E C O N O M I C S B U L L E T I N

Estimating the Effect of Parliamentary Elections on Primary Budget Deficits in OECD Countries

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Abstract

Using an unbalanced panel of 24 OECD countries for the period 1986-2005 the paper empirically tests the political budget cycle hypothesis. The econometric approach is based on the equation proposed by BOHN (1998) for testing the sustainability of fiscal policy and system GMM estimators. The empirical results strongly support the hypothesis of smaller primary surpluses (only) in election years. The result found by BRENDER and DRAZEN (2005) that an election effect exists only in new democracies is rejected. However, in contrast to the political budget cycle hypothesis, it is argued that the result may rather be explained by governments' attempt to avoid intra-governmental conflicts on limited budgetary funds during election years, since this may be interpreted as an adverse signal by the voters. Besides, the results indicate only a temporary effect of the European Monetary Union.

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1. Introduction

During the last thirty years, several empirical tests of the political budget cycle theory have been published (for an overview, see e.g. DRAZEN, 2000; SHI and SVENSSON, 2003). However, the results are at least for the developed countries far from being unambiguous. For example, BRENDER and DRAZEN (2005) find political budget cycles only in newly established democracies.

The paper contributes to the literature by using the approach of BOHN (1998) as basic framework, which has a clear cut theoretical foundation. The dependent variable is the primary surplus instead of the total budget surplus. The primary surplus can be affected by the government in a much faster way, since it excludes interest payments which are exogenous for the government in the short-run. The "system GMM" (generalized method moment) estimator by BLUNDELL and BOND (1998) is applied, which is to be preferred to the first-differenced GMM estimators due to the persistence of the time series. Total government debt and not central government debt is used, since government responsibilities can be dislocated between levels affecting the central governments' primary budget balances, but not reflecting policy changes. Furthermore, the subordinated government levels may try to influence the central state parliamentary election.

The paper is organized as follows. Section 2 introduces the empirical specification based on theoretical considerations. Section 3 describes the dataset used and Section 4 explains the econometric model. The results are discussed in Section 5. Section 6 concludes.

2. Theoretical Framework and Empirical Specification

A framework for explaining public debt policy was formulated by BOHN (1998), based on BARRO's (1979) tax-smoothing model, explaining the primary budget balance (in percent of GDP) by the public debt stock (in percent of GDP) at the beginnig of the period as well as further variables. The primary budget balance is the difference between non-interest spending and total revenues. Let s_{it} represent the ratio of primary surplus and GDP in country $i=1\ldots N$ and year $t=1\ldots T$. The debt-GDP ratio at the start of t is indicated by d_{it-1}. Then the following equation holds for certain conditions (BOHN, 1998)

$$s_{it} = \rho d_{it-1} + \beta X_{it} + \mu_i + \varepsilon_{it}, \qquad (1)$$

with X_{it} denoting a vector of further determinants of the primary surplus, μ_i are unobserved country-specific fixed-effects, and ε_{it} is an i.i.d. error term. If the estimated ρ is positive, i. e., there is a positive response of primary surplus to the debt-GDP ratio, the debt-GDP ratio is mean-reverting and, consequently, fiscal policy is sustainable in the sense of satisfying an intertemporal budget constraint. However, since the estimated ρ is here an (unweighted) average of N different countries, the parameter is not really informative in this application.

The traditional political budget cycle theory is based on fiscal illusion of the voters not recognizing the intertemporal budget constraint of the state (see ALESINA and PEROTTI, 1995). They overestimate the benefits of current expenditure and underestimate the future tax bur-

den. Consequently, politicians use an expansionary fiscal policy in election years in order to maximize reelection probabilities. More recent theoretical models assume rational expectations of voters and are based either on signalling or moral hazard (see SHI and SVENSSON, 2003). Basically, they lead to the same results.

However, there may be another reason for larger budget deficits in election years which, to the best of my knowledge, has not been discussed in the economics literature so far. Again based on asymmetric information, incumbents want to avoid intra-governmental disputes on limited budgetary funds, since this may be interpreted as a more adverse signal by the voters than increasing the budget deficit. For example, assume that two ministers (or two wings of the governing party or coalition) want to realize two different programs associated with increased spending, which cannot be realized simultaneously with a given budget. Alternatively, assume that an unexpected decrease in revenues leads to the necessity of retrenchments. In non-election years a solution without increasing the deficit could possibly be found. However, this would be associated with intra-governmental discussions which could be interpreted as disunity by the voters. In election years disunity of the incumbent government may be a more adverse signal than increasing the deficit. For this reason, "peace" within the government (or the governing party or coalition) is purchased by a larger deficit in election years.

How can this hypothesis be tested? Rational politicians should be aware of the time lags of fiscal policy to have real effects. To become effective, spending must be increased or taxes must be reduced a sufficient time period before the election. Hence, a larger budget deficit should already be observable in the year prior to the election, and not exclusively in the election year. If there are only effects on the deficit in the election year, then either the fiscal is not rational, or it is an indication in favour of the hypothesis formulated above.

Taking the theoretical considerations into account, equation (1) is specified and extended as follows. For the vector X_{it} the output gap (gap_{it}) capturing business cycle effects on revenues and spending (e.g. unemployment assistance), an electoral dummy for the election year ($elect_{it}$), and a dummy for the effect of the Maastricht Treaty as well as the European Monetary Union ($euro_{it}$) are included.

In the basic specification $elect_{it}$ equals 1 in an election year and 0 otherwise. In an alternative specification $elect_{it+1}$ is included additionally, in order to test whether governments raise the budget deficit already in the year prior to the election. Also for the dummy variable $euro_{it}$ two alternatives will be tested. $euro_{it}^{per}$ equals one for all years from 1994 (commencement of the Maastricht Treaty) onwards for all countries being later members of the European Monetary Union. $euro_{it}^{temp}$ equals one for the years from 1994 until 1998 (only the "qualifying period" for the EURO) for the same countries.

Usually a change in the primary budget balance in the current year will also affect the primary budget balance in the next year. For example, raising public investments will not only increase the primary deficit in the current year, but also in the following years, since investment projects usually last longer than one fiscal year. This phenomenon can also be motivated by NISKANEN'S (1971) economic theory of bureaucracy. The government is constrained by

the present budget and the present budget largely determines the next period's budget, leading to a first order autoregressive process. Hence, equation (1) is extended by a lagged dependent variable (s_{it-1}).

$$s_{it} = \alpha s_{it-1} + \rho d_{it-1} + \beta_1 gap_{it} + \beta_2 elect_{it} + \beta_2 euro_{it} + \mu_i + \varepsilon_{it} \quad (2)$$

As a robustness check, equation (2) is modified by using the interaction term $d_{it-1} \times elect_{it}$ instead of the dummy variable $elect_{it}$. The estimated coefficient indicates whether governments are less interested in reducing public debt in order to secure a sustainable fiscal policy during election years.

3. Data Base and Descriptive Statistics

The data set consists of different sources. The macroeconomic data on government debt, (primary) budget balance, and output gap for 1989-2005 are from the OECD Economic Outlook 2006 and can be downloaded at the homepage of the OECD. Instead of central government debt, which has been used in most previous papers, total government debt and total primary budget balance (including state and local government debt as well as social security funds) is used, since government responsibilities can be dislocated between different levels affecting the central governments' primary budget balances, but not reflecting policy changes. Furthermore, gross debt data is used, since measurement problems are more severe in case of net debt due to problems of the valuation of government assets.[1]

Election dates are from the DPI (Database of Political Institutions) data set from the World Bank (BECK et al. 2001). They were complemented by data from the International Institute for Democracy and Electoral Assistance (http://www.idea.int/index.cfm). Only central state parliamentary elections (neglecting presidential elections) are used. This may be a controversial point as some countries such as the U.S., France, and Finland are presidential systems. However, in all democracies parliaments are more or less sovereign in budgetary matters; at least with respect to the budget legislation. Hence, in order to generate comparable results, only parliamentary elections are taken into account.

In Table A1 in the Appendix descriptive statistics on the mean primary balances in election and non-election years are presented. Furthermore, mean cyclically-adjusted primary balances as provided by the OECD Economic Outlook 2006 are depicted. They exclude one-off revenues from the sale of mobile telephone licenses; business cycle effects are eliminated. Those countries with smaller primary surplus in election years are in bold letters. New democracies as defined by BRENDER and DRAZEN (2005) are marked with a star. In 14 out of 24 countries the primary surplus is smaller (0.14 percentage points on average). Excluding "new democracies" the relation shrinks to 11 out of 20 (now 0.7 percentage points smaller on average). Even more relevant, in 15 out of 24 countries the cyclically primary surplus is smaller in election years (0.28 percentage points smaller on average). However, this is the case only in

[1] However, also gross debt data are not always completely comparable across countries due to different definitions or treatment of debt components (see OECD Economic Outlook Sources and Methods: http://www.oecd.org/eco/sources-and-methods).

12 out of 20 countries when new democracies are excluded (now 1.5 percentage points smaller on average). Note that none of these differences are significant from a statistically point of view, which may result from the small sample size.

4. Econometric Model

Equation (2) includes a lagged dependent variable, further variables which may not be strictly exogenous, and fixed country effects. A possible approach is to use the first-differenced GMM estimator by ARELLANO and BOND (1991) and to instrument variables not being strictly exogenous by their lagged levels. Since the first-differenced GMM estimator has been found to have large finite sample bias and poor precisions when the time series are persistent, the system-GMM estimator by BLUNDELL and BOND (1998) is used. This estimator uses lagged first differences of the variables as instruments for the equation in levels in combination with the first-differenced approach. Combining the moment conditions for the difference estimator and the level equation yields the system GMM estimator. Besides the lagged dependent variable s_{it-1}, also d_{it-1}, gap_{it}, and $d_{it-1} \times elect_{it}$ are treated as pre-determined (not strictly exogenous) and are instrumented in this manner.[2] The standard errors are corrected using the approach by WINDMEIJER (2005).[3]

A further econometric issue is potential endogeneity of election timing, i. e., reverse causation or shocks affecting both the election date and the fiscal balance (BRENDER and DRAZEN, 2005). For example, an early election may be caused by the incapacity of the government to solve fiscal problems, or a crisis may lead to a larger deficit as well as an early election. Alternatively, a government chooses the election date strategically; elections are held when the deficit is small. Approaches to sort out endogenous elections can be found e. g. in BRENDER and DRAZEN (2005) as well as SHI and SVENSSON (2006). They find that only the magnitude of the effect decreases, though the effect prevails statistically significant in many cases. The same has been found in this study when trying to separate endogenous elections from "regular" ones (results are not reported but are available upon request). A further approach chosen here is to treat $d_{it-1} \times elect_{it}$ as not being strictly exogenous and instrument it by lagged levels and lagged differences as described above.

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[2] Let x_{it} be the vector of explanatory variables. Strict exogeneity means $E(x_{it}\varepsilon_{is}) = 0 \quad \forall s,t$. If x_{it} is predetermined $E(x_{it}\varepsilon_{is}) = 0$ for $s \geq t$ but $E(x_{it}\varepsilon_{is}) \neq 0$ for $s < t$, i. e., there may be feedback from ε_{is} to future values of x_{it}.

[3] In order to get an idea of the robustness of the results, furthermore a simple fixed-effects estimator without the lagged dependent variable, the one-step first-difference GMM estimator, and the two-step first-difference GMM estimator were applied. The results are available upon request.

5. Results

The estimation results can be found in Table 1. The Hansen test of over-identifying restrictions with the null hypothesis that the instruments are uncorrelated with error term and the ARELLANO and BOND (1991) test of second order serial correlation are reported. The *p*-values of the Hansen test indicate that the models' over-identifying restrictions cannot be rejected. The second order serial correlation test statistics of the residuals do not reject the specification of the error term.

First of all, the coefficient of the lagged dependent variable (s_{it-1}) is relatively large and statistically significant in all specifications indicating significant persistence over time. Note that due to the dynamic specification (s_{it-1}), the magnitude of the other estimated coefficients cannot be directly interpreted as an effect measured in percent of GDP. They have to be divided by (1- $\hat{\alpha}$). The stock of debt (d_{it-1}) has a negative effect on the primary surplus and is in 6 out of 10 specifications statistically significant at least at the 10 percent level. The coefficient of the output gap (gap_{it}) has also the expected sign: The primary surplus is bigger in booms than in recessions.

Most important, the dummy variable for the election year ($elect_{it}$) is negative and statistically significant in all specifications. In Column (1), the coefficient indicates that in election years the primary surplus is 1.3 percent of GDP smaller than in non-election years. In Column (2), the dummy variable $elect_{it+1}$, indicating an election in the subsequent year, is added. The estimated coefficient is far from being significant and, therefore, one can conclude that there is an expansionary budget effect only in the election year and not before. In Column (3), instead of $elect_{it}$ the interaction term $d_{it-1} \times elect_{it}$ is used. The statistically significant coefficient indicate that in election years primary surplus is 1 percent of GDP lower than in non-election years.[4] Hence, the result is not strongly affected by a modified specification. In Column (4), once again it is tested whether there is an effect already in the year prior to the election by adding $d_{it-1} \times elect_{it+1}$. Again this is rejected, while the *p*-value for estimated coefficient for $d_{it-1} \times elect_{it}$ is only slightly above the 10 percent level.

In Columns (5)-(8), the effect of the European Monetary Union and the Maastricht Treaty are tested. While the Maastricht Treaty has a temporary effect in the years 1994-1998 on all countries introducing the EURO in 1999 ($euro_{it}^{temp}$), a statistically significant permanent effect for the countries in the long run ($euro_{it}^{per}$) cannot be detected. This result has also been found in other studies (see e.g. VON HAGEN, 2005). More important, the estimated coefficients of the election year variables are hardly affected.

[4] Mean d_{it-1} in the sample is 63.4 percent (see Table A2 in the Appendix). Therefore, the effect is 63.4 x - 0.004 / (1 – 0.74) = 0.98.

Table 1: Estimation Results: Determinants of Primary Surplus in percent of the GDP (t-values based on corrected standard errors in brackets)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
s_{it-1} §	0.776*** (6.20)	0.780*** (6.14)	0.737*** (6.20)	0.724*** (6.61)	0.745*** (6.07)	0.681*** (5.84)	0.779*** (6.93)	0.754*** (6.75)	0.699*** (6.25)	0.665*** (6.01)
d_{it-1} §	0.063** (2.48)	0.063** (2.38)	0.064** (2.55)	0.038* (1.67)	0.055* (1.75)	0.056 (1.53)	0.051 (1.50)	0.048 (1.36)	0.052 (0.98)	0.043** (1.68)
gap_{it} §	0.404** (2.10)	0.399** (2.38)	0.447** (2.22)	0.497*** (2.68)	0.459* (1.76)	0.532** (2.44)	0.463** (2.06)	0.504*** (2.23)	0.629*** (3.89)	0.682*** (4.34)
$elect_{it}$	-0.289** (-2.31)	-0.292** (-2.34)			-0.300** (-2.46)		-0.310*** (2.62)		-0.303** (-2.07)	
$elect_{it+1}$		-0.023 (-0.12)								
$d_{it-1} \times elect_{it}$ §			-0.004** (-2.20)	-0.003 (1.53)		-0.004** (-1.98)		-0.004** (-2.25)		-0.004* (-1.90)
$d_{it-1} \times elect_{it+1}$ §				-0.000 (-0.00)						
$euro_{it}^{per}$					0.018 (0.02)	-0.011 (-0.17)				
$euro_{it}^{temp}$							1.113* (1.68)	1.255** (2.14)	1.267 (1.67)	1.312 (1.48)
Constant	-3.432*** (-2.69)	-3.431*** (-2.57)	-3.360*** (-2.42)	-1.881 (-1.33)	-2.95* (-1.73)	-2.772 (-1.31)	-2.908* (-1.62)	-2.713 (-1.34)	-2.774 (-0.93)	-2.139 (-1.42)
Hansen test of over-identifying restrictions (*p*-value)	0.157	0.164	0.365	0.292	0.114	0.252	0.171	0.378	0.178	0.227
AR(2) test (*p*-value)	0.347	0.346	0.364	0.352	0.349	0.376	0.350	0.362	0.374	0.377
No. of observations	336	336	336	336	336	336	336	336	298	298
No. of countries	24	24	24	24	24	24	24	24	20	20

§ Instrumented by lagged levels (difference equation) and lagged differences (level equation).

* Significant at the 10 percent level; **significant at the 5 percent level; ***significant at the 1 percent level.

Finally, the result found by BRENDER and DRAZEN (2005), that political budget cycles only exist in new democracies, is reexamined in Column (9) and (10). New democracies are excluded now from the analysis (Czech Republic, Greece, Portugal, Spain). The estimation results for $elect_{it}$ and $d_{it-1} \times elect_{it}$ are hardly affected, indicating that the approach chosen here leads to a rejection of BRENDER and DRAZEN's (2005) result.

6. Concluding Remarks

This paper reexamined the question whether central state parliamentary elections affect the total government's primary budget balance in OECD countries. The empirical results indicate that in election years the primary surplus is about 1.3 percent of GDP (preferred specification) or 1 percent of GDP (alternative specification) smaller than in non-election years. Even after excluding "new democracies", as suggested by BRENDER and DRAZEN (2005), statistically significant effects with similar magnitudes are found.

Since in years prior to parliamentary elections a smaller primary surplus cannot be detected, it seems doubtful whether the political budget cycle theory is suitable to explain the phenomenon completely. Rational politicians should be aware of the time lags of fiscal policy to have real effects. Hence, if their aim is to increase the reelection probability by generating a positive real effect, they would start earlier. For this reason the paper proposed another explanation: Governments try to avoid intra-governmental conflicts on limited budgetary funds in election years, since this may be interpreted as a more adverse signal by the voters than a larger deficit. Hence, "peace" within the government (or the governing party or coalition) is purchased by a larger deficit in election years. In non-election years compromises without increasing the budget deficit can be found with a higher probability. However, they are associated with disputes, which cannot be completely dissembled from public.

Further research should formalize this idea and try to find a clear cut empirical test.

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Appendix

Table A1: General Government Primary Balance 1989-2005 (Surplus + / Deficit -)

	General government primary balances as a percent of nominal GDP			Cyclically-adjusted general government primary balances as a percent of potential GDP	
	mean	non-election years	election years	non-election years	election years
Australia	1.4	1.5	**1.2**	2.0	**1.7**
Austria	0.3	0.5	**-0.4**	0.7	**-0.3**
Belgium	4.6	4.6	4.7	5.1	5.2
Canada	1.4	1.1	2.4	1.5	3.0
Czech Republic*	-5.1	1.3	**1.1**	-3.9	**-6.1**
Denmark	2.9	2.7	3.4	3.1	3.6
Finland	0.5	0.9	**-0.7**	2.5	**1.2**
France	-0.7	-0.6	**-1.3**	-0.2	**-0.5**
Germany	0.1	0.2	**-0.2**	0.1	**-0.1**
Greece*	0.4	0.9	-0.9	1.2	**-0.6**
Iceland	-0.3	-0.2	**-0.4**	0.3	0.4
Ireland	2.6	2.6	**2.4**	2.5	**2.4**
Italy	1.8	1.7	2.2	1.8	2.6
Japan	-2.7	-2.7	**-2.9**	-2.6	**-3.0**
Luxembourg	2.2	1.3	**0.8**	1.2	**1.1**
Netherlands	1.2	1.7	**0.6**	1.5	**0.5**
New Zealand	1.3	2.0	2.0	2.3	**2.0**
Norway	2.0	2.4	4.5	-6.1	-5.2
Spain*	3.0	0.7	**0.4**	0.9	**0.6**
Portugal*	-0.8	0.5	**-0.2**	0.7	**-0.1**
Sweden	0.3	1.5	2.5	0.6	**0.1**
Switzerland	-4.7	-0.2	-0.2	0.3	0.3
United Kingdom	0.6	0.0	**-0.4**	0.0	0.0
United States	-0.7	0.1	0.2	0.3	0.4
Unweighted Mean	0.42	0.79	**0.65**	0.66	**0.38**

Notes: Not for all countries the data is available for the whole period

* New democracy as defined in BRENDER and DRAZEN (2005)

Table A2: Summary Statistics of the Estimation Sample (continuous variables in percent of GDP)

	Mean	Std. Dev.	Min	Max
s_{it}	0.78	3.22	-11.76	12.99
gap_{it}	-0.72	2.36	-12.02	6.37
d_{it-1}	63.41	31.21	4.06	168.09
$elect_{it}$	0.28	0.45	0	1
$elect_{it+1}$	0.25	0.44	0	1
$euro_{it}^{per}$	0.43	0.50	0	1
$euro_{it}^{temp}$	0.13	0.34	0	1