Guia Electoral".

$ELE+1_{it}$: Post Election dummy. Binary variable that assumes value 1 if $ELE_{i,t-1}$ is equal to 1 and 0 otherwise. Source: own elaboration based on "Guia Electoral".

ELE_UNAL_{it}: Conditional Election dummy. Binary variable that assumes value 1 if in province i elections were held during the year t and the provincial and federal executive governments were unaligned (different political party), and 0 otherwise. Source: own elaboration based on "Guia Electoral".

ELE_AL_{it}: Conditional Election dummy. Binary variable that assumes value 1 if in province i elections were held during the year t and the provincial and federal executive governments were aligned (same political party), and 0 otherwise. Source: own elaboration based on "Guia Electoral".

PBC_UNAL_{it}: Conditional Political Budget dummy. Binary variable that assumes value 1 if ELE_UNAL_{it1} is equal to 1; -1 if $ELE\_UNAL_{i,t-1}$ is equal to 1 and 0 otherwise. Source: own elaboration based on "Guia Electoral".

PBC_AL_{it}: Conditional Political Budget dummy. Binary variable that assumes value 1 if ELE_AL_{it1} is equal to 1; -1 if $ELE\_AL_{i,t-1}$ is equal to 1 and 0 otherwise. Source: own elaboration based on "Guia Electoral".

Table 2: Fiscal Variables: Descriptive Statistics

	Mean	Std. Dev.	Min.	Max.	No. Obs
DEF	-0.022	0.031	-0.155	0.058	374
TE	0.237	0.123	0.052	0.812	374
CE	0.807	0.091	0.445	0.952	374
TR	0.215	0.113	0.046	0.825	374
PTR	0.028	0.014	0.004	0.121	374
FR	0.186	0.110	0.024	0.704	374

Table 3: Elections and Fiscal Balance

Equation Estimation Method	1 OLS	2 FIXED EFFECTS	3 GMM	4 OLS	5 FIXED EFFECTS	6 GMM
ELE	-0.0037 (-1.17)	-0.0031 (-0.91)	-0.0030 (-0.97)			
PBC				-0.0064 (-3.22)**	-0.0060 (-3.08)**	0.0062 (-3.33)**
F-test[a] p-value		2.07 0.0045			2.07 0.0045	
Sargan test[b] p-value			283.73 0.9994			285.22 0.9993
Serial Corr[c] p-value			-0.04 0.9677			0.210 0.8359
No.obs.	308	304	302	308	308	308
No. provinces	22	22	22	22	22	22
R^2 (adj.)	0.36			0.38		

Notes: Dependent variable DEF is ratio of government surplus to Geographic Gross Product (PBG). Estimated Regressions:

$$DEF_{it} = \alpha + \beta_1 DEF_{it-1} + \beta_2 DEF_{it-2} + \beta_3 DEF_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + +\gamma_3 ELE_{it} + \eta_i + \varepsilon_{it}$$

$$DEF_{it} = \alpha + \beta_1 DEF_{it-1} + \beta_2 DEF_{it-2} + \beta_3 DEF_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + +\gamma_3 PBC_{it} + \eta_i + \varepsilon_{it}$$

The coefficient estimates on the lagged dependent variables add up to a value less than unity. OLS imposes the restriction $\eta_{i} = \eta \ \forall$ i. t statistics reported in parentheses, calculated using heteroskedastic-consistent standard errors for OLS.

In GMM estimation (Arellano-Bond One Step) z statistics in parentheses. The election dummy variables are treated as strictly exogenous. Variables CREC and PBG are treated as predetermined and levels lagged one or more periods are used as instruments. Two lags of the dependent are included.

* significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level

(a) F-test is an F test of the null hypothesis that all province-specific effects in the FE-specification are equal. (b) P-values for rejecting the null hypothesis in test of the over identifying restrictions, asymptotically distributed as a χ^2 under the null hypothesis of instruments uncorrelated with the residuals. (c) P-values for rejecting the null hypothesis in test for second order serial correlation in the first-difference residuals, asymptotically distributed as N(0,1) under the null of no serial correlation.

Table 4: Elections and Fiscal Balance

Equation	1	2	3
Estimation Method	OLS	FIXED EFFECTS	GMM
ELE	0.0020	0.0023	0.0016
	(0.60)	(0.66)	(0.50)
ELE+1	0.0140	0.0135	0.0141
	(3.98)***	(4.07)***	(4.34)***
F-test: $ELE = -ELE+1$	8.27	7.71	8.78
p-value	0.0043	0.0059	0.0030
F-test[a]		2.11	
p-value		0.0036	
Sargan test[b]			277.02
p-value			0.9998
Serial Corr[c]			1.25
p-value			0.2131
No. obs.	308	308	308
No. provinces	22	22	22
R^2 (adj.)	0.40		

Notes: Dependent variable DEF is ratio of government surplus to Geographic Gross Product (PBG).
Estimated Regressions:

$$DEF_{it} = \alpha + \beta_1 DEF_{it-1} + \beta_2 DEF_{it-2} + \beta_3 DEF_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + \gamma_3 ELE_{it} + \eta_i + \varepsilon_{it}$$

$$DEF_{it} = \alpha + \beta_1 DEF_{it-1} + \beta_2 DEF_{it-2} + \beta_3 DEF_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + \gamma_3 PBC_{it} + \eta_i + \varepsilon_{it}$$

The coefficient estimates on the lagged dependent variables add up to a value less than unity. OLS imposes the restriction $\eta_i = \eta \; \forall \; i$. t statistics reported in parentheses, calculated using heteroskedastic-consistent standard errors for OLS.

In GMM estimation (Arellano-Bond One Step) z statistics in parentheses. The election dummy variables are treated as strictly exogenous. Variables CREC and PBG are treated as predetermined and levels lagged one or more periods are used as instruments. Two lags of the dependent are included.
* significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level
(a) F-test is an F test of the null hypothesis that all province-specific effects in the FE-specification are equal. (b) P-values for rejecting the null hypothesis in test of the over identifying restrictions, asymptotically distributed as a χ^2 under the null hypothesis of instruments uncorrelated with the residuals. (c) P-values for rejecting the null hypothesis in test for second order serial correlation in the first-difference residuals, asymptotically distributed as N(0,1) under the null of no serial correlation.

Table 5: Elections and Total Expenditure

Equation	1	2	3	4	5	6
Estimation Method	OLS	FIXED EFFECTS	GMM	OLS	FIXED EFF.	GMM
ELE	0.0115 (2.50)**	0.0057 (1.50)	0.0100 (2.34)***			
PBC				0.0082 (3.15)***	0.0057 (2.55)**	0.0074 (2.83)***
F-test[a] p-value		11.30 0.0000			11.47 0.0000	
Sargan test[b] p-value			254.35 1.0000			250.02 1.0000
Serial Corr.[c] p-value			1.00 0.3166			1.41 0.1600
No. obs.	308	308	308	308	308	308
No. provinces	22	22	22	22	22	22
R^2 (adj.)	0.90			0.90		

Notes: Dependent variable TE is the ratio of total provincial expenditure to Geographic Gross Product (PBG).

Estimated Regressions:

$$TE_{it} = \alpha + \beta_1 TE_{it-1} + \beta_2 TE_{it-2} + \beta_3 TE_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + \gamma_3 ELE_{it} + \eta_i + \varepsilon_{it}$$

$$TE_{it} = \alpha + \beta_1 TE_{it-1} + \beta_2 TE_{it-2} + \beta_3 TE_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + \gamma_3 PBC_{it} + \eta_i + \varepsilon_{it}$$

The coefficient estimates on the lagged dependent variables add up to a value less than unity. OLS imposes the restriction $\eta_i = \eta \ \forall \ i$. t statistics reported in parentheses, calculated using heteroskedastic-consistent standard errors for OLS.

In GMM estimation (Arellano-Bond One Step) z statistics in parentheses. The election dummy variables are treated as strictly exogenous. Variables CREC and PBG are treated as predetermined and levels lagged one or more periods are used as instruments. Two lags of the dependent variable are included.

* significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level

(a) F-test is an F test of the null hypothesis that all province-specific effects in the FE-specification are equal. (b) P-values for rejecting the null hypothesis in test of the over identifying restrictions, asymptotically distributed as a χ^2 under the null hypothesis of instruments uncorrelated with the residuals. (c) P-values for rejecting the null hypothesis in test for second order serial correlation in the first-difference residuals, asymptotically distributed as N(0,1) under the null of no serial correlation.

Table 6: Elections and Total Expenditure

Equation	1	2	3
Estimation Method	OLS	FIXED EFFECTS.	GMM
ELE	0.0086	0.0026	0.0074
	(1.63)	(0.64)	(1.59)
ELE+1	-0.0078	-0.0087	-0.0073
	(-1.44)	(-2.26)**	(-1.61)
F-test: *ELE =-ELE+1*	0.01	0.88	0.00
p-value	0.9271	0.3484	0.9961
F-test[a]		11.51	
p-value		0.0000	
Sargan test[b]			249.74
p-value			1.0000
Serial Corr[c]			1.42
p-value			0.1568
No. obs.	308	308	308
No. provinces	22	22	22
R^2 (adj.)	0.90		

Notes: Dependent variable TE is the ratio of total provincial expenditure to Geographic Gross Product (PBG).

Estimated Regressions:

$$TE_{it} = \alpha + \beta_1 TE_{it-1} + \beta_2 TE_{it-2} + \beta_3 TE_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + \gamma_3 ELE_{it} + \eta_i + \varepsilon_{it}$$

$$TE_{it} = \alpha + \beta_1 TE_{it-1} + \beta_2 TE_{it-2} + \beta_3 TE_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + \gamma_3 PBC_{it} + \eta_i + \varepsilon_{it}$$

The coefficient estimates on the lagged dependent variables add up to a value less than unity. OLS imposes the restriction $\eta_i = \eta \ \forall$ i. t statistics reported in parentheses, calculated using heteroskedastic-consistent standard errors for OLS.

In GMM estimation (Arellano-Bond One Step) z statistics in parentheses. The election dummy variables are treated as strictly exogenous. Variables CREC and PBG are treated as predetermined and levels lagged one or more periods are used as instruments. Two lags of the dependent variable are included.

* significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level

(a) F-test is an F test of the null hypothesis that all province-specific effects in the FE-specification are equal. (b) P-values for rejecting the null hypothesis in test of the over identifying restrictions, asymptotically distributed as a χ^2 under the null hypothesis of instruments uncorrelated with the residuals. (c) P-values for rejecting the null hypothesis in test for second order serial correlation in the first-difference residuals, asymptotically distributed as N(0,1) under the null of no serial correlation.

Table 7: Elections and Composition Effect

Equation	1	2	3	4	5	6
Estimation Method	OLS	FIXED EFFECTS	GMM	OLS	FIXED EFFECTS	GMM
ELE	0.0000	0.0014	-0.0058			
	(0.00)	(0.21)	(-0.90)			
PBC				-0.0039	-0.0025	-0.0066
				(-0.99)	(-0.65)	(-1.69)*
F-test[a]		2.18			2.16	
p-value		0.0025			0.0028	
Sargan test[b]			244.93			243.05
p-value			1.0000			1.0000
Serial Corr.[c]			-0.89			-0.52
p-value			0.3739			0.6014
No. obs.	308	308	308	308	308	308
No. provinces	22	22	22	22	22	22
R^2 (adj.)	0.60			0.60		

Notes: Dependent variable CE is the ratio of current expenditure to total provincial expenditure. Estimated Regressions:

$$CE_{it} = \alpha + \beta_1 CE_{it-1} + \beta_2 CE_{it-2} + \beta_3 CE_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + \gamma_3 ELE_{it} + \eta_i + \varepsilon_{it}$$

$$CE_{it} = \alpha + \beta_1 CE_{it-1} + \beta_2 CE_{it-2} + \beta_3 CE_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + \gamma_3 PBC_{it} + \eta_i + \varepsilon_{it}$$

The coefficient estimates on the lagged dependent variables add up to a value less than unity. OLS imposes the restriction $\eta_{i} = \eta \ \forall$ i. t statistics reported in parentheses, calculated using heteroskedastic-consistent standard errors for OLS.

In GMM estimation (Arellano-Bond One Step) z statistics in parentheses. The election dummy variables are treated as strictly exogenous. Variables CREC and PBG are treated as predetermined and levels lagged one or more periods are used as instruments. Two lags of the dependent variable are included.

* significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level

(a) F-test is an F test of the null hypothesis that all province-specific effects in the FE-specification are equal. (b) P-values for rejecting the null hypothesis in test of the over identifying restrictions, asymptotically distributed as a χ^2 under the null hypothesis of instruments uncorrelated with the residuals. (c) P-values for rejecting the null hypothesis in test for second order serial correlation in the first-difference residuals, asymptotically distributed as N(0,1) under the null of no serial correlation.

Table 8: Elections and Composition Effect

Equation	1	2	3
Estimation Method	OLS	FIXED EFFECTS	GMM
ELE	0.0039	0.0046	-0.0016
	(0.53)	(0.66)	(-0.23)
ELE+1	0.0108	0.0090	0.0112
	(1.64)	(1.37)	(1.67)*
F-test:	1.60	1.49	0.76
ELE =-ELE+1			
p-value	0.2073	0.2228	0.3831
F-test[a]		2.15	
p-value		0.0030	
Sargan test[b]			244.37
p-value			1.0000

Serial Corr[c]			-0.36
p-value			0.7182
No. obs.	308	308	308
No. provinces	22	22	22
R^2 (adj.)	0.58		

Notes: Dependent variable CE is the ratio of current expenditure to total provincial expenditure.
Estimated Regressions:

$$CE_{it} = \alpha + \beta_1 CE_{it-1} + \beta_2 CE_{it-2} + \beta_3 CE_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + +\gamma_3 ELE_{it} + \eta_i + \varepsilon_{it}$$

$$CE_{it} = \alpha + \beta_1 CE_{it-1} + \beta_2 CE_{it-2} + \beta_3 CE_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + +\gamma_3 PBC_{it} + \eta_i + \varepsilon_{it}$$

The coefficient estimates on the lagged dependent variables add up to a value less than unity. OLS imposes the restriction $\eta_{i} = \eta \ \forall$ i. t statistics reported in parentheses, calculated using heteroskedastic-consistent standard errors for OLS.

In GMM estimation (Arellano-Bond One Step) z statistics in parentheses. The election dummy variables are treated as strictly exogenous. Variables CREC and PBG are treated as predetermined and levels lagged one or more periods are used as instruments. Two lags of the dependent variable are included.

* significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level

(a) F-test is an F test of the null hypothesis that all province-specific effects in the FE-specification are equal. (b) P-values for rejecting the null hypothesis in test of the over identifying restrictions, asymptotically distributed as a χ^2 under the null hypothesis of instruments uncorrelated with the residuals. (c) P-values for rejecting the null hypothesis in test for second order serial correlation in the first-difference residuals, asymptotically distributed as N(0,1) under the null of no serial correlation.

Table 9: Elections and Total Revenue

Equation	1	2	3	4	5	6
Estimation Method	OLS	FIXED EFFECTS	GMM	OLS	FIXED EFFECTS	GMM
ELE	0.0111	0.0051	0.0095			
	(2.62)*	(1.59)	(2.44)**			
PBC				0.0025	0.0004	0.0019
				(0.90)	(0.21)	(0.83)
F-test[a]		17.19			17.41	
p-value		0.0000			0.0000	
Sargan test[b]			270.19			273.64
p-value			0.9999			0.9999
Serial Corr.[c]			1.25			0.98
p-value			0.2096			0.3289
No. obs.	308	308	308	308	308	308
No. provinces	22	22	22	22	22	22
R^2 (adj.)	0.89			0.89		

Notes: Dependent variable TR is the ratio of current expenditure to total provincial expenditure.
Estimated Regressions:

$$TR_{it} = \alpha + \beta_1 TR_{t-1} + \beta_2 TR_{it-2} + \beta_3 TR_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + +\gamma_3 ELE_{it} + \eta_i + \varepsilon_{it}$$

$$TR_{it} = \alpha + \beta_1 TR_{it-1} + \beta_2 TR_{it-2} + \beta_3 TR_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + +\gamma_3 PBC_{it} + \eta_i + \varepsilon_{it}$$

The coefficient estimates on the lagged dependent variables add up to a value less than unity. OLS imposes the restriction $\eta_{i} = \eta \; \forall$ i. t statistics reported in parentheses, calculated using heteroskedastic-consistent standard errors for OLS.

In GMM estimation (Arellano-Bond One Step) z statistics in parentheses. The election dummy variables are treated as strictly exogenous. Variables CREC and PBG are treated as predetermined and levels lagged one or more periods are used as instruments. Two lags of the dependent variable are included.

* significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level

(a) F-test is an F test of the null hypothesis that all province-specific effects in the FE-specification are equal. (b) P-values for rejecting the null hypothesis in test of the over identifying restrictions, asymptotically distributed as a χ^2 under the null hypothesis of instruments uncorrelated with the residuals. (c) P-values for rejecting the null hypothesis in test for second order serial correlation in the first-difference residuals, asymptotically distributed as N(0,1) under the null of no serial correlation.

Table 10: Elections and Total Revenue

Equation	1	2	3
Estimation Method	OLS	FIXED EFFECTS.	GMM
ELE	0.0138	0.0070	0.0125
	(2.91)***	(2.08)**	(3.05)***
ELE+1	0.0075	0.0055	0.0085
	(1.44)	(1.75)*	(2.07)**
F-test:	6..30	5.59	9.76
ELE =-ELE+1			
p-value	0.0126	00187	0.0018
F-test[a]		17.18	
p-value		0.0000	
Sargan test[b]			274.97
p-value			0.9999
Serial Corr[c]			1.00
p-value			0.3194
No. obs.	305	305	302
No. provinces	22	22	22
R^2 (adj.)	0.89		

Notes: Dependent variable TR is the ratio of current expenditure to total provincial expenditure.
Estimated Regressions:

$TR_{it} = \alpha + \beta_1 TR_{t-1} + \beta_2 TR_{it-2} + \beta_3 TR_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + +\gamma_3 ELE_{it} + \eta_i + \varepsilon_{it}$

$TR_{it} = \alpha + \beta_1 TR_{it-1} + \beta_2 TR_{it-2} + \beta_3 TR_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + +\gamma_3 PBC_{it} + \eta_i + \varepsilon_{it}$

The coefficient estimates on the lagged dependent variables add up to a value less than unity. OLS imposes the restriction $\eta_{i=}\eta \; \forall \; i$. t statistics reported in parentheses, calculated using heteroskedastic-consistent standard errors for OLS.

In GMM estimation (Arellano-Bond One Step) z statistics in parentheses. The election dummy variables are treated as strictly exogenous. Variables CREC and PBG are treated as predetermined and levels lagged one or more periods are used as instruments. Two lags of the dependent variable are included.

* significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level

(a) F-test is an F test of the null hypothesis that all province-specific effects in the FE-specification are equal. (b) P-values for rejecting the null hypothesis in test of the over identifying restrictions, asymptotically distributed as a χ^2 under the null hypothesis of instruments uncorrelated with the residuals. (c) P-values for rejecting the null hypothesis in test for second order serial correlation in the first-difference residuals, asymptotically distributed as N(0,1) under the null of no serial correlation.

Table 11: Elections and Revenue from Federal Government[5]

Equation	1	2	3	4	5	6
Estimation Method	OLS	FIXED EFFECTS	GMM	OLS	FIXED EFFECTS	GMM
ELE	0.0114 (2.89)***	0.0053 (1.74)*	0.0097 (2.73)***			
PBC				0.0028 (1.09)	0.0004 (0.23)	-0.0023 (1.06)
F-test[a] p-value		15.51 0.0000			15.76 0.0000	
Sargan test[b] p-value			254.86 1.0000			258.41 1.0000
Serial Corr.[c] p-value			1.49 0.1355			1.25 0.2115
No. obs.	308	308	308	308	308	308
No. provinces	22	22	22	22	22	22
R^2 (adj.)	0.90			0.90		

Notes: Dependent variable FR is the ratio of federal revenues to Gross Geographic Product (PBG).
Estimated Regressions:

$FR_{it} = \alpha + \beta_1 FR_{it-1} + \beta_2 FR_{it-2} + \beta_3 FR_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + +\gamma_3 ELE_{it} + \eta_i + \varepsilon_{FR}$

$FR_{it} = \alpha + \beta_1 FR_{it-1} + \beta_2 FR_{it-2} + \beta_3 FR_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + +\gamma_3 PBC_{it} + \eta_i + \varepsilon_{FR}$

The coefficient estimates on the lagged dependent variables add up to a value less than unity. OLS imposes the restriction $\eta_{i} = \eta \; \forall \; i$. t statistics reported in parentheses, calculated using heteroskedastic-consistent standard errors for OLS.

In GMM estimation (Arellano-Bond One Step) z statistics in parentheses. The election dummy variables are treated as strictly exogenous. Variables CREC and PBG are treated as predetermined and levels lagged one or more periods are used as instruments. Two lags of the dependent variable are included.

* significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level

(a) F-test is an F test of the null hypothesis that all province-specific effects in the FE-specification are equal. (b) P-values for rejecting the null hypothesis in test of the over identifying restrictions, asymptotically distributed as a χ^2 under the null hypothesis of instruments uncorrelated with the residuals. (c) P-values for rejecting the null hypothesis in test for second order serial correlation in the first-difference residuals, asymptotically distributed as N(0,1) under the null of no serial correlation.

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[5]Provincial revenues from revenue sharing ("coparticipation") plus (discretional) transfers from federal government (i.e."Aportes del Tesoro Nacional" – ATN).

Table 12: Elections and Revenue from Federal Government[6]

Equation Estimation Method	1 OLS	2 FIXED EFFECTS.	3 GMM
ELE	0.0138	0.0073	0.0124
	(3.25)***	(2.28)**	(3.33)***
ELE+1	0.0071	0.0057	0.0078
	(1.54)*	(1.92)*	(2.09)**
F-test: *ELE =-ELE+1*	8.03	6.69	10.92
p-value	0.0049	0.0102	0.0456
F-test[a]		15.55	
p-value		0.0000	
Sargan test[b]			258.52
p-value			1.0000
Serial Corr[c]			1.30
p-value			0.1944
No. obs.	308	308	308
No. provinces	22	22	22
R^2 (adj.)	0.91		

Notes: Dependent variable FR is the ratio of federal revenues to Gross Geographic Product (PBG).
Estimated Regressions:

$FR_{it} = \alpha + \beta_1 FR_{it-1} + \beta_2 FR_{it-2} + \beta_3 FR_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + \gamma_3 ELE_{it} + \gamma_4 ELE+1_{it} + \eta_i + \varepsilon_{it}$

$FR_{it} = \alpha + \beta_1 FR_{it-1} + \beta_2 FR_{it-2} + \beta_3 FR_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + \gamma_3 ELE_{it} + \eta_i + \varepsilon_{it}$

The coefficient estimates on the lagged dependent variables add up to a value less than unity. OLS imposes the restriction $\eta_{i} = \eta \ \forall \ i$. t statistics reported in parentheses, calculated using heteroskedastic-consistent standard errors for OLS.

In GMM estimation (Arellano-Bond One Step) z statistics in parentheses. The election dummy variables are treated as strictly exogenous. Variables CREC and PBG are treated as predetermined and levels lagged one or more periods are used as instruments. Two lags of the dependent variable are included.

* significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level

(a) F-test is an F test of the null hypothesis that all province-specific effects in the FE-specification are equal. (b) P-values for rejecting the null hypothesis in test of the over identifying restrictions, asymptotically distributed as a χ^2 under the null hypothesis of instruments uncorrelated with the residuals. (c) P-values for rejecting the null hypothesis in test for second order serial correlation in the first-difference residuals, asymptotically distributed as N(0,1) under the null of no serial correlation.

[6]Provincial revenues from revenue sharing ("coparticipation") plus (discretionary) transfers from federal government.

Table 13: Elections and Revenue from Provincial Taxes

Equation Estimation Method	1 OLS	2 FIXED EFFECTS	3 GMM	4 OLS	5 FIXED EFFECTS	6 GMM
ELE	0.0002 (0.23)	0.0002 (0.22)	0.0002 (0.23)			
PBC				-0.0002 (-0.55)	-0.0002 (-0.51)	-0.0003 (-0.70)
F-test[a] p-value		3.30 0.0000			3.30 0.0000	
Sargan test[b] p-value			338.55 0.8362			340.42 0.8476
Serial Corr.[c] p-value			0.26 0.7969			-0.09 0.9280
No. obs.	308	308	308	308	308	308
No.° provinces	22	22	22	22	22	22
R^2 (adj.)	0.84			0.84		

Notes: Dependent variable PTR is the ratio of provincial revenues to Geographic Gross Product (PBG). Estimated Regressions:

$$PTR_{it} = \alpha + \beta_1 PTR_{it-1} + \beta_2 PTR_{it-2} + \beta_3 PTR_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + \gamma_3 ELE_{it} + \eta_i + \varepsilon_{it}$$

$$PTR_{it} = \alpha + \beta_1 PTR_{it-1} + \beta_2 PTR_{it-2} + \beta_3 PTR_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + \gamma_3 PBC_{it} + \eta_i + \varepsilon_{it}$$

The coefficient estimates on the lagged dependent variables add up to a value less than unity. OLS imposes the restriction $\eta_i = \eta \, \forall \, i$. t statistics reported in parentheses, calculated using heteroskedastic-consistent standard errors for OLS.

In GMM estimation (Arellano-Bond One Step) z statistics in parentheses. The election dummy variables are treated as strictly exogenous. Variables CREC and PBG are treated as predetermined and levels lagged one or more periods are used as instruments. Two lags of the dependent variable are included.

* significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level

(a) F-test is an F test of the null hypothesis that all province-specific effects in the FE-specification are equal. (b) P-values for rejecting the null hypothesis in test of the over identifying restrictions, asymptotically distributed as a χ^2 under the null hypothesis of instruments uncorrelated with the residuals. (c) P-values for rejecting the null hypothesis in test for second order serial correlation in the first-difference residuals, asymptotically distributed as N(0,1) under the null of no serial correlation.

Table 14: Elections and Revenue from Provincial Taxes

Equation	1	2	3
Estimation Method	OLS	FIXED EFFECTS.	GMM
ELE	0.0005	0.0004	0.0005
	(0.66)	(0.56)	(0.66)
ELE+1	0.0009	0.0008	0.0011
	(1.10)	(1.12)	(1.51)
F-test: $ELE = -ELE+1$	1.30	1.049	1.78
p-value	0.2559	0.3083	0.1823
F-test[a]		3.28	
p-value		0.0000	
Sargan test[b]			344.69
p-value			0.7708
Serial Corr[c]			-0.13
p-value			0.8958
No. obs.	304	304	302
No. provinces	22	22	22
R^2 (adj.)	0.84		

Notes: Dependent variable PTR is the ratio of provincial revenues to Geographic Gross Product (PBG). Estimated Regressions:

$$PTR_{it} = \alpha + \beta_1 PTR_{it-1} + \beta_2 PTR_{it-2} + \beta_3 PTR_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + + \gamma_3 ELE_{it} + \eta_i + \varepsilon_{it}$$

$$PTR_{it} = \alpha + \beta_1 PTR_{it-1} + \beta_2 PTR_{it-2} + \beta_3 PTR_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + + \gamma_3 PBC_{it} + \eta_i + \varepsilon_{it}$$

The coefficient estimates on the lagged dependent variables add up to a value less than unity. OLS imposes the restriction $\eta_{i=}\eta \ \forall$ i. t statistics reported in parentheses, calculated using heteroskedastic-consistent standard errors for OLS.

In GMM estimation (Arellano-Bond One Step) z statistics in parentheses. The election dummy variables are treated as strictly exogenous. Variables CREC and PBG are treated as predetermined and levels lagged one or more periods are used as instruments. Two lags of the dependent variable are included.

* significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level

(a) F-test is an F test of the null hypothesis that all province-specific effects in the FE-specification are equal. (b) P-values for rejecting the null hypothesis in test of the over identifying restrictions, asymptotically distributed as a χ^2 under the null hypothesis of instruments uncorrelated with the residuals. (c) P-values for rejecting the null hypothesis in test for second order serial correlation in the first-difference residuals, asymptotically distributed as $N(0,1)$ under the null of no serial correlation.

Table 15: Elections and Fiscal Balance conditional on alignment of provincial and federal government

Equation	1	2	3	4	5	6
Estimation Method	OLS	FIXED EFFECTS.	GMM	OLS	FIXED EFF.	GMM
ELE_UNAL	-0.0106	-0.0091	-0.0084			
	(-1.93)*	(-1.61)	(-1.80)*			
ELE_AL	-0.0003	-0.0002	0.0003			
	(-0.09)	(-0.04)	(0.09)			
PBC_UNAL				-0.0085	-0.0079	-0.0091
				(-2.34)**	(-2.51)**	(-3.19)***
PBC_AL				-0.0052	-0.0048	-0.0043
				(-2.31)**	(-1.97)*	(-1.82)*
F-test[a]		2.03			2.07	
p-value		0.0056			0.0045	
Sargan test[b]			283.40			284.92
p-value			0.9994			0.9993
Serial Corr[c]			-0.19			0.10
p-value			0.8472			0.9165
No. obs.	308	304	302	308	308	308
No. provinces	22	22	22	22	22	22
R^2 (adj.)	0.37			0.38		

Notes: Dependent variable DEF is ratio of government surplus to Geographic Gross Product (PBG).
Estimated Regressions:

$$DEF_{it} = \alpha + \beta_1 DEF_{it-1} + \beta_2 DEF_{it-2} + \beta_3 DEF_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + +\gamma_3 ELE_{it} + \eta_i + \varepsilon_{it}$$
$$DEF_{it} = \alpha + \beta_1 DEF_{it-1} + \beta_2 DEF_{it-2} + \beta_3 DEF_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + +\gamma_3 PBC_{it} + \eta_i + \varepsilon_{it}$$

The coefficient estimates on the lagged dependent variables add up to a value less than unity. OLS imposes the restriction $\eta_{i=}\eta \, \forall \, i$. t statistics reported in parentheses, calculated using heteroskedastic-consistent standard errors for OLS.

In GMM estimation (Arellano-Bond One Step) z statistics in parentheses. The election dummy variables are treated as strictly exogenous. Variables CREC and PBG are treated as predetermined and levels lagged one or more periods are used as instruments. Two lags of the dependent are included.

* significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level

(a) F-test is an F test of the null hypothesis that all province-specific effects in the FE-specification are equal. (b) P-values for rejecting the null hypothesis in test of the over identifying restrictions, asymptotically distributed as a χ^2 under the null hypothesis of instruments uncorrelated with the residuals. (c) P-values for rejecting the null hypothesis in test for second order serial correlation in the first-difference residuals, asymptotically distributed as N(0,1) under the null of no serial correlation.

Table 16: Elections and Total Expenditure conditional on alignment of provincial and federal government

Equation	1	2	3	4	5	6
Estimation Method	OLS	FIXED EFFECTS.	GMM	OLS	FIXED EFF.	GMM
ELE_UNAL	0.0062	0.0005	0.0015			
	(0.70)	(0.07)	(0.28)			
ELE_AL	0.0140	0.0082	0.0101			
	(3.05)***	(1.81)*	(2.59)***			
PBC_UNAL				0.0107	0.0073	0.0034
				(2.10)**	(1.99)**	(1.05)
PBC_AL				0.0068	0.0049	0.0045
				(2.31)**	(1.74)*	(1.87)*
F-test[a]		11.29			11.42	
p-value		0.0000			0.0000	
Sargan test[b]			354.41			350.88
p-value			0.5287			0.5813
Serial Corr[c]			-0.61			-0.59
p-value			0.5406			0.5567
No. obs.	308	308	286	308	308	286
No. provinces	22	22	22	22	22	22
R^2 (adj.)	0.90			0.90		

Notes: Dependent variable TE is ratio of total provincial expenditure to Geographic Gross Product (PBG).
Estimated Regressions:

$$TE_{it} = \alpha + \beta_1 TE_{it-1} + \beta_2 TE_{it-2} + \beta_3 TE_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + \gamma_3 ELE_{it} + \eta_i + \varepsilon_{it}$$

$$TE_{it} = \alpha + \beta_1 TE_{it-1} + \beta_2 TE_{it-2} + \beta_3 TE_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + \gamma_3 PBC_{it} + \eta_i + \varepsilon_{it}$$

The coefficient estimates on the lagged dependent variables add up to a value less than unity. OLS imposes the restriction $\eta_{i=}\eta \ \forall$ i. t statistics reported in parentheses, calculated using heteroskedastic-consistent standard errors for OLS.
In GMM estimation (Arellano-Bond One Step) z statistics in parentheses. The election dummy variables are treated as strictly exogenous. Variables CREC and PBG are treated as predetermined and levels lagged two or more periods are used as instruments. One lag of the dependent variable is included.
* significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level
(a) F-test is an F test of the null hypothesis that all province-specific effects in the FE-specification are equal. (b) P-values for rejecting the null hypothesis in test of the over identifying restrictions, asymptotically distributed as a χ^2 under the null hypothesis of instruments uncorrelated with the residuals. (c) P-values for rejecting the null hypothesis in test for second order serial correlation in the first-difference residuals, asymptotically distributed as N(0,1) under the null of no serial correlation.

Table 17: Elections and Composition Effect conditional on alignment of provincial and federal government

Equation Estimation Method	1 OLS	2 FIXED EFFECTS.	3 GMM	4 OLS	5 FIXED EFF.	6 GMM
ELE_UNAL	0.0190	0.0195	0.0198			
	(1.85)*	(1.76)*	(1.82)*			
ELE_AL	-0.0092	-0.0072	-0.0084			
	(-1.16)	(-0.92)	(-1.12)			
PBC_UNAL				0.0012	0.0031	0.0012
				(0.20)	(0.49)	(0.20)
PBC_AL				-0.0068	-0.0058	-0.0073
				(-1.41)**	(-1.19)	(-1.57)
F-test[a]		2.14			2.17	
p-value		0.0030			0.0026	
Sargan test[b]			235.44			230.71
p-value			1.0000			1.0000
Serial Corr[c]			-0.09			0.01
p-value			0.9250			0.9897
No. obs.	308	308	286	308	308	286
No. provinces	22	22	22	22	22	22
R^2 (adj.)	0.60			0.60		

Notes: Dependent variable CE is the ratio of current expenditure to total provincial expenditure.
Estimated Regressions:

$$CE_{it} = \alpha + \beta_1 CE_{it-1} + \beta_2 CE_{it-2} + \beta_3 CE_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + + \gamma_3 ELE_{it} + \eta_i + \varepsilon_{it}$$
$$CE_{it} = \alpha + \beta_1 CE_{it-1} + \beta_2 CE_{it-2} + \beta_3 CE_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + + \gamma_3 PBC_{it} + \eta_i + \varepsilon_{it}$$

The coefficient estimates on the lagged dependent variables add up to a value less than unity. OLS imposes the restriction $\eta_{i=} \eta \; \forall \; i$, t statistics reported in parentheses, calculated using heteroskedastic-consistent standard errors for OLS.

In GMM estimation (Arellano-Bond One Step) z statistics in parentheses. The election dummy variables are treated as strictly exogenous. Variables CREC and PBG are treated as predetermined and levels lagged two or more periods are used as instruments. One lag of the dependent variable is included.

* significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level

(a) F-test is an F test of the null hypothesis that all province-specific effects in the FE-specification are equal. (b) P-values for rejecting the null hypothesis in test of the over identifying restrictions, asymptotically distributed as a χ^2 under the null hypothesis of instruments uncorrelated with the residuals. (c) P-values for rejecting the null hypothesis in test for second order serial correlation in the first-difference residuals, asymptotically distributed as N(0,1) under the null of no serial correlation.

Table 18: Elections and Total Revenue conditional on alignment of provincial and federal government

Equation Estimation Method	1 OLS	2 FIXED EFFECTS.	3 GMM	4 OLS	5 FIXED EFF.	6 GMM
ELE_UNAL	0.0005	-0.0067	-0.0061			
	(0.08)	(-1.25)	(-1.20)			
ELE_AL	0.0162	0.0108	0.0090			
	(3.37)***	(-2.85)***	(2.57)*			
PBC_UNAL				-0.00005	-0.0014	-0.0057
				(-0.01)	(-0.46)	(-1.96)*
PBC_AL				0.0039	0.0014	-0.0003
				(1.16)	(0.62)	(-0.15)
F-test[a]		17.60			17.36	
p-value		0.0000			0.0000	
Sargan test[b]			364.10			373.00
p-value			0.3863			0.2693
Serial Corr[c]			-0.75			-1.09
p-value			0.4523			0.2770
No. obs.	308	308	286	308	308	286
No. provinces	22	22	22	22	22	22
R^2 (adj.)	0.89			0.89		

Notes: Dependent variable TR is the ratio of current expenditure to total provincial expenditure.
Estimated Regressions:

$$TR_{it} = \alpha + \beta_1 TR_{t-1} + \beta_2 TR_{it-2} + \beta_3 TR_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + +\gamma_3 ELE_{it} + \eta_i + \varepsilon_{it}$$

$$TR_{it} = \alpha + \beta_1 TR_{it-1} + \beta_2 TR_{it-2} + \beta_3 TR_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + +\gamma_3 PBC_{it} + \eta_i + \varepsilon_{it}$$

The coefficient estimates on the lagged dependent variables add up to a value less than unity. OLS imposes the restriction $\eta_{i =} \eta \; \forall \; i$, t statistics reported in parentheses, calculated using heteroskedastic-consistent standard errors for OLS.

In GMM estimation (Arellano-Bond One Step) z statistics in parentheses. The election dummy variables are treated as strictly exogenous. Variables CREC and PBG are treated as predetermined and levels lagged two or more periods are used as instruments. One lag of the dependent variable is included.

* significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level

(a) F-test is an F test of the null hypothesis that all province-specific effects in the FE-specification are equal. (b) P-values for rejecting the null hypothesis in test of the over identifying restrictions, asymptotically distributed as a χ^2 under the null hypothesis of instruments uncorrelated with the residuals. (c) P-values for rejecting the null hypothesis in test for second order serial correlation in the first-difference residuals, asymptotically distributed as N(0,1) under the null of no serial correlation.

Table 19: Elections and Revenue from Federal Government[7] conditional on alignment of provincial and federal government

Equation Estimation Method	1 OLS	2 FIXED EFFECTS.	3 GMM	4 OLS	5 FIXED EFF.	6 GMM
ELE_UNAL	0.0007	-0.0066	-0.0064			
	(0.11)	(-1.30)	(-1.35)			
ELE_AL	0.0166	0.0110	0.0082			
	(3.66)***	(3.07)***	(2.49)**			
PBC_UNAL				0.0003	-0.0014	-0.0051
				(0.08)	(-0.50)	(-1.88)*
PBC_AL				0.0042	0.0015	-0.0004
				(1.30)	(0.68)	(-0.21)
F-test[a]		15.94			15.72	
p-value		0.0000			0.0000	
Sargan test[b]			346.63			353.74
p-value			0.6431			0.5387
Serial Corr[c]			-0.36			-0.58
p-value			0.7156			0.5629
No. obs.	308	308	286	308	308	286
No. provinces	22	22	22	22	22	22
R^2 (adj.)	0.91			0.90		

Notes: Dependent variable FR is the ratio of federal revenues to Gross Geographic Product (PBG).
Estimated Regressions:

$FR_{it} = \alpha + \beta_1 FR_{it-1} + \beta_2 FR_{it-2} + \beta_3 FR_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + \gamma_3 ELE_{it} + \gamma_4 ELE+1_{it} + \eta_i + \varepsilon_{it}$

$FR_{it} = \alpha + \beta_1 FR_{it-1} + \beta_2 FR_{it-2} + \beta_3 FR_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + \gamma_3 ELE_{it} + \eta_i + \varepsilon_{it}$

The coefficient estimates on the lagged dependent variables add up to a value less than unity. OLS imposes the restriction $\eta_{i} = \eta \ \forall \ i$. t statistics reported in parentheses, calculated using heteroskedastic-consistent standard errors for OLS.

In GMM estimation (Arellano-Bond One Step) z statistics in parentheses. The election dummy variables are treated as strictly exogenous. Variables CREC and PBG are treated as predetermined and levels lagged two or more periods are used as instruments. One lag of the dependent variable is included.

* significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level

(a) F-test is an F test of the null hypothesis that all province-specific effects in the FE-specification are equal. (b) P-values for rejecting the null hypothesis in test of the over identifying restrictions, asymptotically distributed as a χ^2 under the null hypothesis of instruments uncorrelated with the residuals. (c) P-values for rejecting the null hypothesis in test for second order serial correlation in the first-difference residuals, asymptotically distributed as N(0,1) under the null of no serial correlation.

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[7] Provincial revenues from revenue sharing ("coparticipation") plus special (discretional) transfers from federal government.

Table 20: Elections and Revenue from Provincial Taxes conditional on alignment of provincial and federal government

Equation Estimation Method	1 OLS	2 FIXED EFFECTS.	3 GMM	4 OLS	5 FIXED EFF.	6 GMM
ELE_UNAL	0.0003	0.0001	0.0008			
	(0.29)	(0.13)	(0.82)			
ELE_AL	0.0001	0.0001	-0.0002			
	(0.14)	(0.19)	(-0.34)			
PBC_UNAL				0.0000	0.0000	0.0000
				(0.00)	(0.04)	(0.15)
PBC_AL				-0.0004	0.0003	-0.0005
				(-0.98)	(-0.68)	(-1.05)
F-test[a]		3.29			3.28	
p-value		0.0000			0.0000	
Sargan test[b]			337.35			338.36
p-value			0.8475			0.8380
Serial Corr[c]			0.33			-0.02
p-value			0.7379			0.9852
N° obs.	308	308	308	308	308	308
N° provinces	22	22	22	22	22	22
R^2 (adj.)	0.84			0.84		

Notes: Dependent variable PTR is the ratio of provincial revenues to Geographic Gross Product (PBG).
Estimated Regressions:

$$PTR_{it} = \alpha + \beta_1 PTR_{it-1} + \beta_2 PTR_{it-2} + \beta_3 PTR_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + +\gamma_3 ELE_{it} + \eta_i + \varepsilon_{it}$$
$$PTR_{it} = \alpha + \beta_1 PTR_{it-1} + \beta_2 PTR_{it-2} + \beta_3 PTR_{it-3} + \gamma_1 PBG_{it} + \gamma_2 CREC_{it} + +\gamma_3 PBC_{it} + \eta_i + \varepsilon_{it}$$

The coefficient estimates on the lagged dependent variables add up to a value less than unity. OLS imposes the restriction $\eta_{i=}\eta \ \forall$ i. t statistics reported in parentheses, calculated using heteroskedastic-consistent standard errors for OLS.

In GMM estimation (Arellano-Bond One Step) z statistics in parentheses. The election dummy variables are treated as strictly exogenous. Variables CREC and PBG are treated as predetermined and levels lagged one or more periods are used as instruments. Two lags of the dependent variable are included.

* significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level

(a) F-test is an F test of the null hypothesis that all province-specific effects in the FE-specification are equal. (b) P-values for rejecting the null hypothesis in test of the over identifying restrictions, asymptotically distributed as a χ^2 under the null hypothesis of instruments uncorrelated with the residuals. (c) P-values for rejecting the null hypothesis in test for second order serial correlation in the first-difference residuals, asymptotically distributed as N(0,1) under the null of no serial correlation.