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MOOTED SIGNALS: ECONOMIC DISTURBANCES AND POLITICAL BUDGET CYCLES

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Governments can finance fiscal expansions with debt to appear competent and boost their electoral prospects, resulting in a political budget cycle. This article shows that economic disturbances blur competence signals, dampening political budget cycles. Economic disturbances can be construed at the aggregate level as economic volatility which is a consequence of decisions taken by diverse economic actors. The more actors that are not elected at the national level have an impact on economic performance, the more difficult it will be for voters to disentangle government-specific competence shocks. Fiscal decentralisation increases policy leverage of governing bodies that are not elected at the national level; economic openness affects the number of foreign economic actors that cannot be held locally accountable. These two factors therefore limit voters' ability to disentangle individual shocks to government competence, dampening strategic borrowing. The predictions receive empirical support from a time series-cross section analysis between 1980 and 2008.

JEL classification codes: D72, E62, D82
Key words: political budget cycles, economic volatility, fiscal decentralisation, economic openness

I. Introduction

A political budget cycle emerges when looming elections tempt governments to manipulate the national budget for electoral gain. If voters cannot perfectly observe the budget balance, governments may borrow in order to finance fiscal expansions that suggest to voters that they can now spend more with a given revenue –in other words that they are more competent fiscal administrators. In two connected articles,

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Alt and Lassen (2006 a,b) recently demonstrated that political budget cycles are more pronounced when low transparency prevents voters from monitoring the budget balance. The less well voters can observe the budget balance the more governments will be inclined to abuse fiscal policy to feign competence. Yet this assumes that voters can infer governments' competence from fiscal policy. This article builds on the insights from the economic voting literature to explore governments' incentives for political budget cycles when economic disturbances blur competence signals.[1] The less governments are believed to be responsible for fiscal outcomes, the less effective fiscal expansions are as an electoral weapon. This article shows that economic disturbances can moot competence signals and thus dampen the magnitude of political budget cycles.

Economic disturbances can be construed in two ways. Firstly, they can be seen as the aggregate influence on the economy, resulting from a myriad of factors influencing the real business cycle.[2] These factors include decisions of individual households and firms, global economic shocks, technological innovation, and international trade and finance. Although each of these factors are generally associated with the actions of non-elected and elected decision makers,[3] the result cannot easily be attributed to one specific actor. In a volatile economic environment, voters will find it increasingly difficult to extract government competence signals from shocks caused by non-elected actors. Economic volatility, as this article will show, thus dampens the effectiveness of public debt as a strategic instrument and thus reduces the magnitude of political budget cycles.

Economic volatility is an aggregate measure of shocks to the economy. A second way of construing economic disturbances is to look at the influence of specific actors that influence economic performance. The more economic decisions are made by actors that are not held accountable at the national level, the more difficult it will be for voters to extract the government's contribution to economic performance. This should reduce the incentive to borrow strategically before a general election. The article will illustrate this mechanism with respect to two measures, one at the

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[1] "Signals" in this article should be understood as "messages" governments wish to transmit to voters –they do not result from a theoretical signalling game.

[2] See, e.g., Romer (2001), chap. 4.

[3] Certainly, some types of economic shocks are not based on the decisions of human actors, such as shocks to commodity prices due to adverse weather conditions. However, to the extent that these shocks are mediated by economic actors, such shocks are not necessarily incommensurate with the argument advanced in this article.

domestic and one at the international level. Domestically, it will turn to fiscal decentralisation and the extent to which lower-government levels are responsible for policy. The more state and local government is empowered, the more difficult it will be for voters to assign responsibility for fiscal policy to specific levels, branches, and agencies of government. One would thus expect fiscal decentralisation to dampen the magnitude of political budget cycles.

At the international level, non-elected actors influence domestic economic performance in particular through trade and international finance. For example, the oil shock from 1973 was caused by a number of Arab oil producers in an attempt to discourage Western countries from supporting Israel during the Yom Kippur war. Since petroleum is the primary source of energy, industrial production in the affected countries was significantly curtailed during that period. Another example is the 2007 credit crunch which originated in the US housing market but turned into a global financial and economic crisis across the world, due both to the international trading in US mortgage-backed securities as well as the importance of the United States as a trading partner. The more open a country is to international trade and finance, the more economic performance is shaped by the decisions of actors that are not elected at the domestic level. Accordingly, the extraction of government competence becomes increasingly difficult with more economic openness, which, as this article demonstrates, in turn decreases the magnitude of political budget cycles.

Given these three different measures of 1) economic volatility, 2) fiscal decentralisation, and 3) economic openness, this article will show that economic disturbances limit the use of strategic debt. The predictions receive support from a large cross-section of member states of the Organisation for Economic Development and Cooperation (OECD) for the period from 1980 to 2008. The remainder of this article proceeds as follows. Section II embeds the argument in the theoretical and empirical literature. Section III presents a model of political budget cycles conditioned by economic volatility and the number of decision makers that are not electorally dependent at the national level. The proposition derived from the model will be tested in the following three sections, where Section IV introduces the data, Section V discusses the estimation procedure and Section VI discusses the results. The last section concludes.

II. Related literature

The literature on political budget cycles is closely linked to the one on economic voting. If voters did not care about economic performance Nordhaus (1975) could

not have argued in his seminal paper that politicians try to enhance their electoral stakes by boosting the economy, resulting in a political business cycle. Nordhaus's ideas on electoral manipulation were based on the Phillips Curve relationship between unemployment and inflation. Accordingly, the theory crumbled when it was shown to be an empirical relationship when expectations are adaptive (Lucas 1976) - but one that could not be exploited for electoral gain under rational expectations (Kuklinski and West 1981). Rogoff and Sibert (1988) developed an alternative theory of electoral manipulation which incorporated rational expectations.[4] In their model governments tried to demonstrate administrative competence through the strategic use of seignorage or public debt. Building on this work, Rogoff (1990) specifically focused on fiscal policy, coining the term of political *budget* cycles to distinguish cycles in taxes, expenditures, or deficits from political *business* cycles, induced by monetary policy. However, still, these models are built on the premise that voters care about the government's economic performance.

The seminal work on economic voting were Kramer's (1971) and Fair's (1978) studies of the impact of the economy on U.S. presidential votes. Their work has inspired a vast amount of related studies (see, e.g. Tufte 1978; Markus 1988; Erikson 1989; Lewis-Beck 1990; Lewis-Beck and Stegmaier 2000). However, the link between macroeconomic performance and votes for the incumbent turned out to be unstable over time (Paldam 1991). Subsequent research was therefore devoted to uncovering the factors that result in this variation in economic voting. One approach was presented by Powell Jr and Whitten (1993), studying nineteen developed democracies.[5] They emphasised the political and institutional context in which votes were cast and attributed particular importance to the "clarity of responsibility", i.e. the extent to which voters could hold governments accountable for policy. Their approach was path breaking and emulated in numerous studies (see, e.g., Anderson 2000; Nadeau, Niemi and Yoshinaka 2002; Taylor 2000; Hellwig 2007, 2008; Duch and Stevenson 2008).

If voters cannot easily associate economic outcomes with government policy because other factors obstruct the clarity of responsibility, the cost of strategic

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[4] In the original Rogoff and Sibert model, competent governments finance fiscal expansions with debt in order to signal their competence to the electorate. Later versions of this model eschewed the adverse selection part resulting in the signalling and concentrated on the moral hazard part (Lohmann 1998). The theory in this article, in line with most of the recent empirical and theoretical literature, follows this latter approach. For a justification see Persson and Tabellini (2000) and Shi and Svensson (2003).

[5] Stigler (1973) anticipated Powell and Whitten's argument but could not present empirical evidence for his theory that emphasised the responsibility of the governing party.

borrowing offsets potential gains from pre-electoral fiscal expansions. For this reason, the clarity of responsibility argument has important implications for the theories of pre-electoral manipulation. Indeed, Lohman's (1998) workhose model of political *business* cycles already points at this signal extraction problem in the case where shocks to inflation moderate the government's impact on economic growth through its use of monetary policy. This article is related to her work but it concentrates more closely on the signal extraction problem and it focuses on fiscal rather than monetary policy.

Clarity of responsibility for fiscal policy depends on many factors. This article focuses in particular on economic disturbances, that is, factors beyond the immediate control of the central government. To the extent that economic disturbances differ both across countries and time, this emphasis adds a new dimension to previous studies on context-conditional political budget cycles that have largely dealt with explaining cross-sectional variation (e.g. Brender and Drazen 2005; Shi and Svensson 2006; Alt and Lassen 2006 a,b; Rose 2006).

There are different ways of construing economic disturbances. One approach was first presented by Quinn and Woolley (2001) who focus on economic volatility. A key result from the analysis is that the economic vote for incumbents is suppressed by economic volatility since a volatile environment makes it harder for voters to extract the government's competence. A second conceptualisation of economic disturbances was pointed out by Duch and Stevenson (2008) who associate them with "nonelectorally dependent decision makers." These actors do not compete at the national level and thus do not factor into the vote choice in general elections. However, the more actors there are that influence economic performance, the more difficult it is for voters, again, to disentangle the individual contribution of the government. Thus, the more non-elected decision makers there are, the smaller the economic vote will be.

This article follows these two distinct conceptualisations. First, the analysis will turn to economic volatility. Second, the analysis will look at the number of nonelectorally dependent decision makers. Certainly, there are different ways of defining these. The article will loosely follow Duch and Stevenson. However, some of their measures of nonelectorally dependent decision makers, including regulatory density and corporatism, are not appropriate for this article: whilst these measures relate to economic performance generally, they cannot easily be linked to fiscal policy which is the emphasis of this article. Instead, the analysis below will therefore focus on fiscal decentralisation as a proxy for fiscal policymakers that are only held accountable at sub-national levels.

At the international level Duch and Stevenson's conceptualisation of nonelectorally dependent decision makers is more appropriate for this article. They focus on economic openness, arguing that trade and the free flow of capital reduces government's ability to use fiscal (and monetary) policy freely.[6] This article will echo their argument by employing an index that accounts for the extent to which a country is subject to shocks in trade and capital flows.

III. Theory

The model derived in this section draws on a number of studies. It explores electoral manipulation under rational expecations, as first modelled by Rogoff and Sibert (1988). In the Rogoff and Sibert model, a moral hazard problem arises because voters do not observe all components of the national budget; an adverse selection problem arises because administrative competence levels are known to politicians but not to voters. As in Lohmann (1998), this article eschews the adverse selection element and focuses on the moral hazard problem. Accordingly, neither politicians nor voters can observe competence contemporaneously. This assumption is not unreasonable, as pointed out by Shi and Svensson (2003:70):

> "Given the large set of possible policy issues that a government may face, the assumption simply means that politicians are (ex ante) uncertain about how well they will be able to handle future problems, and thus how well they will be able to transform government revenues into public output."

Instead of focusing on monetary policy this article focuses on fiscal policy and political budget cycles (Rogoff 1990). The emphasis on the moral hazard problem and fiscal policy is comparable to similar models presented by Persson and Tabellini (2000), Shi and Svensson (2006) and Alt and Lassen (2006a). The model will be complemented with elements of the economic voting model developed by Duch and Stevenson (2008).

Let voter i's utility be expressed as follows:

$$U_s^i = \sum_{s=t}^{T} \beta^{s-t} \left[g_s + u(c_s) + \theta^i z_s \right], \tag{1}$$

[6] For a related argument see Hellwig (2007) and Hellwig and Samuels (2007).

where b is a discount factor which is assumed to be one. Voters are assumed to have a non-economic bias toward either the incumbent or the challenger which is represented by the term $\theta^i z$, where $z = \{-½,½\}$ respectively for the incumbent party and the challenger. Moreover, $\theta^i \sim unif[-½+v;½+v]$, where $v \in [-½,½]$. The parameter v is exogenously determined and reflects the challenger's popular advantage on non-economic policy; that is *higher* values of v represent a *lower* non-economic popularity of the incumbent party. $u(c)$ represents the utility for consumption, where consumption c is:

$$c_t = y - \tau_t, \tag{2}$$

where y is income and τ is the tax rate. Note that taxes are lump sum and do not change proportionally with income. Politician j's utility is:

$$U_s^j = \sum_{s=t}^{T} \beta^{s-t} \left[g_s + u(c_s) + X \right], j = \{a,b\}, \tag{3}$$

where X indicates ego-rents. The incumbent is labeled as a and b is the challenger. Government expenditure g is given by

$$g_t = \tau_t + d_t - R(d_{t-1}) + \eta_t^j + \sum_{l=1}^{\xi} \varepsilon_{lt}, \tag{4}$$

where τ is tax revenue and d is the deficit. $R(d)$ is the cost of the deficit, for which it is assumed that $R(0) = 0, R'(d) > 0, R'(0) \geq 1$, and $R''(d) > 0$. Government competence is given, as in previous articles, by η, which is modeled as a sequence of individual competence shocks, μ:

$$\eta_t^j = \mu_t^j + \mu_{t-1}^j, \; j = \{a,b\}. \tag{5}$$

The model differs from similar variants in the literature by introducing an additional disturbance, the economic shock ε. This shock represents decisions made my nonelectorally dependent actors. There are $\xi \in \mathrm{N}$ such actors in the economy, each adding to the overall economic shock. The values for both economic shocks, ε, and competence shocks, μ, are distributed identically and independently (*iid*) with zero mean and finite variance:

$$k_t = \mu_t^j + \sum_{l=1}^{\xi} \varepsilon_{lt} \overset{\text{iid}}{\sim} N\left(0, \sigma_\mu^2 + \xi\sigma_\varepsilon^2\right). \tag{6}$$

The sum of the random shocks, k, has a distribution function $F(k)$ and a density function $f(k)$. Elections take place at the end of every other period: an election is held in period t; period $t + 1$ is the post-election period; another election will be held at the end of period $t + 2$. The model focuses on only one election.[7] Equation 5 stipulates that competence persists for two periods. Hence, competence in the pre-election period is partly carried over into the next electoral term. Yet, since elections are held every two periods, competence in the post-election period ($t + 1$) is not carried over into the next electoral term (beginning in period $t + 3$, after an election at the end of period $t + 2$). Incumbents thus only have an incentive to feign competence in the election period.

As incumbents do not have an incentive to feign competence in off-election periods and since the marginal utility of public consumption is constant at one ($g'(d) = 1$) and the marginal cost of borrowing is greater or equal than one and increasing when the deficit exceeds zero ($R'(0) \geq 1; R''(0) > 0$), incumbents will not borrow in off-election years. In fact, they will repay any outstanding debt. Accordingly, the cost of servicing outstanding debt in the election year is zero.

The equilibrium tax rate τ^* is determined by maximising the government's utility:

$$\max_{\tau} \mathrm{E}_t\left[g_t + u\left(c_t\right) + X\right], \tag{7}$$

$$s.t.\ g_t = \tau_t + \eta_t + \sum_{l=1}^{\xi} \varepsilon_{lt}. \tag{8}$$

The solution to this maximisation problem, solving for the equilibrium tax rate τ^*, is:

$$\tau_t = \tau^* = y - u_c^{-1}(1), \tag{9}$$

where $\tau = \tau^*$ and is the same for both the incumbent a and challenger b. The two candidates will set the same tax rate, however they differ in their competence in delivering public goods given the revenue they collect. Indifferent voters will vote

[7] This discussion compares to Shi and Svensson (2006: 1377–1378).

for the candidate that is expected to be more competent. In the case of candidate *b*, the challengers, voters have no information about competence. They will thus form their expectations on the mean value of μ which is zero. From equations 4 and 5, expected government expenditure of candidate *b* in the next period, $t + 1$ is thus:

$$\mathrm{E}_t\left[g^b_{t+1}\right]=\tau^*-\mathrm{E}_t\left[R\left(d^*_t\right)\right], \tag{10}$$

where d^* is the equilibrium deficit in the election year, yet to be derived. The expected government expenditure for the incumbent *a* can be derived in a similar way, except that voters observe the government's competence in period $t - 1$:

$$\mathrm{E}_t\left[g^a_{t+1}\right]=\tau^*-\mathrm{E}_t\left[R\left(d^*_t\right)\right]+\mathrm{E}_t\left[\mu^a_t|k\right]. \tag{11}$$

Voter *i* will vote for candidate *a* if:

$$\mathrm{E}_t\left[\mu^a_t|k\right]-\theta^i\geq 0. \tag{12}$$

The probability that voter *i* will vote for candidate *a* can thus be calculated as follows:

$$\Pr\left(\mathrm{E}_t\left[\mu^a_t|k\right]-\theta^i\geq 0\right)=\mathrm{E}_t\left[\mu^a_t|k\right]+\frac{1}{2}-v. \tag{13}$$

The expectation of the government's competence shock conditional on the overall shock, $\mathrm{E}\left[\mu^a_t|k\right]$ can be presented as:

$$\mathrm{E}_t\left[\mu^a_t|k\right]=\rho_{\mu^a_t k}\frac{k-\mathrm{E}[k]}{\sigma_k}\sigma^a_\mu+\mathrm{E}\left[\mu^a_t\right]=\left(\frac{\sigma^2_{\mu^a}}{\sigma^2_{\mu^a}+\xi\sigma^2_\varepsilon}\right)\left(g_t-\tau^*-d_t-\mu^a_{t-1}\right). \tag{14}$$

Since voters cannot observe the deficit, their best guess of the overall expected competence shock to public expenditure, $\mathrm{E}\left[\hat{\mu}^a|k\right]$, can be calculated as follows:

$$\mathrm{E}_t\left[\hat{\mu}^a_t|k\right]=\left(\frac{\sigma^2_{\mu^a}}{\sigma^2_{\mu^a}+\xi\sigma^2_\varepsilon}\right)\left(g_t-\tau^*-\hat{d}_t-\mu^a_{t-1}\right). \tag{15}$$

Substituting equations 4 and 5 into equation 15 yields:

$$\mathrm{E}_t\left[\hat{\mu}_t^a \middle| k\right]=\left(\frac{\sigma_{\mu^a}^2}{\sigma_{\mu^a}^2+\xi\sigma_\varepsilon^2}\right)\left(\mu_t^a+\varepsilon_t+d_t-\hat{d}_t\right). \tag{16}$$

From equations 13 and 16, the probability P that candidate a receives at least 50% of the votes can be expressed as:

$$\begin{aligned} P_t &= P_r\left(\left(\left(\frac{\sigma_{\mu^a}^2}{\sigma_{\mu^a}^2+\xi\sigma_\varepsilon^2}\right)\left(\mu_t^a+\varepsilon_t+d_t-\hat{d}_t\right)+\frac{1}{2}-v\right)\geq\frac{1}{2}\right) \\ &= 1-F\left(\left(\hat{d}_t-d_t\right)+\left(\frac{\sigma_{\mu^a}^2+\xi\sigma_\varepsilon^2}{\sigma_{\mu^a}^2}\right)v\right). \end{aligned} \tag{17}$$

The government then maximises its expected utility for periods t and $t+1$.

$$\begin{aligned} &\max_d \mathrm{E}_t\left[\tau^*+d_t+\eta_t^a+u\left(y-\tau^*\right)+X\right]+\mathrm{E}_t[(1-F\left(\left(\hat{d}_t-d_t\right)+\left(\frac{\sigma_{\mu^a}^2+\xi\sigma_\varepsilon^2}{\sigma_{\mu^a}^2}\right)v\right) \\ &*\left(\tau^*-R\left(d_t\right)+\eta_{t+1}^a+u\left(y-\tau^*\right)+X\right)]+\mathrm{E}_t[F\left(\left(\hat{d}_t-d_t\right)+\left(\frac{\sigma_{\mu^a}^2+\xi\sigma_\varepsilon^2}{\sigma_{\mu^a}^2}\right)v\right) \\ &*\left(\tau^*-R\left(d_t\right)+\eta_{t+1}^b+u\left(y-\tau^*\right)\right)]. \end{aligned} \tag{18}$$

The first order condition for this maximisation problem is:

$$1+f\left(\left(\hat{d}_t-d_t\right)+\left(\frac{\sigma_{\mu^a}^2+\xi\sigma_\varepsilon^2}{\sigma_{\mu^a}^2}\right)v\right)X-R'\left(d_t\right)=0. \tag{19}$$

In equilibrium the incumbent's choice of the deficit d^* must be consistent with the voters' expectations. Thus in equilibrium $d^* = \hat{d}_t = d_t$. This means that voters fully understand the government's incentives and correctly anticipate any electoral changes in the deficit. Given the assumptions about the function F, the first order condition in equation 19 must hold in equilibrium:

$$1+f\left(\left(\frac{\sigma_{\mu^a}^2+\xi\sigma_{\varepsilon}^2}{\sigma_{\mu^a}^2}\right)v\right)X-R'\left(d^*\right)=0. \tag{20}$$

Totally differentiating the first order condition yields the following comparative static for *economic volatility*, σ_{ε}^2:[8]

$$\frac{\partial d^*}{\partial \sigma_{\varepsilon}^2}<0. \tag{21}$$

Analogously, for the *number of nonelectorally dependent actors*, ξ, total differentiation yields:

$$\frac{\partial d^*}{\partial \xi}<0. \tag{22}$$

These findings can be summarised in the following proposition.

Proposition 1. *Comparative statics of equilibrium pre-electoral deficit*
a) The equilibrium deficit, d^*, decreases as the variance of economic shocks, σ_{ε}^2, increases.
b) The equilibrium deficit, d^*, decreases as number of nonelectorally dependent decision makers, ξ, increases.

To summarise the intuition of the model, economic disturbances blur responsibility for variations in government output: an increase in output could result from an increase in government competence as well as from an economic shock over which the government had no control. A government that wishes to take advantage of asymmetric information over the deficit in order to fool voters into believing that an increase in expenditure results from higher administrative efficiency has a lower incentive to do so if it is less likely to be rewarded at the polls. Borrowing is costly and it is only rational for governments to feign competence if the vote gain offsets this cost. Economic volatility, and the number of non-elected economic actors, decrease economic voting and the relative cost of electoral manipulation increases. Therefore, political budget cycles are less likely to emerge in an economically

[8] The comparative statics are derived in the appendix.

volatile environment, or an environment characterised by many nonelectorally dependent decision makers. The next two sections will deal with the empirical tests of this proposition.

IV. Data

The dependent variable for the analysis is the fiscal deficit. An alternative operationalisation could be government expenditure or taxation. Using the deficit has the advantage that it combines both: fiscal expansions and tax cuts, according to the theory, will both increase the deficit. The standard operationalisation is the budget balance as a percentage of GDP, where a *negative* budget balance corresponds to a fiscal deficit. Data on the budget balance of general government were obtained from the *2009 World Economic Outlook*, published by the International Monetary Fund (IMF). Ideally, the variable would capture the budget balance of *central* rather than *general* government as the latter includes lower tiers of government which the theory above is silent about. The World Bank's *World Development Indicators* (WDI's) contain budget balance (cash surplus / deficit) data for central government. The correlation between these data and the IMF general government budget balance data is $r = 0.96$ which suggests that general government data are a valid proxy. The analysis will focus on the IMF data because of better coverage. Data are available for the period 1980 until 2008, however time series differ in length for individual countries, the panel is thus unbalanced. Deficit data are available only for OECD countries.[9]

The key independent variables for the analysis are measures of economic disturbances. The first measure, which will be used to test proposition 1a), is economic volatility, *LN VOLATILITY*. For this analysis, it was constructed by calculating the variance in quarterly, seasonally adjusted, economic growth over two years. The growth data were obtained from the WDIs. It is a judgment call as to how many observations to include in calculating the variance in economic growth. Two years, i.e. eight quarters, seem a reasonable period. The two-year period corresponds closely to the theoretical model which assumes the persistence of competence shocks for two periods. It should therefore be an appropriate measure to test the proposition derived from the model and will therefore be the

[9] It should be noted that these are generally developed countries (Shi and Svensson 2006) with relatively high transparency levels (Alt and Lassen 2006a,b). Accordingly, the empirical analysis will be conducted in the most "adverse" scenario for political budget cycles. Conversely, supportive results should strengthen the argument considerably.

operationalisation used in the analysis.[10] The volatility data are heavily skewed which is why the variable will be used as a function of natural logarithms. Data availability allows the inclusion of 26 countries.[11]

Two measures for the number of nonelectorally dependent decision makers will be employed to test proposition 1b). First, the analysis will turn to domestic decision makers and include a measure of fiscal decentralisation, *LOCAL REVENUE*. To construct this measure, revenue data by government-tier were obtained from the OECD's statistics service. The variable was calculated as the percentage share of local and state government revenue in total government revenue. For most countries, data are available for the entire sample period of 1980 to 2008 and 28 countries are available for the analysis.[12]

The second measure of nonelectorally dependent decision makers is economic openness. To closely follow the intuition of the model above, economic openness is conceptualised as the product of nonelectorally dependent decision makers and the variance of shocks at the international level. The measure will include components of both international trade and capital flows. For trade, yearly data on a country's import and export volume, and quarterly data on its terms of trade (calculated as prices for exports / prices for imports) were obtained from the WDIs. The yearly trade data were then multiplied by the logged two-year variance of the quarterly terms of trade data.[13]

For the capital component, yearly and quarterly data for FDI and portfolio investment were obtained from the IMF's *International Financial Statistics*. Again, the logged two-year variances of the quarterly data were multiplied with their

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[10] This theoretical justification aside, there are also few practical alternatives to this measure. A one-year window does not contain sufficient quarterly data to calculate a meaningful measure of volatility. Monthly growth data would be valuable information but such data are not widely available. A possible alternative measure is the variance in growth from a three-year window. This measure was calculated to check the robustness of the findings. All results from the analysis below are robust to this alternative operationalisation.

[11] The countries included in the analysis are: Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, South Korea, Luxembourg, the Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland, the United Kingdom, and the United States.

[12] The countries included in the analysis are the same as for economic volatility, but including in addition Israel and New Zealand.

[13] The choice of a two-year window for calculating the variance in the terms of trade echoes the window for the economic volatility data.

respective yearly variables. These three products were then transformed into indices for trade, FDI, and portfolio investment: for variable values *V* three separate indices, each ranging from 0 to 10, were constructed using the formula $[(V_i - V_{\min})/(V_{\max} - V_{\min})*10]$. Higher values represent more openness. The mean value of the three indices forms the economic openness measure, *OPEN*. Data availability allows for the analysis of 27 countries between 1980 and 2008.[14]

The second key variable is the election dummy; it is based on data from the World Bank's 2008 edition of the *Database of Political Institutions (*Beck et al. 2001*)* and was manually extended up to the year 2008. In specifying control variables, the analysis will follow the specifications of other, similar, studies, in particular those of Shi and Svensson (2006). It will include the log of GDP per capita and a measure of economic growth. The variation in economic volatility may be an artifact of the business cycle; as economic volatility was calculated for a two-year window, two-year economic growth will be included as another control variable. All three control variables are based on GDP data from the IMF's *2009 World Economic Outlook*. Descriptive statistics for all variables can be found in the appendix.

V. Estimation

Proposition 1 will be tested in a pooled time series-cross section analysis. The empirical model to be estimated can be expressed as follows:

$$F_{i,t} = \beta_0 + \beta_1 F_{i,t-1} + \beta_2 ELECT_{i,t} + \beta_3 DISTURB_{i,t} + \beta_4 ELECT_{i,t} * DISTURB_{i,t} + \gamma' \mathbf{X_{i,t}} + \eta_i + \lambda_t + v_{i,t}, \quad (23)$$

where $i = 1,2,....,N$ and $t = 1,....,T$. $F_{i,t}$ is the indicator of fiscal policy, which in this case is the budget balance. This means that *negative* values of the dependent variable indicate a budget deficit. *ELECT* is a dummy variable indicating whether an election took place in year *t*. *DISTURB* represents the different measures of economic disturbances: economic volatility, fiscal decentralisation, and the index of economic openness. The main interest of the empirical analysis lies with the coefficients on the variable *ELECT* and the interaction of *ELECT* and *DISTURB*. The overall effect is

[14] Country coverage is the same as for fiscal decentralisation but excludes South Korea. Investment data are largely available for Belgium and Luxembourg as a joint entity. In this case, the data were assigned to Belgium as the bigger country. Luxembourg is included for the early millennium when individual investment data are available.

expected to be negative, since elections cause a decrease in the budget balance, but increasing in the disturbance measures due to the weakening of competence signals.

Apart from these main variables of interest the statistical model will include a lagged dependent variable, $F_{i,t-1}$ to model the underlying dynamics of the dependent variable. The economic control variables are included in the vector $\gamma' \mathbf{X_{i,t}}$. The parameters η_i and λ_t are the country and time specific error terms while $v_{i,t}$ indicates the overall error.

Data for the budget balance are available for 28 years which means that the length of the time series employed in the analysis is rather short. Estimating the model with fixed effects (FE) allows to account for the heterogeneity across countries. However, FE combined with a lagged dependent variable can result in significant bias, given the short time series (Nickell 1981). Arellano and Bond (1991) developed a model that circumvented this problem by differencing all variables and instrumenting the lagged, differenced dependent variable. This method, based on the General Method of Moments (GMM) has been widely used in the study of political budget cycles (Shi and Svensson 2003; Brender and Drazen 2005; Shi and Svensson 2006). The method comes in two variants: difference-GMM is the original estimator which was later enhanced to also incorporate the lagged equations, resulting in a method called system-GMM (Arellano and Bover 1995; Blundell and Bond 1998). This method is particularly suited for cases in which the dependent variable is highly persistent –as is the case with deficit data. System-GMM is thus the estimator chosen in the analysis below.[15]

The presentation of the results closely follows Bond's (2002) recommendations on implementing the GMM estimator. The tables presenting the main results will thus also include the pooled and FE estimates. If correctly implemented, the estimate for the lagged dependent variable will lie between the pooled and FE estimates. The tables also report the AR2 statistics for the first-differenced residuals (also known as the "Arellano-Bond test"). For the instruments to be correct, given the lag structure, there must be no second-order autocorrelation. Lastly, the Hansen (1982) test of overidentifying restrictions will be reported.[16]

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[15] The System-GMM estimator will be used in its robust one-step version. System-GMM is derived under the assumption of absent contemporaneous correlation. Time dummies will thus be included in all analyses.

[16] The number of lags that can be used as internal instruments is restricted to a maximum of three in all GMM analyses. However, in spite of the reduced instrument count, the Hansent test consistently approaches unity which is most likely a consequence of its weak power in the presence of many instruments (Bowsher 2002).

VI. Results

Table 1 presents the results of the statistical analysis with respect to economic volatility. Columns one and two present the results for the election dummy in the pooled and fixed effects analyses respectively. Column three presents the GMM result. As expected, the coefficient for the lagged dependent variable in the GMM specification lies in between the pooled and FE estimates, suggesting that the model is correctly specified. There is no second-order autocorrelation in the differenced residuals (which would invalidate the instruments).

The Hansen test does not reject the hypothesis of valid overidentifying restrictions –however, it should be borne in mind that this test is weakened by the number of instruments.

Table 1. Economic volatility and political budget cycles (dependent variable: budget balance)

Model	(1)	(2)	(3)	(4)	(5)	(6)
Method	Pooled	FE	GMM	Pooled	FE	GMM
BALANCE (L1)	0.93***	0.78***	0.83***	0.93***	0.79***	0.83***
	(0.03)	(0.04)	(0.06)	(0.03)	(0.04)	(0.06)
GROWTH (1 YEAR)	0.28***	0.15	0.21**	0.28***	0.16	0.20**
	(0.11)	(0.12)	(0.13)	(0.11)	(0.12)	(0.10)
GROWTH (2 YEAR)	0.02	0.13*	0.14*	0.02	0.13	0.13*
	(0.06)	(0.07)	(0.09)	(0.06)	(0.08)	(0.08)
LN GDP	0.24	-0.11	-0.50	0.28	-0.19	-0.40
	(0.20)	(1.00)	(0.57)	(0.20)	(1.02)	(0.59)
LN VOLATILITY	-0.10*	-0.13	-0.07	-0.17***	-0.18	-0.14
	(0.06)	(0.09)	(0.13)	(0.06)	(0.10)	(0.12)
ELECT	-0.35*	-0.38**	-0.37***	-0.09	-0.20	0.05
	(0.18)	(0.13)	(0.15)	(0.24)	(0.17)	(0.20)
ELECT X LN VOLATILITY				0.24**	0.16**	0.33**
				(0.10)	(0.08)	(0.14)
Hansen test [a]			0.99			0.99
AR(2)[b]			0.21			0.16
No. countries	26	26	26	26	26	26
No. observations	486	486	486	486	486	486

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. Time dummies are included but not reported. [a] Test based on Hansen (1982); p-value reported. [b] Arellano-Bond test of no second order serial correlation; p-value reported. Number of instruments limited to first three lags of endogenous variables; number of instruments is 214 for model 3 and 293 for model 6.

The election dummy is negatively signed, as expected, and significant. It indicates that the budget balance decreases by 0.37 percentage points in election years. The magnitude of the political budget cycle is thus considerable.[17]

Columns four, five, and six repeat the analysis including the interaction effect between the election dummy and the logged volatility variable. Again, the model seems correctly specified: the GMM estimate of the lagged dependent variable in column six lies between the estimates for the pooled model (column four) and the FE model (column five). The autoregressive structure also suggests that the model is correctly specified. The interaction effect is statistically significant at the 5% level; its positive sign conforms to expectations: the larger the degree of economic volatility, the smaller is the effect of election years on the budget balance. To test the joint significance of the effect of election years of the budget balance, table 4 calculates the marginal effect of the election variable at different percentiles of economic volatility. Table 4 shows that the effect in model six is statistically significant both at the median level and the lower quartile. It is not significant at the upper quartile where volatility is particularly strong. The results are supportive of proposition 1a) as they indicate that at very high levels of volatility the political budget cycle is virtually zero and picks up in magnitude at lower levels of volatility. In the lower quartile of the volatility data the budget balance decreases by 0.6% of GDP, a considerable effect.

Tables 2 and 3 provide the analysis with reference to decision makers that are not electorally accountable at the national level. Table 2 includes the share of local and state revenue as a percentage of total revenue to capture the extent of fiscal decentralisation. As in table 1, table 2 first presents the model without the interaction effect. Looking at the diagnostics, the model is correctly specified. The lagged dependent variable in column three (model 9) lies in between the estimates from the pooled and FE regressions in the first two columns. The autocorrelation structure also suggests that the instruments are valid, even though the p-value for the AR2 structure is relatively low. The effect of the election dummy on the budget balance in the GMM model in column three is -0.44. This effect is statistically significant at the 1% level, indicating that a political budget cycle can be detected in these countries. The fiscal decentralisation index on its own is not statistically significant in any of the first three columns.

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[17] The median budget balance in the sample is –1.78. A change from –1.78 to (–1.78-0.37=) –2.15 constitutes a 20% increase in the budget deficit measured as a percentage of GDP.

Table 2. Fiscal decentralisation and political budget cycles (dependent variable: budget balance)

Model	(7)	(8)	(9)	(10)	(11)	(12)
Method	Pooled	FE	GMM	Pooled	FE	GMM
BALANCE (L1)	0.88***	0.80***	0.84***	0.88***	0.80***	0.83***
	(0.02)	(0.03)	(0.04)	(0.02)	(0.03)	(0.04)
GROWTH (1 YEAR)	0.25***	0.29***	0.29***	0.25***	0.29***	0.29***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
LN GDP	0.42**	0.51	0.87**	0.40**	0.48	0.87**
	(0.17)	(0.50)	(0.52)	(0.17)	(0.51)	(0.48)
ELECT	-0.35**	-0.35**	-0.44***	-0.55**	-0.63***	-0.92***
	(0.14)	(0.14)	(0.13)	(0.24)	(0.24)	(0.24)
LOCAL REVENUE	0.01	-0.01	-0.02	0.00	-0.01	-0.02
	(0.00)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)
ELECT X LOCAL REVENUE				0.01	0.02*	0.03**
				(0.01)	(0.01)	(0.02)
Hansen test [a]			0.99			0.99
AR(2)[b]			0.39			0.36
No. countries	28	28	28	28	28	28
No. observations	697	697	697	697	697	697

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. Time dummies are included but not reported. [a] Test based on Hansen (1982); p-value reported. [b] Arellano-Bond test of no second order serial correlation; p-value reported. Number of instruments limited to first three lags of endogenous variables; number of instruments is 309 for model 15 and 391 for model 18.

Columns four through six of table 2 focus on the fiscal decentralisation measure, *LOCAL REVENUE*. As expected, its interaction terms with the election dummy are positively signed. In the FE model, the term is significant at the 10% level and in the GMM model at the 5% level. In the pooled model it is not significant. The marginal effect from the GMM estimation can, again, be found in table 4. The effect is negative and statistically significant at the 1% level for the 50th and 25th percentile; the effect of election years on the budget balance expands from –0.15 when fiscal decentralisation is high to –0.74 when it is low. This illustrates clearly how the empowerment of subnational government distorts the central government's competence signals, thus dampening the magnitude of political budget cycles –a finding that is in line with proposition 1b).

Lastly, table 3 includes the third and last economic disturbance measure: economic openness. Looking at the diagnostics suggests, again, that the GMM model in column three is correctly specified. The first three columns do not include the

Table 3. Economic openess and political budget cycles (dependent variable: budget balance)

Model	(13)	(14)	(15)	(16)	(17)	(18)
Method	Pooled	FE	GMM	Pooled	FE	GMM
BALANCE (L1)	0.88***	0.75***	0.79***	0.88***	0.76***	0.79***
	(0.03)	(0.04)	(0.07)	(0.03)	(0.04)	(0.06)
GROWTH (1 YEAR)	0.26***	0.32***	0.32***	0.26***	0.32***	0.31***
	(0.04)	(0.05)	(0.05)	(0.04)	(0.05)	(0.05)
LN GDP	0.57**	0.47	0.22	0.58**	0.50	0.56
	(0.27)	(0.64)	(0.62)	(0.27)	(0.64)	(0.57)
ELECT	-0.22	-0.20	-0.21	-1.19**	-1.03**	-1.25***
	(0.16)	(0.16)	(0.17)	(0.54)	(0.51)	(0.41)
OPEN	0.00	-0.05	-0.06	-0.06	-0.10	-0.06
	(0.07)	(0.08)	(0.15)	(0.08)	(0.08)	(0.09)
ELECT X OPEN				0.24*	0.20*	0.24**
				(0.13)	(0.12)	(0.11)
Hansen test [a]			0.99			0.99
AR(2)[b]			0.75			0.60
No. countries	27	27	27	27	27	27
No. observations	615	615	615	615	615	615

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. Time dummies are included but not reported. [a] Test based on Hansen (1982); p-value reported. [b] Arellano-Bond test of no second order serial correlation; p-value reported. Number of instruments limited to first three lags of endogenous variables; number of instruments is 226 for model 7 and 311 for model 12.

interaction term. The election dummy is correctly signed but not significant; the openness measure on its own is not significant. Columns four to six include the interaction term between the measure of economic openness and the election dummy. The interaction term is consistently significant, at the 10% level for the pooled and FE analyses and at the 5% for the GMM analysis. The positive sign indicates that political budget cycles decrease in magnitude when the economy is more open. Table 4 illustrates this relationship. The effect changes from almost zero at the highest quartile (high openness) to –0.44 at the lowest quartile (low openness). For the lower two percentiles listed in the table, the effect is statistically significant at the 10% and 1% level respectively. This provides further support for proposition 1b) - political budget cycles are smaller in countries where economic openness blurs the responsibility for fiscal policy.

Further analyses were carried out to test the robustness of the results. Firstly, the sample does include some of the countries that Brender and Drazen (2005) label

Table 4. Marginal effects

Model		(6)	(12)	(18)
Conditioning variable		*LN VOLATILITY*	*LOCAL REVENUE*	*OPEN*
Percentile of conditioning variable	75th	-0.06	-0.15	-0.01
		(0.17)	(0.17)	(0.22)
	50th	-0.36***	-0.42***	-0.24*
		(0.13)	(0.10)	(0.14)
	25th	-0.60***	-0.74***	-0.44***
		(0.18)	(0.17)	(0.14)

*** p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses.

"new" democracies (notably Greece, Portugal, Spain, South Korea, as well as the Czech Republic and Slovakia).[18] Excluding these countries from the analysis indeed weakens the results, which is consistent with Brender and Drazen's argument that political budget cycles are less pronounced in countries where voters have acquired experience to effectively monitor their governments. As accountability improves, there is less scope for moral hazard in public finance and electoral manipulation decreases. However, to the extent that a political budget cycle can be detected, it is conditioned by economic disturbances.

Secondly, Alt and Lassen (2006 a) show that government ideology affects strategic borrowing where right-wing governments are more inclined to borrow before election. Thus, the government's ideology was controlled for, using the left-right measure from the World Bank's *Database of Political Institutions*. This variable does not reach conventional levels of statistical significance and the findings in the tables above are robust to this alternative specification. It can therefore be concluded that proposition 1 is supported well by the data.

VI. Conclusion

Faced with economic disturbances, what are governments' incentives to feign competence before an election? This article has argued that in such an environment these incentives are comparatively small. As the literature on economic voting has determined, economic disturbances make it harder for voters to determine whether

[18] Shi and Svensson's (2006) study is less suited to check the robustness of the results as all countries included in the analysis are OECD countries and thus relatively developed.

increases in government output are due to a positive economic shock or, indeed, to an increase in the government's administrative efficiency. The uncertainty surrounding competence shocks in this setting thus reduces the degree of economic voting. Building on the insights gained from this literature, this article takes the argument from voting to government behaviour.

The article has looked at two different aspects of economic disturbances: economic volatility and the influence of nonelectorally dependent decision makers. The latter was operationlised in two ways, once with respect to fiscal decentralisation and once with respect to economic openness. All these factors blur the government's competence signal and thus decrease the incentive to borrow before elections. The empirical evidence supports this proposition. The three sources for economic disturbances explored in this article by no means constitute an exhaustive list. More research should be devoted to exploring the effect of other disturbances on the magnitude of political budget cycles, both in developed and developing countries. Forging further links between the literatures on political budget cycles and economic voting are likely to yield interesting additional insights.

Appendix

A. Theoretical

The comparative statics can be derived easily from the equilibrium condition in equation 20. Since the function $f(.)$ is a normal probability density function, totally differentiating equation 20 with respect to economic variance, $\sigma_{\varepsilon a}^2$, yields:

$$\frac{\partial d^*}{\partial \sigma_\varepsilon^2} = -\frac{1}{4} \frac{\xi e^{-\frac{v^2\left(\sigma_{\mu^a}^2 + \xi\sigma_\varepsilon^2\right)}{2\sigma_{\mu^a}^2}} \sqrt{2}\left(v^2\left(\sigma_{\mu^a}^2 + \xi\sigma_\varepsilon^2\right) + \sigma_{\mu^a}^4\right) X}{\sqrt{\pi}\left[\sigma_{\mu^a}^4\left(\sigma_{\mu^a}^2 + \xi\sigma_\varepsilon^2\right)^{\frac{3}{2}} R''\left(d^*\right)\right]} < 0. \tag{A1}$$

It is easy to see that term must be negative. The exponential function in the numerator is always positive, so are all the squared terms. Ego-rents X, and the number of nonelectorally dependent decision makers, ξ, are also defined to be positive. In the denominator, the powers also show that it must be positive. The cost function is defined such that $R''(.) > 0$. Thus, the minus sign turns the whole expression negative.

Since the number of nonelectorally dependent actors, ξ forms a product with the economic variance, σ_ε^2, in equation 6, total differentiation yields very similar results.

$$\frac{\partial d^*}{\partial \xi} = -\frac{1}{4}\frac{\sigma_\varepsilon^2 e^{-\frac{v^2\left(\sigma_{\mu^a}^2+\xi\sigma_\varepsilon^2\right)}{2\sigma_{\mu^a}^2}}\sqrt{2}\left(v^2\left(\sigma_{\mu^a}^2+\xi\sigma_\varepsilon^2\right)+\sigma_{\mu^a}^4\right)X}{\sqrt{\pi}\left[\sigma_{\mu^a}^4\left(\sigma_{\mu^a}^2+\xi\sigma_\varepsilon^2\right)^{\frac{3}{2}}R''\left(d^*\right)\right]} < 0. \tag{A2}$$

Equivalently to equation A1, it is easy to see that the whole expression must be negative.

B. Empirical

Table A1. Descriptive statics (economic volatility)

Variable	Obs	Mean	Median	Std. Dev.	Min	Max
BALANCE	470	-1.39	-1.78	4.27	-12.26	18.82
GROWTH (1 YEAR)	470	2.78	2.80	2.00	-6.24	10.42
GROWTH (2 YEAR)	470	5.78	5.80	3.66	-9.75	20.95
LN GDP	470	10.01	10.12	0.56	8.24	11.64
LN VOLATILITY	470	-1.05	-1.25	1.36	-5.30	3.06
ELECT	470	0.19	0	0.39	0	1

Table A2. Descriptive statics (fiscal decentralisation)

Variable	Obs	Mean	Median	Std. Dev.	Min	Max
BALANCE	697	-2.11	-2.40	4.31	-15.73	18.82
GROWTH (1 YEAR)	697	2.63	2.76	2.57	-10.62	11.50
LN GDP	697	9.93	10.01	0.62	7.82	11.64
LOCAL REVENUE	697	18.50	18.23	12.36	0.07	49.3
ELECT	697	0.26	0	0.43	0	1

Table A3. Descriptive statics (economic openness)

Variable	Obs	Mean	Median	Std. Dev.	Min	Max
BALANCE	615	-2.34	-2.75	4.36	-15.,73	18.82
GROWTH (1 YEAR)	615	2.53	2.71	2.52	-10.62	11.50
LN GDP	615	9.92	10.01	0.63	7.82	11.64
OPEN	615	4.11	4.05	1.36	0	8.59
ELECT	615	0.26	0	0.44	0	1

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