Do Changes in Democracy Affect the Political Budget Cycle? Evidence from Mexico

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Abstract

The previous empirical literature in opportunistic election cycles attempts to identify whether there is a significant impact of the election calendar on economic policy. The econometric analysis implemented in this paper goes a step further, seeking to test whether a country's time-varying degree of democracy affects the way in which economic policy is chosen as elections approach. A simple econometric model is estimated for the case of Mexico's fiscal policy between 1957 and 1997. The estimation reveals the government's strong systematic use of public spending in infrastructure and current transfers as a means to earn votes. Most importantly, we show that the magnitude of the election cycle has been exacerbated during the country's most democratic episodes.

1. Introduction

For as long as there have been elections, these have been accompanied by the conventional wisdom that opportunistic incumbents are willing to go to great lengths to ensure their political power. However, not until recently has a body of literature attempted to search formally for empirical evidence of politically-driven manipulations of economic policy before scheduled ballots. Most of the studies have focused attention almost exclusively on the case of developed economies, which have highly evolved political systems and thus seem likely to generate the incentives for leaders to engage in policy-making antics.

Interestingly, the strongest evidence of opportunistic cycles in economic policy emerged only once the literature shifted its attention towards a second set of countries: some developing economies, mainly in Latin America and Asia, that could be classified as "imperfect democracies." Often counting with relatively well-organized election processes, these countries satisfy the necessary conditions and data requirements for formal econometric studies to be performed. The results arising from such exercises have been remarkable, especially when compared to the weak evidence delivered by the analysis of OECD countries.

There is, however, one very important difference between the two sets of countries that has not been accounted for in previous empirical studies of election cycles. While most developed democracies have enjoyed stable postwar political environments, the developing countries have experienced swings in their political systems, becoming either more or less democratic at different moments in time. In other words, democ-

racy in these countries has displayed significant historical variation, even if elections have taken place regularly in accordance to some election calendar.

In this paper, I concentrate attention on this fact, and ask: Does a country's time-varying degree of democracy affect the way in which economic policy is conducted prior to elections? If so, how is this effect characterized? To answer these questions, I use a simple econometric model, which is estimated based on Mexico's fiscal policy between 1957 and 1997. Since Mexico was governed for 70 years by a single political party (PRI), that held exogenous elections regularly during the whole period, the country constitutes a good candidate for a search of political budget cycles in a context of underdeveloped democratic institutions. While the election calendar was never disrupted, the country's degree of democracy evolved over time, allowing us to explore how such an evolution affected the features of the election cycles.

The analysis is related to the past empirical literature on political cycles in developing countries. Research in this area has been scarce and, as a result, few studies focus specifically on the Mexican case. Whitehead (1990) and Magaloni (2000) show that there were electoral cycles in total government spending in the periods 1965–85 and 1970–98. Most cross-country studies focusing on Latin America have included the country in their samples, and interesting conclusions have often emerged. For example, Ames (1987) estimated a panel regression of 17 Latin American countries between 1947 and 1982, showing that public expenditures increased by 6.3% in the pre-election year and decreased by 7.6% in the post-election year. Kraemer (1997) investigated the impact of electoral politics on fiscal policy in 21 countries of Latin America and the Caribbean between 1983 and 1995, finding that fiscal deficits were higher in election years than would otherwise be predicted. Rojas-Suarez et al. (1998) reported a deterioration of the election year's fiscal stance for several Latin American countries, with important destabilizing effects.

In this paper, I take a fresh look at the Mexican case by improving both the data and the methodology used. The database has three strong advantages over those analyzed in former studies. First, it covers a longer period (1957–97). Second, the series are in quarterly frequencies, a feature that provides high flexibility when testing for opportunistic policy-making. Finally, the database comprises not only the values of government income and spending, but also some detail about their breakdown. We can thus focus attention on those components of public spending that are most visible to the public and hence most likely to be used with political goals. My methodology departs from that applied in the "first generation" of empirical studies on election cycles, as I adopt a flexible specification to estimate the path followed by fiscal policy in the pre-election period.

The most important contribution of this paper is its attempt to measure explicitly the impact of alternative democracy indices on the magnitude of the election cycle followed by the fiscal policy indicators. The results indeed shed light on the impact that a democratization process may have over the choice of economic policy in developing countries. The conclusions emerging from the empirical study are very striking. In particular, the results unveil the Mexican government's strong systematic use of public spending in infrastructure as a means to earn votes prior to federal elections. There is also some evidence of higher growth rates for current transfers around the election period. Most importantly, it is shown that the magnitude of the cycle is exacerbated during the country's most democratic episodes.

As a plausible explanation for the results, I discuss the model presented in Gonzalez (2000), in which the election cycles are produced by competent politicians who signal their ability to otherwise uninformed voters. In this framework, a democratization process generates two opposite forces affecting the size of the election cycle in public spending. First, it makes elections more threatening, thus enticing politicians to increase the magnitude of the most "visible" government expenditures before elections. Second, as the higher level of democracy increases the economy's "degree of transparency" (the voters' chances to learn the true value of office-holder's administrative competence), the cycle is attenuated. The question of which of these two forces dominates is really an empirical matter.

A reasonable interpretation of the present empirical results is that the democratization process in Mexico has increased the risk of the government losing power, but has not increased the country's transparency rapidly enough to reduce the incumbent's temptation to engage in opportunistic policy-making.

Section 2 presents the methodology and the data used in the study. Section 3 presents the econometric model's estimates, followed by a short discussion of the theoretical framework. The final section compares the present results with some previous findings in the literature.

2. Empirical Analysis

Model Specification and Methodology

The relationship between "visible" fiscal policy x_t and the political variables generally will be taken to be

$$x_t = \alpha + \beta(L)x_{t-1} + \phi(L)z_t + \sum_{i=1}^{n} \gamma_i P_{i,t} + \sum_{i=1}^{n} \delta_i (P_{i,t} * I_t) + \varepsilon_t, \quad t = 1, \ldots, T \qquad (1)$$

where the lagged structure of policy is captured by the polynomial $\beta(L)x_{t-1}$ of order m. We consider the response of policy to the past state of the economy through $\phi(L)z_t$, while the term $\sum_{i=1}^{n} \gamma_i P_{i,t}$ accounts for the pre-election dummy (or set of n dummies) reflecting the effect of the approaching ballot on the policy variable, x_t. The final term on the right-hand side captures the impact of the degree of democracy I_t on the election cycle's magnitude.

Assuming (a) that democracy is exogenous to the current policy x_t, and (b) that it is appropriately measured, we can estimate equation (1) consistently by OLS. Unfortunately, it is possible for at least one of these two requirements not to hold. First, it might be argued that a country's economic conditions influence its political structure and institutions. Moreover, no consensus has been reached in the literature regarding the direction of the causality between democracy and economic performance; see Przeworski and Limongi (1993), Londregan and Poole (1990, 1996), Rodrick (1997, 2000), and Drazen (2000). The position taken here is that, in general, political processes tend to develop slowly over time, and hence it seems unlikely that economic policy has an immediate effect on a country's degree of democracy. Indeed, it is reasonable to believe that economic conditions have only a delayed effect on the political environment. If this is the case, the problem of endogeneity is not a concern for our estimation of equation (1), since the political index I_t on the right-hand side of the regression will be predetermined at the time the policy x_t is set.

Table 1. Visible Fiscal Policy Variables

Name	Variable x (growth rate)
INCOME	Total real government income
EXPEND	Total real government expenditure
TRANSF	Current transfers / Total expenditure
INFRAST	Investment in infrastructure / Total expenditure

To strengthen this claim, I have taken a pragmatic approach and allowed the data to provide information about the extent to which Mexico's economic conditions have affected its democratization process. In order to disentangle whether there is a contemporaneous impact of economic variables on democracy, a series of Granger causality tests were performed between the real world price of crude oil and the available indices of democracy for Mexico. Since the Mexican economy and the government's finances rely very heavily on crude oil exports, but Mexico does not have any power in the world market for this commodity, the oil price is completely exogenous to the country's economic policies and outcomes. Hence, it constitutes a very useful instrument for searching for a causal relationship between economic variables and the degree of development of the Mexican political system.

As a second difficulty, the available indices of democracy constitute only proxies to the true value of such a political feature, thus introducing a potential measurement error that may lead to inconsistent estimates for equation (1). To deal with both problems, the estimation is performed using the instrumental variables method, which ensures unbiasedness and consistency of the regression coefficients.[1]

The Data

The database contains various categories of fiscal instruments used by the Mexican central government. It consists of quarterly seasonally-adjusted series covering the sample range 1957:01 to 1997:04. It reports the government's total income, total expenditure, investment in infrastructure, and current transfers (which include only subsidies to consumption, aid for cultural and social development, social security payments, and other nonfinancial transfers). I consider the last two indicators (transfers and investment in infrastructure) as the two most highly visible components of government spending, and hence the most likely to be manipulated by a government for electoral purposes. In order to detect how they effect the composition of government spending, both of them are expressed in terms of the total expenditure. Owing to the series' properties, estimations are performed with the annualized growth rates of all four fiscal policy indicators.[2] Variables are displayed in Table 1, and details can be found in the Appendix.

The Estimations

Given the nature of this study, it is necessary to control for other potential sources of cyclical behavior in the economy that are independent of the political events and that

may affect the government's policy decisions. To this end, the growth rate of an industrial production index has been used as a (lagged) indicator of economic activity. We control also for the population trend, that might have affected the fiscal policy indicators over time.

The first part of the political database relates to the election calendar. The study covers 14 federal elections (both presidential and midterm elections for Congress). All ballots followed an exogenous calendar, every six years for presidential elections, and every three years for midterm elections.[3] The pre-election dummy $P_{i,t}$ in equation (1) has been constructed and tested in two possible forms. The first specification (version 1 henceforth) is the most widely used in the opportunistic political cycles literature, as can be seen in the survey by Alesina et al. (1997). Under this approach, $n = 1$; that is, only one election dummy is included in equation (1) at a time. Such a dummy captures the average behavior of the fiscal policy x_t during some number K of quarters prior to the election. The dummy is denoted AK, and it equals 1 in all K quarters preceding the election (election period not included), but is zero otherwise. Following earlier literature, we test for $K = 1$ to $K = 8$ quarters prior to the election date for each fiscal policy variable.

The AK dummy has been criticized by Grier (1989) and Williams (1990), since it implicitly restricts the pre-election policy manipulation to be the same in every quarter of the horizon K. Moreover, the dummy has a discontinuous nature, dropping from 1 to 0 around the pre-election horizon; Drazen (2000) has argued that it might not be reasonable to expect such a discontinuity in policy, especially at the beginning of the pre-election period.

Given these criticisms, I also estimate the model using a second, more flexible approach to constructing the pre-election dummies. This specification has been implemented in more recent studies of election cycles, such as Besley and Case (1995) and Faust and Irons (1999), and it allows us to identify effects that are specific to single quarters in the political term. The test relies on $n = K$ dummies that are simultaneously included in the estimated regression. In this case, for every $k = 1, \ldots, K$ we construct the dummy Qk, which equals 1 in the kth period preceding the election, and is zero otherwise. The Qk dummies range from $k = 1$ to 8; the horizon has been chosen to be sufficiently long in order to capture the pattern in which economic policy is manipulated, and to avoid a possible discontinuity. This approach will be known as version 2 in what follows. In both versions, I also include in the regression a separate variable, $Elect_t$, that takes a value of 1 in every election period and zero otherwise.[4]

The political database also contains indicators of the country's degree of democracy for the period 1957–97. For the sake of robustness, three different measures of the level of political development in Mexico have been tested in this study; all have been obtained from broadly known sources. All three indices fall in a range [0,10] where *lower* values account for *stronger* democracy, whereas higher values are linked to more autocratic regimes. The first two political indicators were extracted from the Polity III Database developed by Jaggers and Gurr (1995). In particular, I have used the *Autocracy Index*, reflecting the general closedness of the country's political institutions, as well as the *Regulation of Participation Index*, which measures the institutional restrictions to political expression. A third index has been constructed using Freedom House's Index of Political Rights. I consider it appropriate to rename this measure the
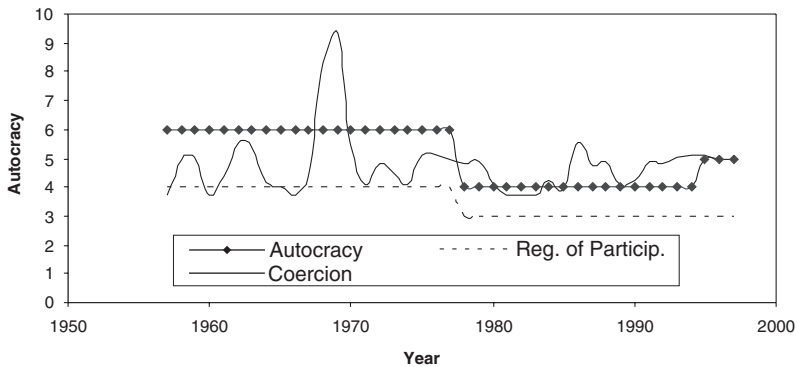
Figure 1. Political Indicators

Index of Political Coercion, in order to facilitate its interpretation in the remainder of the paper. The indices are displayed in Figure 1.

I shall first present a brief summary of the results of the Granger causality tests that help to justify the choice of instruments for the instrumental variable estimation performed in the following sections of this study. Then I examine the estimates of the econometric model. Following earlier literature, I start with the baseline estimation for versions 1 and 2, in which only the pre-election dummies are included in the regressions. I then introduce simultaneously the political dummies by themselves and interact them with the index of democracy, according to equation (1).

Granger Causality Tests

The Granger causality analysis delivers extremely interesting results.[5] We start by assessing the impact of the oil prices on Mexico's economic performance and fiscal policy. As expected, there is evidence that oil prices have had a very significant effect on the country's economic activity (namely, on industrial production). There is also strong evidence suggesting that oil prices have Granger-caused two of our fiscal policy variables: total income and total expenditures. The growth rate of investment in infrastructure and the current transfers seem to have been chosen independently of the oil prices' behavior.[6]

On the other hand, I have found no evidence that the oil prices have had any significant precedence on the behavior of the democracy indices within a 4-year horizon.[7] Generally, the results reflect a negligible (or at least, extremely slow) impact of the country's economic conditions on its degree of democracy during the period under analysis. This implies that the simultaneity bias is not a strong concern in the particular case studied in this paper.[8] The results of the tests are also helpful in determining the instruments that should be used when dealing with the potential measurement error of these political indicators. In particular, lagging every democracy index by a year provides an exogenous instrument whose measurement error is not correlated with the regression's disturbance. This quality ensures that the instrumental variable method will deliver unbiased and consistent coefficient estimates of the econometric model in equation (1).

Estimating the Election Cycle in the Benchmark Model

A summary of the results in the federal elections case is displayed in Tables 2 and 3 for versions 1 and 2, respectively. For brevity,[9] in the case of version 1, I present only the estimated coefficients for the specification with $K = 6$. ==The regressions reveal strong systematic use of investment in infrastructure as a political tool for the period under analysis.== The estimation of version 1 delivers positive and significant coefficients for the pre-election dummy, capturing the average effect during the six quarters prior to the election, *A6*, and also for *Elect*, the dummy covering the election's quarter. The estimation of version 2 shows that this indicator tends to be above average during the second, fifth, sixth, and seventh quarters prior to the election, as well as during the election quarter itself.

Measuring the Impact of Democracy on the Election Cycle

I first present the estimation results for the case in which the Index of Autocracy represents the state of Mexico's political environment. The results are reported in Tables 4 and 5. ==The coefficient estimates for version 1 display a strong pre-election manipulation of three of the policy indicators.== In particular, the growth rate of investment in infrastructure is above average by 74.62 percentage points during the six quarters before the election, and the government's income growth is below average by 14 percentage points. ==Finally, the growth rate in current transfers does not present a significant pre-election coefficient for the dummy comprising the six pre-election quarters, but it is about 66.5 percentage points above average during the election quarter itself.==[10]

Very importantly, the coefficients for the dummies that are multiplied by the Index of Autocracy are also significant. In the case of transfers and investment in infrastructure, the coefficients are negative. We should recall that lower values of this index represent a more democratic environment, while higher values are linked to more

Table 2. Baseline Model, Version 1

	Dependent variable[b]			
Independent variable[a]	Income (1)	Expenditure (2)	Transfers (3)	Infrastructure (4)
Elect	0.36	1.32	−15.62	21.41
	(0.11)	(0.20)	(−1.95)*	(1.97)*
A6	1.83	3.98	−11.41	10.59
	(0.99)	(1.42)	(−2.83)***	(1.74)*
Lags	5	5	5	5
Controls	Yes	Yes	Yes	Yes
R^2	0.44	0.37	0.33	0.31
Observations	159	159	159	159

[a] * Significant at 10%, ** at 5%, *** at 1%.
[b] OLS estimation, *t*-statistics in parenthesis. Heteroskedasticity-robust standard errors.

Table 3. Baseline Model, Version 2

Independent variable[a]	Dependent variable[b]			
	Income (1)	Expenditure (2)	Transfers (3)	Infrastructure (4)
Elect	1.09	1.26	−11.57	26.33
	(0.32)	(0.22)	(−1.58)	(2.47)**
Q1	1.57	7.26	3.01	10.54
	(0.44)	(1.22)	(0.40)	(0.92)
Q2	2.76	−0.91	−7.44	29.39
	(0.78)	(−0.15)	(−0.96)	(2.60)**
Q3	2.58	1.70	−13.13	6.08
	(0.73)	(0.29)	(−1.70)*	(0.54)
Q4	0.87	0.49	3.54	−1.43
	(0.25)	(0.08)	(0.46)	(−0.13)
Q5	4.43	2.44	−11.38	30.26
	(1.26)	(0.41)	(−1.48)	(2.64)***
Q6	3.52	8.98	−13.71	23.54
	(0.99)	(1.50)	(−1.76)*	(2.04)**
Q7	2.58	4.18	5.80	23.75
	(0.73)	(0.70)	(0.75)	(2.04)**
Q8	0.53	−3.80	2.90	15.78
	(0.15)	(−0.64)	(0.38)	(1.36)
Lags	6	4	6	6
Controls	Yes	Yes	Yes	Yes
R^2	0.36	0.36	0.35	0.37
Observations	159	159	159	159

[a] * Significant at 10%, ** at 5%, *** at 1%.
[b] OLS estimation, *t*-statistics in parenthesis. Heteroskedasticity-robust standard errors.

autocratic regimes. Thus, the negative estimates imply that, as the country becomes more autocratic, the average pre-election growth of these policy variables diminishes. For instance, an increase of 1 point (10%) in the Index of Autocracy reduces the pre-electoral growth rate in infrastructure by 12.8 percentage points, while the growth rate of transfers in the election period declines by 16.6 percentage points. Finally, a 10% rise in the Index of Autocracy will increase the growth rate of government income by 3.4 percentage points.

The estimation of version 2 of the model leads to similar conclusions. Some of the most important effects are illustrated in Figures 2 and 3. These figures display the estimated coefficients of the noninteracted pre-election dummies for the growth rate of investment in infrastructure (*INFRAST*) and the growth rate of current transfers (*TRANSF*).

Figure 2 shows clearly that *INFRAST* is significantly above average relatively early in the pre-election period; the positive coefficients are statistically different from zero in the second and last quarter immediately before the election. In contrast, Figure 3 suggests that *TRANSF* is not significant until the election quarter itself. This pattern

Table 4. Index of Autocracy, Version 1

Independent variable[a]	Dependent variable[b]							
	Income (1)	Expend (2)	Transfs (3)	Infrast (4)	Income (5)	Expend (6)	Transfs (7)	Infrast (8)
Elect	−11.65	10.01	66.61	−31.57	−10.97	12.76	52.05	−33.66
	(−0.73)	(0.37)	(1.97)*	(−0.58)	(−0.66)	(0.46)	(1.52)	(−0.61)
A6	−14.64	−4.83	4.49	74.70	−13.85	−1.48	−11.85	72.09
	(−1.78)*	(−0.35)	(0.26)	(2.65)***	(−1.43)	(−0.09)	(−0.60)	(2.24)**
Elect*index	2.45	−1.73	−16.57	10.48	2.32	−2.34	−13.92	10.88
	(0.78)	(−0.32)	(−2.49)**	(0.99)	(0.71)	(−0.41)	(−2.06)**	(1.00)
A6*index	3.36	1.78	−3.28	−12.80	3.21	1.12	−0.12	−12.30
	(2.05)**	(0.66)	(−0.96)	(−2.33)**	(1.66)*	(0.35)	(−0.03)	(−1.96)**
Lags	5	5	5	5	5	5	5	5
Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Trend	No	No	No	No	Yes	Yes	Yes	Yes
R^2	0.45	0.37	0.36	0.33	0.45	0.37	0.37	0.33
Observations	159	159	159	159	159	159	159	159

[a] *Significant at 10%, ** at 5%, *** at 1%.
[b] Instrumental variables estimation.

indicates that the government has simultaneously used these two types of spending to improve its re-election odds. Investment in infrastructure increases early in the political term so that the final product is in finished form by the time of the election. On the other hand, the government concentrates heavily towards transfers once the election is only weeks ahead, since they can be rapidly distributed to the public. Interestingly, there is no significant impact on the total expenditure's magnitude. A reasonable explanation is that only a reallocation of the government budget in favor of its most "visible" components (transfers and infrastructure) takes place prior to the ballots. Once again, the estimates show that an increase in Mexico's level of democracy exacerbates the cycle's size.

Based on the estimates of version 2, a battery of *F*-tests was performed to verify whether different subsets of the estimated coefficients are jointly significant. The results of these tests can be found in Table 5. The coefficients of the pre-election dummies (by themselves and interacted with the Index of Autocracy) are all jointly significant ($F = 1.7176$). The pre-election period was also divided into three different subsets, including quarters Q1 to Q3, Q4 to Q6, and Q7–Q8, respectively. For *INFRAST*, the first two of these subsets are significantly different from zero. In the case of transfers, none of the subsets mentioned above is statistically significant for this variable. Only the test of joint significance for *Elect* delivers an *F*-statistic significantly different from zero ($F = 3.5608$). Hence, the heaviest increase in the rate of growth for transfers seems to occur during the election period almost exclusively.

To conclude, this estimation suggests that the government used public investment and current transfers opportunistically. There is evidence that the increase in investment in infrastructure started relatively early in the pre-election period, while the current transfers picked up very strongly during the election quarter only. Most importantly, the magnitude of the election cycle in the country was significantly magnified during those periods in which the government faced a more democratic environment.

Table 5. Index of Autocracy, Version 2

Independent variable[a]	Income (1)	Expend (2)	Transfs (3)	Infrast (4)	Income (5)	Expend (6)	Transfs (7)	Infrast (8)
				Dependent variable[b]				
Elect	−11.87	12.05	58.42	−24.67	−9.52	19.06	39.24	−21.61
	(−0.72)	(0.43)	(1.67)*	(−0.46)	(−0.56)	(0.66)	(1.11)	(−0.39)
Q1	−29.38	−22.28	−2.09	118.39	−27.30	−15.19	−21.07	121.09
	(−1.75)*	(−0.78)	(−0.05)	(2.16)**	(−1.58)	(1.08)	(−0.58)	(2.16)**
Q2	−8.03	24.30	30.41	123.27	−5.84	31.36	9.78	126.02
	(−0.48)	(0.86)	(0.85)	(2.30)**	(−0.34)	(1.08)	(0.27)	(2.30)**
Q3	1.57	−13.52	−16.54	62.33	4.22	−5.14	−41.94	65.76
	(0.08)	(−0.40)	(−0.38)	(0.97)	(0.20)	(−0.15)	(−0.95)	(1.00)
Q4	−22.12	−5.52	−63.71	72.80	−19.63	2.61	−83.80	76.63
	(−1.09)	(−0.16)	(−1.47)	(1.10)	(0.94)	(0.07)	(−1.91)**	(1.12)
Q5	−1.78	13.14	−4.80	13.08	0.76	20.75	−25.67	17.32
	(−0.08)	(0.38)	(−0.11)	(0.20)	(0.04)	(0.58)	(−0.58)	(0.25)
Q6	−32.10	−4.66	2.32	100.30	−29.76	2.76	−16.54	104.55
	(−1.58)	(−0.13)	(0.05)	(1.52)	(−1.42)	(0.08)	(−0.37)	(1.52)
Q7	−18.33	24.26	−16.93	85.98	−15.92	32.32	−35.55	90.34
	(−1.01)	(0.79)	(−0.43)	(1.47)	(−0.86)	(1.02)	(−0.89)	(1.49)
Q8	15.35	32.94	−32.61	78.04	17.81	40.71	−50.97	81.85
	(0.85)	(1.06)	(−0.82)	(1.33)	(0.96)	(1.29)	(−1.27)	(1.36)
Elect*index	2.55	−2.32	−14.14	10.45	2.13	−3.53	−10.86	9.91
	(0.79)	(−0.42)	(−2.07)**	(0.99)	(0.64)	(−0.63)	(−1.58)	(0.92)
Q1*index	6.25	5.82	1.25	−21.52	5.88	4.59	4.43	−21.99
	(1.87)*	(1.02)	(0.18)	(−2.00)**	(1.72)*	(0.79)	(0.62)	(−2.00)*
Q2*index	2.14	−5.17	−7.54	−18.97	1.76	−6.39	−3.93	−19.45
	(0.64)	(−0.92)	(−1.07)	(−1.79)*	(0.51)	(−1.11)	(−0.55)	(−1.80)*
Q3*index	0.16	3.18	0.52	−11.58	−0.32	1.66	5.23	−12.19
	(0.04)	(0.47)	(0.05)	(−0.90)	(−0.08)	(0.24)	(0.59)	(−0.92)
Q4*index	4.86	1.25	13.76	−15.08	4.23	−0.24	17.40	−15.76
	(1.16)	(0.18)	(1.59)	(−1.14)	(1.01)	(−0.03)	(1.99)**	(−1.16)
Q5*index	1.21	−2.40	−1.34	3.61	0.74	−3.80	2.73	2.85
	(0.30)	(−0.35)	(−0.15)	(0.28)	(0.18)	(−0.53)	(0.31)	(0.21)
Q6*index	7.15	2.57	−3.55	−15.38	6.71	1.19	0.29	−16.16
	(1.76)*	(0.37)	(−0.41)	(−1.18)	(1.61)	(0.17)	(0.03)	(−1.19)
Q7*index	3.97	−3.98	4.51	−11.81	3.53	−5.47	8.12	−12.60
	(1.14)	(−0.67)	(0.59)	(−1.06)	(0.99)	(−0.90)	(1.06)	(−1.09)
Q8*index	−3.06	−7.52	7.01	−11.86	−3.51	−8.95	10.44	−12.56
	(−0.88)	(−1.26)	(0.92)	(−1.06)	(−0.99)	(−1.47)	(1.37)	(−1.09)
Lags	5	5	5	5	5	5	5	5
Ec. control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pop. trend	No	No	No	No	Yes	Yes	Yes	Yes
R^2	0.48	0.40	0.39	0.41	0.49	0.40	0.41	0.41
Observations	159	159	159	159	159	159	159	159
F: Elect-Q8[c]	0.7701	0.5854	1.0537	1.7176**	0.7093	0.6374	1.7778	1.5841*
F: Q1-Q3[c]	0.7673	0.5900	0.9641	2.3712**	0.7131	0.6275	1.1101	2.2584**
F: Q4-A6[c]	1.0488	0.3569	1.4908	2.2412**	0.9473	0.3973	1.6313	2.1753**
F: Q7-Q8[c]	0.6271	0.8791	0.4599	1.9182	0.6281	1.0690	0.8542	1.8881
F: Elect[c]	0.3451	0.0927	3.5608**	3.7121**	0.2616	0.2250	3.4960**	3.7024**

[a] *Significant at 10%, ** at 5%, *** at 1%.
[b] Instrumental variables estimation.
[c] *F*-tests of joint significance; dummies by themselves and interacted with index.
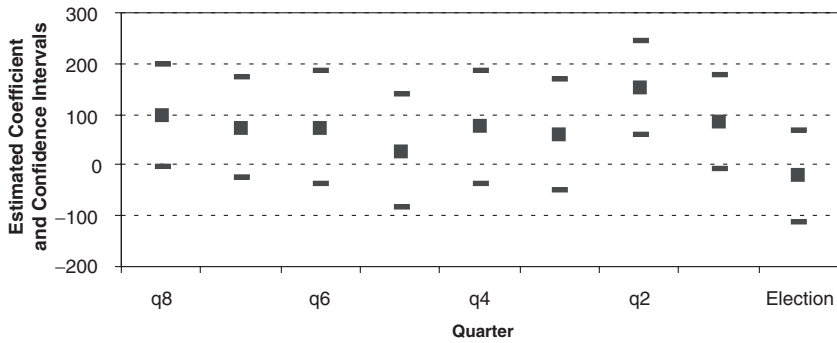
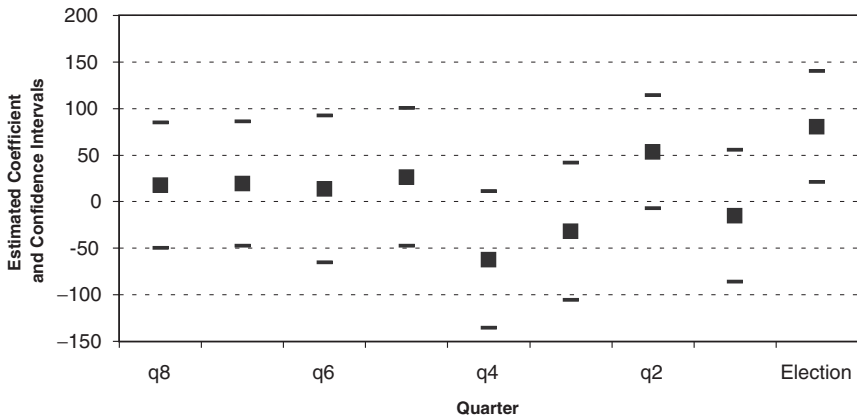*Figure 2. Pre-election Response of Investment in Infrastructure*

Figure 3. Pre-election Response of Transfers

For the sake of robustness, the model in equation (1) has been estimated with two other alternative measures of Mexico's degree of democracy. These are an Index of Political Coercion, and an Index of Regulation of Participation. Indeed, the most interesting comparison might be that between the results obtained with the Index of Autocracy and those rendered by the Index of Political Coercion. As can be readily seen in Figure 1, these two measures are not too highly correlated.[11]

Table 6 displays the coefficients for version 1 when the estimation is performed using the Index of Political Coercion as our measure for democracy. As before, the response of the investment in infrastructure growth during the six quarters previous to the election is positive. Further, the estimation of the dummy multiplied by the Index of Political Coercion suggests, once again, that an increase in Mexico's degree of democracy exacerbates the opportunistic manipulation of policy, while its reduction attenuates the magnitude of the pre-electoral activity. The behavior of total income is also similar to that described under the Autocracy Index. The behavior of transfers, however, has not proven to be robust to changes in the measure of democracy. In particular, there are no significant pre-election coefficients (by themselves or interacted), and the election quarter itself is not significant either, in sharp contrast with the previous results.

Table 6. Index of Political Coercion, Version 1

Independent variable[a]	Dependent variable[b]							
	Income (1)	*Expend* (2)	*Transfs* (3)	*Infrast* (4)	*Income* (5)	*Expend* (6)	*Transfs* (7)	*Infrast* (8)
Elect	−48.99	33.81	−103.32	−8.29	−48.83	32.75	−103.52	−1.01
	(−1.16)	(0.46)	(−1.14)	(−0.06)	(−1.17)	(0.44)	(−1.16)	(−0.01)
A6	−10.91	−9.88	−4.84	51.62	−9.99	−9.39	−5.22	50.18
	(−1.61)	(−0.86)	(−0.33)	(2.25)**	(−1.49)	(−0.82)	(−0.36)	(2.20)**
Elect*index	10.66	−7.00	18.91	6.41	10.69	−6.69	18.60	4.71
	(1.18)	(−0.44)	(0.97)	(0.21)	(1.19)	(−0.42)	(0.97)	(0.15)
A6*index	2.67	2.85	−1.31	−8.47	2.51	2.77	−1.26	−8.25
	(1.95)**	(1.25)	(−0.45)	(−1.86)*	(1.85)*	(1.22)	(−0.44)	(−1.82)*
Lags	5	5	5	5	5	5	5	5
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Trend	No	No	No	No	Yes	Yes	Yes	Yes
R^2	0.46	0.38	0.34	0.31	0.47	0.38	0.36	0.32
Observations	159	159	159	159	159	159	159	159

[a] * Significant at 10%, ** at 5%, *** at 1%.
[b] Instrumental variables estimation.

Estimates of version 2 confirm these conclusions (Table 7). For example, *INFRAST* is reported to rise particularly during the sixth, fifth, and last period immediately before the election; the tests for joint significance report *F*-statistics that are statistically different from zero for all quarters from Q6 to *Elect*. This provides evidence that the investment in infrastructure growth has picked up relatively early in the political term (at least 18–12 months before the election quarter). The estimates for *TRANSF*, as well as the tests for joint significance, reveal no evidence of pre-electoral manipulation.

The estimations performed with the Regulation of Participation Index are displayed in Tables 8 and 9. These results are very similar to those obtained with the Index of Autocracy, which might have been expected owing to the high correlation existing between the two indices.

To summarize, the behavior of the current transfers during the election quarter might not be considered robust to the use of the Index of Political Coercion. However, the estimates for investment in infrastructure and income growth have shown a remarkable resilience to the changes in the democracy measures used in this empirical analysis.

Robustness

The results suggest very clearly not only that there is an election cycle in some of the components of the Mexican government spending, but also that its magnitude is affected by developments in the country's political process. The estimated coefficients of the dummies interacted with Autocracy, Regulation of Participation, and Political Coercion Indices have consistently displayed negative signs, indicating such a reduction in opportunistic behavior during less democratic stages. Interestingly, two of the

Table 7. Index of Political Coercion, Version 2

Independent variable[a]	Dependent variable[b]							
	Income (1)	Expend (2)	Transfs (3)	Infrast (4)	Income (5)	Expend (6)	Transfs (7)	Infrast (8)
Elect	−49.30	34.16	−121.78	−8.13	−48.41	34.32	−126.18	−4.82
	(−1.00)	(0.40)	(−1.22)	(−0.05)	(−1.00)	(0.40)	(1.21)	(−0.03)
Q1	16.66	−55.81	116.76	280.67	−13.60	−52.76	104.38	277.67
	(−0.32)	(−0.64)	(1.12)	(1.83)*	(−0.27)	(−0.61)	(0.98)	(1.82)*
Q2	−13.70	32.49	88.38	24.83	−10.23	35.31	77.34	21.93
	(−0.27)	(0.38)	(0.87)	(0.16)	(−0.20)	(0.41)	(0.73)	(0.14)
Q3	−12.62	−33.83	−44.51	28.66	−11.07	−32.83	−48.05	27.02
	(−0.87)	(−1.41)	(−1.43)	(0.64)	(−0.76)	(−1.35)	(−1.51)	(0.61)
Q4	−8.32	−1.36	7.34	−9.83	−6.77	−0.42	4.70	−11.54
	(−0.57)	(−0.06)	(0.24)	(−0.22)	(−0.47)	(−0.02)	(0.15)	(−0.26)
Q5	1.56	−3.59	−44.03	80.98	3.07	−3.00	−45.82	78.67
	(0.11)	(−0.15)	(−1.36)	(1.82)*	(0.21)	(−0.12)	(−1.37)	(1.77)*
Q6	−16.55	−8.89	18.46	92.83	−14.93	−8.23	17.93	90.44
	(−1.09)	(−0.37)	(0.59)	(2.10)*	(−1.00)	(−0.34)	(0.54)	(2.05)**
Q7	41.90	−15.83	−140.22	156.29	60.97	−4.60	−176.64	132.62
	(0.41)	(−0.09)	(−0.64)	(0.53)	(0.61)	(−0.03)	(−0.83)	(0.45)
Q8	−43.02	89.86	15.93	−60.13	−26.62	101.08	−16.22	−84.10
	(−0.42)	(0.50)	(0.08)	(−0.19)	(−0.27)	(0.57)	(−0.08)	(−0.28)
Elect*index	10.83	−7.40	23.73	7.71	10.80	−7.35	24.30	6.84
	(1.02)	(−0.40)	(1.11)	(0.23)	(1.03)	(−0.40)	(1.09)	(0.21)
Q1*index	3.87	13.31	−24.29	−58.22	3.41	12.76	−22.07	−57.76
	(0.35)	(0.72)	(−1.10)	(−1.77)*	(0.31)	(0.69)	(−0.96)	(−1.77)*
Q2*index	3.52	−7.29	−20.41	0.74	2.96	−7.79	−18.46	1.15
	(0.32)	(−0.40)	(−0.95)	(0.02)	(0.27)	(−0.42)	(−0.82)	(0.04)
Q3*index	3.02	7.12	5.94	−4.44	2.88	7.01	6.26	−4.32
	(1.07)	(1.55)	(1.04)	(−0.52)	(1.03)	(1.51)	(1.06)	(−0.52)
Q4*index	1.87	0.40	−0.76	1.71	1.73	0.29	−0.56	1.88
	(0.66)	(0.08)	(−0.13)	(0.20)	(0.62)	(0.06)	(−0.09)	(0.22)
Q5*index	0.55	0.99	6.36	−10.10	0.39	0.94	6.57	−9.84
	(0.20)	(0.21)	(1.06)	(−1.20)	(0.14)	(0.20)	(1.05)	(−1.17)
Q6*index	3.95	3.43	−6.88	−13.61	3.73	3.26	−6.82	−13.29
	(1.37)	(0.72)	(−1.19)	(−1.63)	(1.31)	(0.70)	(−1.13)	(−1.60)
Q7*index	−8.15	4.02	29.75	−27.03	−12.00	1.76	37.22	−22.32
	(−0.39)	(0.11)	(0.67)	(−0.45)	(−0.59)	(0.05)	(0.85)	(0.71)
Q8*index	8.85	−19.50	−2.90	15.40	5.56	−21.77	3.69	20.16
	(0.42)	(−0.53)	(−0.07)	(0.25)	(0.27)	(−0.60)	(0.09)	(0.32)
Lags	5	5	5	5	5	5	5	5
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Trend	No	No	No	No	Yes	Yes	Yes	Yes
R^2	0.33	0.25	0.31	0.29	0.35	0.35	0.25	0.30
Observations	159	159	159	159	159	159	159	159
F: Elect-Q8[c]	0.3792	0.4812	1.0169	1.3438	0.3966	0.4777	0.9127	1.2989
F: Q1-Q3[c]	0.3124	0.6857	1.1281	1.4680	0.3750	0.6742	1.0988	1.3998
F: Q4-A6[c]	0.6627	0.3329	1.3823	2.0971**	0.7144	0.3367	1.2259	1.9914*
F: Q7-Q8[c]	0.1447	0.3675	0.2210	1.0897	0.1824	0.3723	0.3168	1.0416
F: Elect[c]	0.5517	0.0815	1.7500	2.6229*	0.6134	0.0790	2.0070	2.4714*

[a] *Significant at 10%, ** at 5%, *** at 1%.
[b] Instrumental variables estimation.
[c] F-tests of joint significance; dummies by themselves and interacted with index.

Table 8. Index of Regulation of Participation, Version 1

Independent variable[a]	Dependent variable[b]							
	Income (1)	*Expend* (2)	*Transfs* (3)	*Infrast* (4)	*Income* (5)	*Expend* (6)	*Transfs* (7)	*Infrast* (8)
Elect	−18.75	6.74	96.26	−63.50	−0.87	10.12	74.26	−64.43
	(−0.89)	(0.19)	(2.16)**	(−0.89)	(0.38)	(0.27)	(1.59)	(−0.86)
A6	−19.86	−10.05	16.97	91.24	−20.71	−6.10	−7.86	90.12
	(−1.85)*	(−0.56)	(0.75)	(2.48)**	(−1.50)	(−0.27)	(−0.27)	(1.95)**
Elect*index	5.60	−1.54	−32.52	24.31	5.81	−2.47	−26.49	24.58
	(0.92)	(−0.15)	(−2.54)**	(1.20)	(0.91)	(−0.23)	(−1.99)**	(1.15)
A6*index	6.36	4.09	−8.37	−23.27	6.61	2.95	−1.18	−22.95
	(2.05)**	(0.79)	(−1.29)	(−2.23)**	(1.65)*	(0.45)	(−0.14)	(−1.75)*
Lags	5	5	5	5	5	5	5	5
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Trend	No	No	No	No	Yes	Yes	Yes	Yes
R^2	0.45	0.37	0.36	0.33	0.45	0.37	0.37	0.33
Observations	159	159	159	159	159	159	159	159

[a] * Significant at 10%, ** at 5%, *** at 1%.
[b] Instrumental variables estimation.

political measures (the Autocracy Index and the Regulation of Participation Index) follow a negative trend (see Figure 1). That is, the country has become less autocratic (more democratic) over time. This implies that the pre-electoral distortion observed in both *TRANSF* and *INFRAST* has grown over the 40 years covered by this study.

We should note that having a variable that is negatively associated to a downward trend is equivalent to having the same variable positively associated to an upward trend. Thus, one might ask whether the estimated effects between our fiscal policy indicators and the political indices are not really capturing the relationship between fiscal policy and some other variable of economic nature (perhaps with a positive trend) that has been omitted from the analysis.

In order to verify that the estimated response of the election cycle to the political indices is reflecting only the impact of the democratization process over fiscal policy, equation (1) was re-estimated by controlling also for the population trend. This variable constitutes a reasonable measure of the expansion of the economy's needs in the long run, to which government spending might have responded increasingly over time.[12]

The results of these new estimations can be found in columns 4–8 of Tables 4–9. Very importantly, even if some of the fiscal variables do have a significant response to the population trend, the effect of the three political indices on the fiscal policy pre-election behavior remains practically unchanged when compared with the earlier results.

3. A Possible Theoretical Explanation

A theoretical framework proposed in Gonzalez (2000) may help to explain the results delivered by the present econometric analysis. It builds on previous work by Rogoff and Sibert (1988) and Rogoff (1990).

Table 9. Index of Regulation of Participation, Version 2

Independent variable[a]	Dependent variable[b]							
	Income (1)	Expend (2)	Transfs (3)	Infrast (4)	Income (5)	Expend (6)	Transfs (7)	Infrast (8)
Elect	−20.09	9.44	83.60	−57.21	−18.39	21.73	49.85	−45.73
	(−0.92)	(0.26)	(1.83)*	(−0.81)	(−0.79)	(0.56)	(1.05)	(−0.62)
Q1	−42.49	−30.38	0.11	−143.13	−40.97	−18.17	−33.18	153.28
	(−1.90)*	(−0.80)	(0.01)	(1.98)*	(−1.74)*	(−0.46)	(−0.68)	(2.03)**
Q2	−8.74	29.23	61.42	155.74	−7.15	41.51	24.23	165.95
	(−0.39)	(0.78)	(1.31)	(2.20)**	(−0.30)	(1.05)	(0.50)	(2.24)**
Q3	6.98	−14.48	−19.87	58.95	8.87	−0.21	−64.24	71.53
	(0.26)	(−0.32)	(−0.36)	(0.70)	(0.31)	(−0.00)	(−1.08)	(0.80)
Q4	−27.04	−7.87	−80.62	91.04	−25.24	5.99	−118.08	105.23
	(−1.02)	(−0.18)	(−1.43)	(1.04)	(−0.89)	(0.13)	(−2.01)**	(1.12)
Q5	−13.70	8.03	5.25	14.57	−11.91	20.95	−33.17	30.07
	(−0.51)	(0.18)	(0.09)	(0.16)	(−0.42)	(0.43)	(−0.56)	(0.32)
Q6	−45.33	−18.14	24.04	121.00	−43.66	−5.24	−11.37	136.34
	(−1.69)*	(−0.39)	(0.42)	(1.38)	(−1.54)	(−0.11)	(−0.19)	(1.44)
Q7	−23.93	28.63	−20.93	101.59	−22.51	40.18	−48.43	114.46
	(−1.05)	(0.74)	(−0.42)	(1.37)	(−0.95)	(0.99)	(−0.96)	(1.46)
Q8	19.04	41.91	−38.98	94.04	20.50	53.08	−65.29	104.85
	(0.84)	(1.08)	(−0.79)	(1.26)	(0.87)	(1.31)	(−1.31)	(1.35)
Elect*index	6.08	−2.58	−27.70	24.50	5.62	−5.84	18.82	21.39
	(0.98)	(−0.24)	(−2.12)**	(1.22)	(0.85)	(−0.53)	(−1.40)	(1.01)
Q1*index	12.85	10.73	1.20	−38.30	12.44	7.50	9.86	−41.01
	(1.98)**	(0.98)	(0.09)	(−1.84)*	(1.84)*	(0.66)	(0.70)	(−1.90)**
Q2*index	3.30	−8.88	−19.94	−36.84	2.87	−12.15	−9.99	−39.59
	(0.51)	(−0.81)	(−1.47)	(−1.80)*	(0.42)	(−1.07)	(−0.71)	(−1.86)*
Q3*index	−1.34	4.84	1.76	−15.70	−1.86	0.95	14.01	−19.09
	(−0.17)	(0.37)	(1.11)	(−0.64)	(−0.23)	(0.07)	(0.82)	(−0.74)
Q4*index	8.19	2.46	24.84	−27.06	7.70	−1.34	35.11	−30.88
	(1.06)	(0.19)	(1.51)	(−1.07)	(0.94)	(−0.10)	(2.07)**	(−1.15)
Q5*index	5.24	−1.97	−4.81	4.78	4.74	−5.52	6.13	0.60
	(0.68)	(−0.15)	(−0.29)	(0.19)	(0.58)	(−0.40)	(0.36)	(0.02)
Q6*index	14.17	7.64	−11.39	−28.12	−28.12	13.71	4.07	−32.31
	(1.83)*	(0.57)	(−0.69)	(−0.69)	(−1.11)	(1.68)*	(0.29)	(−1.19)
Q7*index	7.37	−7.04	7.79	−21.59	6.98	−10.18	15.52	−25.07
	(1.15)	(−0.64)	(0.56)	(−1.05)	(1.05)	(−0.90)	(1.09)	(−1.15)
Q8*index	−5.49	−13.50	12.02	−21.79	0.30	−16.51	19.36	−24.71
	(−0.86)	(−1.23)	(0.86)	(−1.04)	(−0.89)	(−1.45)	(1.37)	(−1.13)
Lags	5	5	5	5	5	5	5	5
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Trend	No	No	No	No	Yes	Yes	Yes	Yes
R^2	0.48	0.40	0.40	0.41	0.48	0.40	0.42	0.41
Observations	159	159	159	159	159	159	159	159
F: Elect-Q8[c]	0.8066	0.5627	1.1350	1.6635*	0.7315	0.6106	1.2550	1.5193*
F: Q1-Q3[c]	0.8344	0.5268	1.1406	2.2447**	0.7864	0.5738	1.2612	2.1616**
F: Q4-A6[c]	1.0917	0.3669	1.5326	2.1923**	0.9536	0.3952	1.7182	2.1609**
F: Q7-Q8[c]	0.6246	0.8515	0.4502	1.8748	0.6192	1.0423	0.8732	1.9056
F: Elect[c]	0.5113	0.0340	3.6807**	3.9647**	0.4154	0.1697	3.3816**	3.9251**

[a] * Significant at 10%, ** at 5%, *** at 1%.
[b] Instrumental variables estimation.
[c] *F*-tests of joint significance; dummies by themselves and interacted with index.

The model assumes a country where voters are rational and forward-looking. The representative citizen derives utility from the consumption of two different goods, x and y, that are produced by the country's government. The main difference between the goods is the timing at which they can be delivered. In particular, y_t is produced with a one-period delay, while x_t is finished and consumed immediately. Hence at time t, an office-holder produces x_t, which is observed by the representative voter in the same period, and y_{t+1}, which can be observed only in the future.

Office-holders can be more or less competent in administering the available resources to generate x_t and y_{t+1}. In general, more skilled leaders are able to produce more of the two goods. A leader knows his own competence before starting production; however, owing to the difference in production timing of the goods, voters cannot observe competence if it is not with a delay.

The policy-maker has similar preferences to that of the citizen. In addition, he perceives an exogenous fixed rent reflecting his satisfaction for each period he remains in power, and this triggers his opportunistic behavior.

The political rules that characterize the country replicate the legal structure that would normally exist in a developed democracy. Democracy is defined as a political system in which a challenger may replace the incumbent policy-maker in regularly scheduled elections. Thus, in this model, the country's level of democracy is determined by the extent to which the voter's decision in the ballots is honored by the government. This last feature is measured by a cost c, representing the disutility faced by the voter when enforcing the political turnover after a particular election. While the transition cost should be zero in an ideal democracy, it may become unboundedly large as the citizen attempts to remove a dictator from office. The cost c_t can vary over time, according to a general random process. The basic intuition behind this political shock is that, at every point in time, both the voter and the office-holder have some common expectation regarding the political environment that will prevail in the following period. However, the realized value of the country's degree of democracy may differ from such an expectation as new political events arise. For instance, the emergence of a charismatic challenger that generates social excitement about a democratic transition may reduce the voter's perceived cost of enforcing the turnover, while news regarding the destruction generated by a neighbor country's civil war might increase the citizen's fear of removing his own government by force.

The model in Gonzalez (2000) considers a two-period setup, with timing as follows. At the beginning of history, the competence level is revealed to the incumbent. The political shock c_t is realized at the beginning of each period, and observed by all agents. The leader then chooses fiscal policy $\{x_t, y_{t+1}\}$. The citizen observes x_t, conjectures the incumbent's competence, and then casts his vote. If the challenger wins the election, the voter removes the office-holder with cost c_t.

The undominated sequential equilibrium of the problem implies that, in the last period in history, when there are no electoral incentives, the politician simply selects the optimum amounts of the goods. These optimal values are the same to those that would be observed if full information prevailed in the economy.

The magnitude of the cost of enforcing the political turnover becomes relevant in the first political term. As it is shown in Gonzalez (2000), the citizen's vote is decided by the comparison between the voter's expected utility if the incumbent is re-elected versus his expected utility derived under an untried opponent, net of the cost involved in replacing the old politician with the successful challenger. Crucially, this implies that

the public might be willing to re-elect an incompetent leader when the cost of enforcing the turnover is high enough. Hence, in sufficiently autocratic environments, elections do not represent a real threat for any of the two types of politician to lose power. As a result, the office-holder will simply choose his full-information policy during the first political term, and no politically-driven policy distortions will be observed in equilibrium.

In contrast, as the economy becomes more democratic, the welfare gain of replacing an incompetent policymaker with a new government is greater than its cost. This implies that any office-holder is in risk of being voted off if the citizens believe he is of the low-competence type. Therefore, in a more democratic environment, elections are threatening, and competent politicians will need to signal their quality to the public in order to ensure re-election. More specifically, Gonzalez (2000) shows that a unique separating equilibrium can be obtained, in which the skilled politician reduces the planned amount of the slow production good y in order to generate a drastic increase in the visible good x as a signal of competence. This electoral distortion will convey information to the voters regarding the incumbent's true ability, and as a result, only the competent leaders will be reappointed for a second political term.

Importantly, as pointed out by Gonzalez (2000), it can be argued that the public may be able to learn the office-holder's true skill directly from the environment with certain probability. This likelihood can be interpreted as the country's level of transparency, which may be linked to the degree of democracy. In developed democracies, information may be more readily available to the public, and a free press will flourish as political and civil rights are strong. As a result, it becomes easier for the voter to learn about the present and future policies being implemented by the government, and to deduce the latter's ability. Hence, the competent leader's need to signal in equilibrium is reduced.

In summary, a more democratic environment generates two opposite forces affecting the size of the election cycle. On the one hand, as the cost of enforcing the political turnover diminishes, competent governments are enticed to increase the magnitude of the visible component of the government spending before the election to improve their re-election odds. On the other hand, as the higher level of democracy increases the voters' chances to learn the true value of the office-holder's competence, the distortion is attenuated. The question of which of these two forces is the strongest one is really an empirical matter and the response may vary from country to country.

4. Conclusions

The findings presented in this paper have several interesting implications. First, the analysis shows that the Mexican government has, indeed, manipulated fiscal policy for political purposes prior to all federal elections; the policy variable used seems to be infrastructure spending. Some evidence suggests that a public investment boom starts relatively early in the political term (at least six quarters prior to the election), continues until at least the last quarter prior to the ballot, and then diminishes as the election quarter is reached. Slightly more modest evidence suggests that current transfers have also been used by the government as a means to earn votes, and that this type of government spending tends to be concentrated most heavily during the election quarter itself.

Earlier literature, too, documents a strong pre-election use of public investment, especially in developing countries. Khemani (1999) showed that state elections in India were preceded by a government spending spree in road construction. Kraemer (1997) and Schuknecht (1996) reported evidence on election cycles in developing countries that relied on the production of public capital. The heavy dependence on this component of the government expenditures contrasts sharply with the evidence for OECD economies, where personal transfers and taxes have usually been the policy instruments playing a major role around elections.

The most relevant finding in this study is, perhaps, the one regarding links between the degree of democracy and the magnitude of the election cycle. Practically all the estimations show that the strength of the distortion is exacerbated during more democratic periods. The conclusion is that the Mexican government has relied on heavy pre-election spending as the country's democratization process has induced a bigger threat for the ruling party to lose power.

The theoretical framework suggests that an increasing level of democracy is likely to increase the country's level of transparency. This feature may reduce the incumbent government's incentive to generate pre-election cycles. Therefore, a reasonable interpretation of the present empirical results is that the Mexican democratization process has not increased the country's transparency rapidly enough to reduce the incumbent's temptation to engage in opportunistic policy-making.

Future research could take several directions. One of the most promising falls into the policy arena. In our benchmark model, competent politicians have incentives to manipulate government spending, while trying to enhance the re-election odds. Clearly, such an equilibrium outcome embodies a welfare loss that might be suppressed by imposing certain regulations to policy-making. As pointed out by Rogoff (1990), for such regulations to be welfare-improving, the information flowing to the public regarding the incumbent's competency must not be curtailed; otherwise, citizens may be unable to tell politicians apart when casting their votes.

A second mechanism can be used to curtail the opportunistic cycles generated by the executive branch of power: as alternative political institutions are introduced or enhanced, the discretion with which the government manages fiscal policy may be reduced. For instance, a strong Congress may be able to reduce the executive's ability to choose fiscal policy opportunistically. However, as more political parties come into play when policy decisions are made, new incentives arise, and hence the emergence of a different type of election cycle is likely to occur, as discussed by Alesina et al. (1997) and Drazen (2000).

Importantly, this type of change in regulations and/or institutions often emerges during the democratic episodes in a country's political history. Hence, understanding the mechanisms through which different schemes may work, as well as their welfare consequences, is of great importance in a world that is witnessing a strong democratization wave.

5. Data Appendix

Data on public expenditure were extracted from the publication *Estadisticas de Finanzas Publicas. Gobierno Federal, Cifras Mensuales 1938–1980* and from the electronic database *Sistema de Finanzas Publicas y Deuda Publica*. All variables are in

quarterly frequencies. The presence of seasonal effects in all series was handled by applying the Ratio to Moving Average Filter. The real price of crude oil, the index of industrial production, the population, and the CPI were obtained from the International Monetary Fund's International Finance Statistics CD-ROM.

The two first indicators of democracy were extracted from the Polity III Database (Jaggers and Gurr, 1995): the autocracy index, which reflects the general closedness of the country's political institutions, and the Regulation of Participation Index, which measures the development of institutional structures for political expression. The Polity III Database covers the whole period of interest 1957–97 for the case of Mexico. A third index (Index of Political Coercion) was obtained from the Freedom House index of Political Rights. This index is available only since 1972. A measure was constructed covering the period 1957–97 based on the regression estimates of the Freedom House score on several indicators from the Banks Cross-National Database. The Banks database contains objective measures of political events, such as the number of annual political assassinations, antigovernment demonstrations, guerrillas, riots, and an index of party legitimacy for the period 1957–97. Therefore, the indicator reflects the component of the Freedom House index that is based on the observation of these sociopolitical events.

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Notes

1. The lag structure in equation (1) is chosen according to the statistical significance of the last lag, starting with a structure of six lags. I have applied the serial correlation Breusch–Godfrey LM test and the White test for heteroskedasticity (with no cross terms); appropriate corrections have been implemented when necessary.

2. All variables have been tested for stationarity through the augmented Dickey Fuller test (including trend and constant). There is no evidence to reject the null hypothesis of a unit root for none of the policy indices. Hence, they have been re-expressed in annualized growth rates, constructed from their log-differences, $log\,x_t - log\,x_{t-4}$.

3. Every six years, the Congress and presidential elections coincide.

4. The dummy, $Elect_t$, has been kept separate because the election in Mexico takes place early in the respective quarter, and hence it might pick up post-election rather than pre-election effects.

5. Results are not reported, but are available upon request.

6. The series used in our study correspond to the income and expenditures of the central government only. Hence, the direct proceeds and expenditures of PEMEX, the public monopoly for oil extraction, processing and distribution are not included.

7. The tests between the real price of crude oil and the political indices were performed based on a relatively large number of lags, since the development of democratic institutions constitutes a process that develops slowly over time. The tests used annual data since the relationship between democracy and economic variables is likely to develop in a long time span. A total number of 41 observations were included.

8. The results involving the Index of Autocracy and the Index of Regulation of Participation may lack power, given the small variation that these two variables have presented over time. Owing to this weakness, we give attention to the results for the Index of Political Coercion (which have higher power, since this index has displayed significant variability during the sample period).

9. Detailed results for the estimations for $K = 1$ to 8 are available upon request. The estimated coefficients for both the benchmark and the interacted models at all horizons are very close to those presented in the main text.

10. The point estimates for the constant terms of these regressions (not reported in the tables for brevity) are: 0.0746 for the growth of investment in infrastructure, 0.1458 for the growth in total government's income, and 0.1652 for the growth in current transfers.

11. The correlation coefficient between the Index of Autocracy and the Index of Political Coercion equals 0.2159, while the Index of Autocracy and the Index of Regulation of Participation have a correlation of 0.9655.

12. Recall that we have already introduced controls for the level of economic activity in the previous estimations, through an index of industrial production.