

FISCAL SUSTAINABILITY, ELECTORAL CYCLES AND THE EUROPEAN CONSTRAINT

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Abstract

We test sustainability by analysing stationarity and testing cointegration between the series of public expenditures and revenues as ratios of GDP in 13 member states of the European Union during 1970-1997. Although there is cointegration in Germany, the UK, Austria, Finland and the Netherlands, our results point to the existence of fiscal sustainability only in the UK and Germany. We also test two additional hypothesis: (a) the existence of *electoral budget cycles* in the years of elections for the European Parliament; (b) the influence of the Maastricht constraint on public deficits since 1992. There is evidence of (b) however, it did not enhance sustainability.

Key words: fiscal policy; Europe; cointegration; electoral cycles.

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1. Introduction

Since Trehan and Walsh (1988) it has been shown that one way to test whether the Intertemporal Budget Constraint has been satisfied is by studying the stationary properties of the series of government expenditures (inclusive of interest) and revenue; in case they are integrated of order one, it is required that they be cointegrated. Therefore, we assume that cointegration between expenditures and revenues, either in real terms or as ratios of GDP, is a condition for the sustainability of fiscal policy. Hakkio and Rush (1991) and Quintos (1995), among others, have also used this approach to test fiscal sustainability.

This paper extends our previous work [Silvestre and Bravo (1999)] on the analyses of fiscal sustainability in 13 EU member states, using EC data on the series of public expenditures and revenues as ratios of GDP in the period 1970 to 1997. In this paper, we analyze sustainability in the context of an open economy and, in a second step, we introduce the influence of politics into this framework. We test the following hypothesis: (a) governments manipulate expenditures and taxes in order to obtain favorable electoral outcomes thus, producing an *electoral budget cycle*; (b) after 1992, the Maastricht target on public deficits have effectively constrained national governments, inducing efforts towards sustainability. We test both hypothesis by adding political dummy variables in the regression of revenues on expenditures.

The paper is organized as follows. The second section reviews some of the main papers on the subject of the sustainability of budget deficits and the third introduces the theoretical model of the government intertemporal budget constraint. The fourth section examines the econometric methodology; the fifth presents the results of cointegration; the sixth section introduces the political hypothesis and the respective empirical testing. Finally, the seventh section concludes the paper.

2. Previous studies on groups of countries

There are only a few recent studies on groups of countries. To our knowledge, Payne (1997) and Fève and Henin (1998) are the only studies in this strand of literature which have examined sustainability through the cointegration of public expenditure and revenue for the G 7 countries. The latter find fiscal policies to be non-sustainable in Europe and Canada, whilst the former concludes for the existence of sustainability in some countries.

In what concerns the European countries, there are two recent studies but their object is to produce medium term forecasts, which is beyond the subject of this paper. Uctum and Wickers (1997) use data on debt –GDP ratios for 13 EU member states based on the period 1970 to 1995. They study both long-run sustainability, which requires stationarity of the debt or deficit as a test of the PVBC, and medium term sustainability. They proceed by analyzing medium-term sustainability into greater detail - they use Blanchard's indicator of fiscal stress to test the consequences of imposing debt and deficit ceilings for the sustainability of fiscal policies in the US and in the European countries. Their method evaluates the fiscal pressure entailed in fulfilling the sustainability condition; it calculates at each time the change in the average tax rate required over the next 5 years to satisfy the IBC. They extend the data with OECD forecasts for GDP growth, debt and deficit, inflation and interest rates and run forecasts till the year 2000.

One of their contributions is to test sustainability as the achievement of specified debt/GDP levels. The paper shows that fiscal stance is sustainable in most countries; however, repeating the simulations by imposing the Maastricht restrictions on 60% of debt and 3 or 0% deficit creates nonsustainability in many countries, unless primary surpluses are maintained.

Artis and Marcelino (1998) also used data on the debt and deficit ratios to test the validity of the long-run sustainability condition, requiring the discounted debt-GDP ratio to be a stationary zero-mean random variable; that was accepted for countries where the logs of the debt and deficit ratios were cointegrated. With few exceptions for some countries, solvency can be expected not to hold. They also confirm the forecasts presented by Uctum and Wickens. These studies show that the analyzes of sustainability should not be based only on the past behavior of governments but should incorporate a forward looking definition.

3. The formulation of the intertemporal budget constraint

The sustainability of public deficits is determined by the dynamics of the public debt. The factors which influence this dynamics can be derived from the intertemporal budget constraint (IBC). The IBC is derived from the accounting identity that expresses the budget constraint for period t as follows:

$$B_t - B_{t-1} = G_t - T_t + r B_{t-1} \quad (1)$$

Where B is the stock of debt, G expenditures net of interest, T equals tax revenues and r is the interest rate (rate of return on bonds). It states that the change in the stock of debt from one period to the next one must cover the budget deficit inclusive of interest payments (rB_{t-1}); $(G_t - T_t)$ is known as the primary deficit (net of interest) ¹.

The IBC can also be presented with the variables as ratios of GDP. We can demonstrate that by dividing (1) by the GDP:

$$b_t - b_{t-1} = g_t - \tau_t + r b_{t-1} \quad (2)$$

where the lower case letters denote the ratio of the corresponding upper- case letters to nominal

GDP . Going back to equation (1) and assuming that the interest rate is stationary² around the mean r , and rearranging the terms, (1) can be rewritten as:

$$B_t - (1+r) B_{t-1} = G_t - T_t \quad (3)$$

As (3) holds for every period, solving this equation by recursive substitution forward (into future periods), and calling G' total expenditures, we have the common formulation of the PVBC:

$$B_t = \sum_{j=0}^{\infty} (1+r)^{-j} (T_{t+j} - G_{t+j}) + \lim_{j \rightarrow \infty} (1+r)^{-j} B_{t+j} \quad (4)$$

Taking first differences and given that $B_t - B_{t-1} = G'_t - T_t$ according to identity (1) and G' is *primary* expenditures plus interest payments (rB_{t-1}), this is, $G'_t = G_{t+} + (r_{t-r})B_{t-1}$ with interest rates taken around a zero mean. one can rewrite equation (4) as follows:

$$G'_t - T_t = \sum_{j=0}^{\infty} (1+r)^{-j} (\Delta T_{t+j} - \Delta G_{t+j}) + \lim_{j \rightarrow \infty} (1+r)^{-j} \Delta B_{t+j} \quad (5)$$

Assuming that the variables in levels are integrated of order one, the variables in the right-hand side of the equation (5) are stationary, as they are first differences. This implies that the left-hand side of the equation must be stationary in order to satisfy the PVBC. If on the

other hand, T_t and G'_t are $I(1)$, they must be cointegrated with vector $[1 \ -1]$, so that the deficit, is stationary. The same applies when the variables are presented as ratios of GDP.

According to the definition of sustainability in section 2, what we are in fact testing concerns the expectations of creditors. Therefore, let us present equation (5) in terms of expected values, which is the most usual formulation:

$$B_t = E_t \sum_{j=0}^{\infty} (1+r_t)^{-j} (T_{t+j} - G'_{t+j}) + \lim_{j \rightarrow \infty} E_t (1+r_t)^{-j} B_{t+j} \quad (6)$$

if creditors expect the government to respect the IBC, the expected value of the stock of debt as j gets large (in the limit j tends to infinity) will be zero:

$$E (\lim_{j \rightarrow \infty} B_{t+j}) = 0 \quad (7)$$

Then, the present value of the stock of debt at time t (B_t) will equal the sum of expected future primary surpluses: $B_t = \sum_{j=1}^{\infty} E (T_{t+j} - G_{t+j})$, which is known as the transversality condition, meaning that the actual level of the public debt ratio (b_t) should be compensated by the expected present value of future primary surpluses as ratios of GDP. Next section shows the steps that were taken to implement this test for 13 EU member states.

4. The econometric methodology

The econometric methodology follows in two steps: in the first step, the stationarity properties of the time series are studied by using unit root tests and in the second step, given that the series are non-stationary, tests of cointegration are applied to the series.

The unit root tests we apply are the Dickey-Fuller (DF) and the Augmented Dickey-Fuller (ADF) tests [Dickey and Fuller (1979,1981)]. These tests are performed to determine the series order of integration. The order of integration of a series is the number of times a

series needs to be differenced to achieve stationarity. The tests implemented are explained in Silvestre and Bravo (1999).

As the series were stationary in only two countries, we had to test the remaining ones for cointegration. Two series that are integrated of order one are said to be cointegrated if both have a common trend, that is, if there is a linear combination of them which is stationary. The second step is thus, to test whether the two series are cointegrated. Let denote the two time series by y_t and x_t (in the application these series are the ratios of government expenditures and revenues, respectively). The cointegration test we apply is the Engle-Granger test (Engle and Granger (1987)) and is based on the OLS residuals of the following (potential) cointegration equations:

$$\begin{aligned}x_t &= a + by_t + u_t \\y_t &= a' + b'x_t + v_t\end{aligned}\tag{8}$$

where u_t and v_t stand for the error terms of the equation regressions.

The null hypothesis of the Engle-Granger cointegration test is: that the two variables x and y are not cointegrated. If the variables are not cointegrated the residuals u_t and v_t are not stationary. Therefore, the cointegration test looks for a unit root of the residual series.

5. The data and the empirical results

We have used data on total public expenditures and total revenues as ratios of GDP from the European Commission for the period 1970-97 for 13 EU member states. We did not include Greece and Norway because the corresponding series were not available for the whole sample. Our approach is similar to the one followed by Payne (1997) for the G7 countries in the period 1955-93 (on average).

Tables 1 and 2 show the results from applying the ADF unit root tests for each of the 13 countries. Only 0 to 3 lags were sufficient to study stationarity. The ratios of expenditures (g) and revenues (t) are integrated of order one (I(1)) in all the countries, with the exception of Germany and the UK, where both g and t are I(0), and Italy where g and t are not of the same order of integration and thus, not cointegrated (see Table 2); however, applying the Phillips-Perron (1988) test, the series for Italy are also I(1). Therefore, the results from Tables 1 and 2 indicate that budgetary policies in Germany and the UK have been sustainable and no cointegration tests were needed for these countries. We ran the Engle-Granger cointegration tests for the remaining 11 countries and summed up the results in Tables 3 and 4 which report the estimated b 's (on the line "Coeff. Ind. Var.") and the ADF unit root tests on the residuals of the two cointegration equations described in (8) ³. Based on the analyzed sample, our results show that there is cointegration of public expenditures and revenues in Austria, Finland, and the Netherlands - we wrote down **Yes** or **No** (Tables 3 and 4), meaning the existence or non-existence of cointegration in the countries analyzed. The estimated b is less than unity for all countries, including the ones where cointegration is present. Therefore, in all of them, when expenditures (as % of GDP) have increased by 1.0, revenues have increased only by 0.6 to 0.7 on average. The tests of whether or not b is statistically different from one were based on the t -statistics, whose values are reported in Table 5; the high values obtained for the t -statistic show that all the estimated b 's are significantly different from one, therefore, the cointegrating vector is not $[1 \ -1]$; as we have stated, the latter has been seen as a necessary condition for satisfying the intertemporal budget constraint. However, some authors have argued that one can relax the strong condition that cointegration with vector $[1 \ -1]$ is necessary to ensure sustainability, as required by the transversality condition; Quintos (1995) ⁴ showed that one can assume a *weaker condition* by considering that the existence of cointegration and $0 < b \leq 1$ are

necessary and sufficient conditions. This implies that public deficits may still be sustainable, even when expenditures have grown at higher rates than revenues, providing that the debt ratio grows slower than the growth rate of mean interest rates.

Following Quintos' approach, we have estimated the growth rates of those variables for the five countries where revenues and expenditures are either stationary or cointegrated and found out that only in the United Kingdom the growth of total expenditures was smaller than the growth of implicit interest rates; however, as our series were also stationary in Germany, we can conclude for the existence of fiscal sustainability in the UK and Germany. Payne (1997) has also concluded for sustainability in these two countries, while in Italy, cointegration was present only when expenditures and revenues were in levels or in per capita terms. Artis and Marcellino (1998) also found that the gross discounted debt ratios were stationary for Austria, UK and the Netherlands and the undiscounted one only for Finland, pointing to the existence of sustainability in those three countries; this shows that the results depend upon the data sources, the time-length and the variables used.

6. Introduction of the hypothesis of electoral budget cycles

In this section we introduce a political economy hypothesis. We attempt at testing whether the efforts towards sustainability, namely after 1989 registered in the countries quoted above were the result of electoral budget cycles. Our test analyses whether our series on government expenditures and revenues are correlated with the dates of elections for the European Parliament (EP). The underlying hypothesis is that national governments may manipulate budgetary policies in such a way that it increases their popularity hence, the probability that all the candidates from the ruling political party are elected.

Elections were held every five years starting in 1984; therefore, elections for the EP have taken place in 1984, 1989, 1994 and 1999. As our data covers the period 1970-97, we have considered the first three elections. Naturally, it is understood that the European Parliament (E.P.) elections have smaller domestic impact than elections for the national governments; in the several countries they have taken place at different points of the electoral periods (for national parliaments) which may produce *crossed* results. Nevertheless, the period under analysis was crucial for the consolidation of the European Union; the achievement of the convergence targets represented considerable restraint upon national macroeconomic policies which has increased the attention of the public on the European political agenda during the 90's.

6.1. The assumptions of the political business cycle

6.1.1. The opportunistic business cycle

There is a great number of studies included in the Political Business Cycle literature. Among others, Gärtner (1994, 1999), present a recent survey.

Most of the literature on political economic cycles have analyzed *opportunistic cycles* and *partisan cycles* in a context of a *closed economy*; the former are generated as the result of governments' manipulation of macroeconomic variables, such as real income, unemployment and inflation rates, in order to be reelected in a world of naïve and myopic voters, whilst the latter assumed that the pattern of those cycles differs according to the ideology of the party in office, as reflected in different preferences for policy outcomes (for instance, in a simplistic form, assuming that right wing parties focus upon the reduction in inflation before an election while the left prefers the reduction in unemployment).

Therefore, under those assumptions, the variations in the levels of some economic variables according to the electoral calendar generate economic cycles, being a source of macroeconomic instability. Tufte (1978) is among the few to note that PBC may have socially beneficial effects as governments tend to redistribute income more equally prior to elections than at other times. As we show in the next section, the international context offers other arguments to support the view that electoral budget cycles may not be destabilizing .

6.1.2. The *signaling* models and the electoral budget cycles

During the late 80's the literature was characterized by the addition of rational expectations on the part of voters. Through the 90's, most studies have refined the assumptions and the algebraic formulation of the models; the recent wave in the literature has focused on the assumptions of rational voters under asymmetric information which form the basis of *signaling models*⁵ rather than the previous *opportunistic* models. Following on the path of signaling models, we assume that voters are rational but not fully informed and assess government's competition by observing the change in policy instruments, related to fiscal or monetary policy. Therefore, rational policymakers will change the levels of expenditures or the tax rates according to the electoral calendar, generating what is known as *electoral budget cycles*.

The assumption that governments use fiscal instruments to affect the probability of reelection, given that voters suffer from fiscal illusion, has been assumed in early studies. The strategic use of debt has been emphasized in previous studies such as Alesina and Tabellini (1991) and Persson and Svensson (1989). In Rogoff and Sibert (1988) and Rogoff (1990) competent incumbents signal voters by reducing taxes and increasing public

consumption, hence, increasing public deficit prior to elections and leading to a suboptimal level of public investment in the following period. Katsimi (1999) follows on the same lines but, in addition to those authors, she predicts that governments' behaviour will lead to a permanent increase in the public sector and the effect on public debt will depend on the competence differential between the candidates.

6.1.3. Electoral cycles and international cooperation

However, the literature on electoral cycles have focused on a *closed economy* context; we think that the assumption of international interdependence should be taken into account as it may change our hypothesis. In the particular case of the European Union, integration reduces the autonomy of national policy-makers in some respects but, it does not eliminate the possibility of electoral cycles. On the contrary, given the existence of spillovers from one country's economic performance to another, one ought to consider the hypothesis that electoral economic cycles in one country may generate externalities to other countries, influencing also economic cooperation between them. Lohman (1993) has studied the relationship between domestic political business cycles and international cooperation and claimed that international cooperation may have stabilizing effects on domestic politics by forcing rival policymakers/politicians to cooperate in their own country, partisan differences become less relevant. We think that this hypothesis is plausible also in the context of EU, as the disutility obtained as a result of not cooperating at the domestic level is sufficiently large to deter defection at the international level, and *vice-versa*⁶. In this sense, domestic and international cooperation may be jointly (but not singly) sustainable.

We have followed some of the assumptions used in models of signaling but adapted them to the context of the EU. We state them as follows:

The behaviour of voters

Voters are rational but are neither well informed about the economy nor about the competence of candidates - there is asymmetric information between government, or incumbents, and voters. As the literature has shown, people vote moved by a mix of motivations: to improve their welfare, out of civic duty or to improve the economic situation in general; so, in general, it is plausible that the public votes in the candidate that is expected to use policies that are related to an improvement in his welfare. However, in the case of the EU member states, cooperation to reduce deficits and debt during the 90's, may have led the opposition and voters to assess governments' competence in controlling the respective economies by looking at the efforts of reducing the deficit ratio - which is equivalent to reducing the gap between the expenditure and revenue ratios that we have used in the previous section.

The behaviour of government

We think that it is plausible to assume government's manipulation of budgetary policy in an opportunistic fashion in elections years before 1990. On the other hand, after the Maastricht Treaty, given the context described above, national governments have been, to a great extent, assessed by their efforts to attain some target levels. Therefore, it seems rather plausible that governments have attempted at increasing their probability of reelection by **signaling its competence** to the voters through the reduction in the budget deficit and/or in the public debt as ratios of GDP, relative to their levels of reference. However, that should

not rule out completely the possibility of *opportunistic* electoral budget cycles but may simply limit their extent or making their occurrence more irregular.

Under the assumptions stated above, we test the following two hypothesis:

- (a) governments of the countries analyzed have attempted at inducing *opportunist electoral budget cycles* by increasing public expenditures and/or at reducing taxes in the years of elections prior to 1992; this would result in deficits increasing in those years.
- (b) on the other hand, it may be assumed that the constraint imposed by the European Commission on fiscal policy, since the Maastricht Treaty in 1992, has influenced public opinion; so, governments have in fact concentrated upon the reduction of budget deficits after 1992; contrarily to (a), this should be translated in our data by the reduction of the ratio of public expenditures and/or the increase in the revenues' ratio.

In order to test hypothesis (a) described above, we have included one dummy **DE** that take the value **one** in the three years of elections for the E.P. - 1984, 1989 and 1994; on the other hand, we test hypothesis (b) by adding another dummy **DEX** with value **one** in the period 1992-1997 (inclusive), and **zero** in the other years, which is assumed to capture the relevance of the external constraint on national public budgets imposed by the EU institutions after 1992.

6.2. Testing the electoral budget cycle

Tables 6 and 7 show all the results from regressing public revenues (t) on expenditures (g) (as ratios of GDP), and the four dummies described above; Therefore, we have estimated the following linear relationship:

$$t_t = \text{const} + a_1 g_t + a_2 DE + a_3 YDE_t + a_4 DEX_t + a_5 YDEX_t + u_t$$

This form was the first cointegration-regression represented in (8) of section 4, with the addition of the electoral and the 'European constraint' dummies in this way, we were able to compare the value of the b - coefficient with its previous value (see results in Table 6). Note that, we have used first-differences for the countries where t and g were not cointegrated. We present the slope-electoral dummy as YDE and, in the first-difference equations, as $DYDE$ (table 7). By the same token, $YDEX$ and $DYDEX$ are the slope-dummies representing the effect of external constraint. The estimated coefficients of DE are expected to be negative and that of DEX (the shift dummy) and $YDEX$ (the slope dummy) should be positive. We estimated this form for the five countries where cointegration was present (results in table 6) and used the same form in first-differences for the other countries (table 7). The statistically significant dummies, between the 1% and 10% levels (as shown by the * and ** on the p-values), are shown in Tables 6 and 7.

The dummies were significant in five out of the thirteen countries studied: DE and YDE were significant only in Italy; elsewhere there is no evidence of electoral cycles around the EP elections. Besides, we have used total expenditures and revenues as ratios of GDP and annual data; tests of electoral budget cycles usually require more detailed expenditure items, and preferably quarterly data. However, the Maastricht constraint (after 1992) has influenced fiscal sustainability in four of the countries analyzed – Finland, UK, Portugal and Spain. Both DEX and $YDEX$ are significant; the coefficients of DEX (the shift-dummy) are all positive, but the slope-dummy has negative coefficients. This means that, in the last 6 years, the constraint towards fiscal discipline produced a positive shift -effect, meaning that both the expenditures and the tax ratios have increased after 1992; but that

does not tell us whether how public deficits changed; however, the slope-effect, measured by YDEX, have negative coefficients which had the effect of reducing the values of the b -coefficients in the cointegration regressions. Therefore, smaller values of the b after 1992 do not indicate a movement towards greater sustainability (which would require a b closer to 1). Therefore, combining both effects - the positive shift effect with a flatter slope -, it seems plausible to assume that, in the period 1992-97 the *degree* of cointegration between the two series did not increase (it was even reduced), indicating that there was not been an effective movement towards sustainability. In spite of the EU constraint, there is no evidence of significant structural changes in most national budgetary policies from 1992 to 1997.

7. Conclusions

This paper has tested the sustainability of public deficits by studying the stationarity and the cointegration properties of total public expenditures and revenues as ratios of GDP.

Taking into account the European Commission data on the last 3 decades and the methodology used in this paper, sustainability has been a *privilege* of only two countries: the UK and Germany. Although public revenues and expenditures are cointegrated in Austria, Finland and the Netherlands, that is not a sufficient condition. Nevertheless, sustainability has been confirmed in some of those countries by other studies which have used different time-lengths and different data series of fiscal variables.

In what concerns the addition of the political hypothesis, our analysis does not enable one to conclude that there were electoral budget cycles in the period analyzed; in fact, DE (the dummy for the EP election years) was significant only in Italy, and it may well be capturing the influence of elections for national parliaments, which are assumed to be more relevant

than the European Parliament elections. On the other hand, the *European constraint* on national deficits after 1992 was found significant in four of the thirteen countries analyzed - Finland, UK, Portugal and Spain. However, it did not contribute for increasing sustainability.

Notes

* As the pioneering literature noted, B represents the real market value debt; therefore, the official debt series should be corrected, which implies, for instance, taking into account reevaluations of financial assets, seigniorage, privatization, by adding some of those items to the right hand side of equation (1) as other sources of public revenue. That may be relevant for the result, as we have shown in the Portuguese case in Santos and Silvestre (1998) however, data was not available on those variables for most countries.

² As it is usually assumed in the literature, the interest rate is stochastic.

³ Germany and the UK were not included in Tables 3 and 4 as the corresponding series were $I(0)$ in Tables 1 and 2.

⁴ Op. cit., page 410, for greater detail.

⁵ As initiated by the studies of Rogoff and Sibert (1988) and Rogoff (1990).

⁶ Lohman, op. cit., page 1384.

⁷ It would be positive in the regression of expenditures (g) on revenues, but we have not used it in this section.

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APPENDIX

Table 1: Results from stationarity tests

Country		g	t	Δg	Δt
Austria	ADF	-2.533	-2.591	-4.385	-5.123
	Lags	0	2	0	1
	P-value	0.155	0.095	0.000	0.000
Belgium	ADF	-2.049	-2.707	-3.410	-3.902
	Lags	1	0	0	0
	P-value	0.266	0.073	0.011	0.002
Denmark	ADF	-1.683	-0.930	-3.432	-4.460
	Lags	0	0	0	0
	P-value	0.440	0.778	0.010	0.000
Finland	ADF	-1.087	-1.420	-3.762	-4.761
	Lags	2	0	1	2
	P-value	0.720	0.573	0.003	0.000
France	ADF	-2.016	-2.122	-3.300	-3.600
	Lags	1	1	0	0
	P-value	0.280	0.236	0.015	0.006
Germany	ADF	-3.019	-3.423	-	-
	Lags	0	0	-	-
	P-value	0.033	0.010	-	-
Ireland	ADF	-1.627	-1.873	-3.453	-6.248
	Lags	1	0	0	0
	P-value	0.469	0.345	0.009	0.000

Note: g = ratio of expenditures to GDP; t = ratio of revenues to GDP

Table 2: Results from stationarity tests (cont.)

Country		g	t	Δg	Δt
Italy	ADF	-1.757	0.025	-0.781	-5.164
	Lags	3	0	2	0
	P-value	0.402	0.461	0.825	0.000
Netherlands	ADF	-1.956	-2.793	-2.999	-3.946
	Lags	1	0	0	0
	P-value	0.306	0.059	0.035	0.002
Portugal	ADF	-1.657	-0.284	-5.194	-5.052
	Lags	0	0	0	0
	P-value	0.454	0.928	0.000	0.000
Spain	ADF	-1.284	-1.090	-3.400	-4.766
	Lags	1	0	0	0
	P-value	0.636	0.719	0.011	0.000
Sweden	ADF	-1.929	-2.228	-3.236	-4.186
	Lags	1	0	0	0
	P-value	0.319	0.196	0.018	0.001
U. K.	ADF	-3.484	-2.983	-	-
	Lags	1	1	-	-
	P-value	0.008	0.036	-	-

Table 3: Results from Engle-Granger cointegration test

Country		Depend. Variable		Cointegration
		g	t	
Austria	ADF	-4.277	-4.273	Yes
	Lags	1	1	
	P-value	0.003	0.003	
	Coeff. ind. Var.	1.526	0.605	
Belgium	ADF	-1.161	-1.145	No
	Lags	0	0	
	P-value	0.868	0.872	
	Coeff. ind. Var.	1.460	0.598	
Denmark	ADF	-2.764	-2.278	No
	Lags	1	1	
	P-value	0.184	0.385	
	Coeff. ind. Var.	1.210	0.631	
Finland	ADF	-3.207	-3.360	Yes
	Lags	1	1	
	P-value	0.069	0.047	
	Coeff. ind. Var.	1.420	0.630	
France	ADF	-2.553	-2.487	No
	Lags	0	0	
	P-value	0.256	0.285	
	Coeff. ind. Var.	1.331	0.719	

Table 4: Results from Engle-Granger cointegration test (cont.)

Country		Depend. Variable		Cointegration
		g	t	
Italy	ADF	-1.450	-0.675	No
	Lags	0	0	
	P-value	0.780	0.949	
	Coeff. ind. Var.	1.104	0.809	
Ireland	ADF	-0.941	-1.643	No
	Lags	0	0	
	P-value	0.914	0.703	
	Coeff. ind. Var.	1.211	0.382	
Netherlands	ADF	-4.039	-4.375	Yes
	Lags	0	0	
	P-value	0.006	0.002	
	Coeff. ind. Var.	1.394	0.685	
Portugal	ADF	-2.203	-1.682	No
	Lags	0	0	
	P-value	0.423	0.685	
	Coeff. ind. Var.	1.215	0.734	
Spain	ADF	-2.395	-2.312	No
	Lags	0	0	
	P-value	0.327	0.368	
	Coeff. ind. Var.	1.276	0.762	
Sweden	ADF	-3.263	-2.958	No
	Lags	1	1	
	P-value	0.060	0.120	
	Coeff. ind. Var.	1.340	0.492	

Table 5: Results of the t-statistic test of the hypothesis: $b=1$

Country	Coeff. b	Coeff. (b-1)	St. dev.	t-statistic
Austria	0.605	-0.395	0.034	-11.561
Finland	0.630	-0.370	0.042	-8.744
Germany	0.605	-0.395	0.051	-7.783
Netherlands	0.685	-0.315	0.029	-10.833
U. K.	0.342	-0.658	0.123	-5.354

Table 6: Results from regression of revenues (t) on expenditures (g) with dummies for the E. Parliament election years

Countries	Variable	Coeffic	t-statistic	P-value
Austria	Constant	17.153	8.621	0.000
	Expend.(g)	0.601	14.406	0.000
	DE	0.390	0.193	0.849
	YDE	-0.061	-0.181	0.858
	DEX	24.642	1.333	0.196
	YDEX	-0.461	-1.319	0.201
Finland	Constant	10.743	4.662	0.000
	Expend.(g)	0.825	14.636	0.000
	DE	3.882	0.632	0.534
	YDE	-0.058	-0.465	0.647
	DEX	52.083	2.309	0.031**
	YDEX	-0.964	-2.517	0.020**
Germany	Constant	16.341	6.466	0.000
	Expend.(g)	0.599	10.908	0.000
	DE	12.632	1.008	0.324
	YDE	-0.243	-0.919	0.368
	DEX	1.884	0.058	0.955
	YDEX	-0.036	-0.054	0.957
Netherlands	Constant	13.558	7.837	0.000
	Expend.	0.684	21.080	0.000
	DE	-2.289	-0.184	0.848
	YDE	0.034	0.160	0.874
	DEX	-5.487	-0.645	0.526
	YDEX	0.106	0.663	0.514
U. K.	Constant	20.494	4.636	0.000
	Expend.	0.447	4.239	0.000
	DE	3.704	0.305	0.733
	YDE	-0.077	-0.271	0.789
	DEX	36.747	1.707	0.102*
	YDEX	-0.919	-1.824	0.082*

Notes: * 10% , ** 1 to 5% significance level.

Table 7: Results from regression of revenues changes (Δt) on expenditures changes (Δg) with dummies for the E. Parliament election years (cont.)

Countries	Variable	Coeffic	t-statistic	P-value
Belgium	Constant	0.117	0.571	0.574
	Expend. (Δg)	0.401	4.040	0.001
	DE	-11.441	1.301	0.207
	YDE	0.210	1.365	0.187
	DEX	-3.290	-0.231	0.819
	DYDEX	0.065	0.249	0.806
Denmark	Constant	0.372	1.183	0.250
	Expend. (Δg)	0.114	0.829	0.416
	DE	2.620	0.091	0.928
	YDE	-0.044	-0.092	0.928
	DEX	-19.158	-0.754	0.459
	DYDEX	0.317	0.751	0.461
France	Constant	0.292	1.620	0.120
	Expend. (Δg)	0.318	2.710	0.013
	DE	-0.046	-0.004	0.997
	YDE	-0.003	-0.012	0.991
	DEX	-11.182	-0.529	0.603
	DYDEX	0.204	0.522	0.607
Ireland	Constant	0.162	0.489	0.630
	Expend. (Δg)	0.451	3.533	0.002
	DE	-4.928	-0.659	0.517
	YDE	0.120	0.704	0.489
	DEX	-5.272	-0.419	0.680
	DYDEX	0.129	0.393	0.698
Italy	Constant	0.480	2.112	0.047
	Expend. (Δg)	0.213	1.914	0.069
	DE	26.687	1.918	0.069*
	YDE	-0.530	-1.972	0.062 *
	DEX	-5.966	-0.595	0.558
	DYDEX	0.123	0.660	0.516
Portugal	Constant	0.268	0.846	0.407
	Expend. (Δg)	0.371	3.140	0.005
	DE	2.715	0.290	0.774
	YDE	-0.060	-0.261	0.797
	DEX	68.827	2.167	0.042**
	DYDEX	-1.528	2.156	0.043 **
Spain	Constant	0.412	1.615	0.121
	Expend. (Δg)	0.427	2.914	0.008
	DE	-3.834	10.612	0.547
	YDE	0.090	0.608	0.550
	DEX	23.670	2.303	0.032 **
	DYDEX	-0.518	-2.347	0.029 **
Sweden	Constant	0.478	1.030	0.315
	Expend. (Δg)	0.136	1.720	0.479
	DE	11.567	0.607	0.551
	YDE	-0.175	-0.586	0.564
	DEX	13.051	0.591	0.561
	DYDEX	-0.198	-0.608	0.550

