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TAXATION AND POLITICAL BUSINESS CYCLES IN EU ECONOMIES

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Abstract

This paper examines whether incumbent national governments of eleven member states of the European Union manipulated the tax policy instruments at their disposal in order to create national political business cycles, opportunistic or partisan. The empirical evidence, based on data concerning the 1965-97 period, does not support this hypothesis. Rather, it appears that governments have pursued stabilization policies.

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Keywords: Tax instruments; Target variables; Elections; Electoral cycles; Partisan cycles; Stabilization policies.

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TAXATION AND POLITICAL BUSINESS CYCLES IN EU ECONOMIES

1. Introduction

This paper examines whether the national governments of the European Union (EU) member states have used tax policies as a means for the stabilization of their economies or for their reelection by creating national political business cycles (PBCs). If they have caused PBCs did these cycles exhibit comparable patterns over time and, perhaps, narrower in amplitude in the post-Maastricht (1992) era than in the preceding period? And in that case could these cycles be identified as being of an electoral-type or a partisan-type? Answers to such questions may illuminate the perspectives of the European Monetary Union (EMU) states in respect to the coordination of their tax policies toward an eventual implementation of a federal-type fiscal organization in the years to come. These issues are examined for democratic societies with majoritarian and proportional political systems. The former systems have to do with two major political parties alternating in power; the latter involve a larger number of smaller parties and coalition governments.

The benchmark year 1992 has triggered an era of rising expectations for a gradual loss of fiscal autonomy of the EU member states, due to the budget-to-GDP and deficit-to-GDP criteria imposed by the Treaty of Maastricht. These criteria comprise a subset of the conditions required by the member states prior to their accession to the EMU and have to be sustained afterwards. Consequently, these requirements are to be reflected in the economic policies of national governments, regardless of ideological differences, and, hence, in less prominent national PBCs caused by tax policies in the post-1992 era relative to the preceding period (see also Alesina et al., 1997, chap.10).

Political business cycle models feature the idea that, in majoritarian systems, governments acting in favor of their own political interests and/or the interests of particular pressure groups tend to stimulate aggregate demand in pre-election periods. Their actual policies before elections can give rise to electoral (opportunistic) or partisan cycles. Electoral cycles are defined as the persistent cyclical patterns of key target- and policy variables regardless of the ideological orientation of the incumbent government (Nordhaus, 1975; Lindbeck, 1976). Partisan cycles are defined as the persistent differences in such patterns conditional upon the ideology of the party in power (see, for instance, Hibbs, 1977, and Haynes and Stone, 1990). Both types of models make use of an exploitable Phillips curve. In terms of voters' expectations, these models are considered as retrospective and naive. The counterparts of these models based on rational expectations are classified as rational electoral (Rogoff and

Sibert, 1988, and Rogoff, 1990) and rational partisan models (Alesina 1987, Alesina and Roubini 1993). Proportional political systems, with several parties forming coalition governments, are not prone to yield partisan cycles. Through policy moderation, coalition governments are slow to react to shocks due to the veto power by their members over the choice of policies [Alesina (1987 and Alesina et al. (1997) and the literature cited therein]. Moreover, they have a tendency to create larger budget deficits and build up government debt [Alesina et al. (1997)]. For a different view see De Haan and Sturm (1977).

The empirical evidence in connection with PBCs caused by tax instruments is mixed. Among the studies lending support to this view are Tufte (1978), Mikesel (1978), Pack (1988), Bizer and Durlauf (1989), Cox and McCubbins (1991), Poterba (1994) and Yoo (1998). Against this view argue Brennan and Buchanan (1980), Hicks (1984), Karran (1985) and Frohlich and Oppenheimer (1990). With the exception of Yoo, who is concerned with the Japanese case, the other studies deal with the US economy. Most recently, Schuknecht (2000) has examined fiscal policies in pre-election periods in twenty-four developing countries. His work indicates increasing public expenditures rather than lowering taxes as a major political choice in pre-election periods.

Empirical evidence from the majority of eleven member states of the EU reveals a narrowing of the divergences observed in the evolution of the structures of direct and indirect taxes from the early 1970s to the late 1990s (post Maastricht period) as the coefficients of variation in Table 1 indicate.¹ A question is whether the above changes reflect stabilization through tax policies or are intended pre-election period actions of incumbent governments seeking to improve their reelection prospects. In the latter case, it is of interest to investigate whether the changes observed during the 1965-97 period can be distinguished in accord with the ideological position of the incumbent governments, liberal and socialist, and/or coalition type.

We shall examine the pre- and post-election period influences of incumbent governments on the cycles of key target variables and tax instruments as well as the two major components of the latter, direct and indirect taxes, in the EU member states during the 1970-97 period.

¹ From the fifteen member states of the EU, our analysis excludes Luxembourg due to data unavailability as well as Austria, Finland and Sweden are not examined due to the length of our data set (1965-1997) and their so-to-speak late accession (1995) in the EU. A longer time period was not available due to the lack of statistical data concerning various categories of the variables employed in the countries of the sample. For the same reasons, the ten new members of the EU as of spring 2003 are also not examined.

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Methodological issues are discussed in the following section and a description of the data is provided in Section 3. The empirical results are discussed in Section 4. Conclusions and policy implications are in the last section.

**Table 1: Structure and Percentage Shares of Tax Instruments in GDP,
European Union States 1968-1997**

Countries/dates	TD/T	TYP/T	TYC/T	TP/T	TI/T	TGS/T	TSS/T	TOS/T	T/GDP	TD/IT
BEL:1968-73	50.9	36.3	10.0	4.6	49.1	29.6	16.6	2.9	24.3	1.04
1993-97	60.1	46.5	9.6	4.0	39.9	22.9	12.9	4.0	30.5	1.51
DEN:1968-73	60.0	51.0	2.8	6.2	40.0	18.0	18.7	3.4	39.0	1.50
1993-97	65.5	56.9	4.7	3.8	34.5	20.8	12.0	1.8	48.1	1.90
FRA:1968-73	35.7	19.9	9.4	6.5	64.3	43.7	19.1	1.4	20.5	0.56
1993-97	46.1	26.4	9.3	10.5	53.9	34.1	17.6	2.2	22.6	0.86
GER:1968-73	55.2	40.9	8.6	5.7	44.8	23.6	18.7	2.5	23.2	1.23
1993-97	53.4	43.1	5.7	4.7	46.6	29.4	15.4	1.8	26.6	1.15
GRE:1968-73	32.9	14.6	3.6	14.7	67.1	26.1	41.0	0.0	14.0	0.49
1993-97	34.4	18.9	9.8	5.7	65.6	37.7	27.9	0.0	19.7	0.52
IRE:1968-73	45.5	23.1	7.8	14.6	54.5	14.0	40.4	0.1	26.1	0.83
1993-97	54.4	38.0	10.9	5.5	45.6	25.1	20.5	0.0	28.6	1.19
ITA:1968-73	40.6	18.9	11.3	10.3	59.4	21.7	34.3	3.5	16.3	0.68
1993-97	60.2	38.5	13.6	8.1	39.8	20.2	15.4	4.2	28.8	1.51
NET:1968-73	58.5	42.0	10.8	5.6	41.5	21.2	19.9	2.4	24.2	1.41
1993-97	54.2	33.0	14.1	7.1	45.8	26.1	15.2	4.5	26.4	1.18
POR:1968-73	40.5	34.2	-	6.3	59.5	13.2	43.2	3.0	13.6	0.68
1993-97	40.8	37.4	-	3.4	59.2	30.7	27.6	0.9	24.7	0.69
SPA:1968-73	43.9	19.1	14.2	10.6	56.1	31.6	24.4	0.2	10.4	0.78
1993-97	55.0	36.8	9.4	8.8	45.0	25.1	16.1	3.8	21.8	1.22
UK:1968-73	64.6	38.4	9.7	16.5	35.4	8.0	24.6	2.8	28.3	1.82
1993-97	56.9	32.4	11.4	13.1	43.1	24.1	17.0	2.0	28.8	1.32
Statistics										
1968-73										
\bar{X}	48.01	30.75	8.83	4.63	51.99	22.92	27.03	2.03	24.15	1.01
s	10.24	11.75	3.45	0.71	10.24	9.73	10.45	1.49	6.82	0.43
V	0.21	0.38	0.39	0.46	0.20	0.42	0.39	0.73	0.28	0.43
1993-97										
\bar{X}	52.82	37.08	10.32	4.07	47.17	26.94	17.96	2.28	20.05	1.19
s	8.82	9.84	3.44	0.25	8.82	5.36	5.23	1.61	7.10	0.38
V	0.17	0.27	0.33	0.44	0.19	0.20	0.29	0.71	0.35	0.32

Source: OECD, *Revenue Statistics*, various issues.
Notes: Country initials refer to eleven states of EU. Symbol – indicates that Portuguese data do not distinguish between TYP and TYC (see definitions of variables, below). The tax categories at issue are included in TYP.
Definitions of variables: TD = direct taxes (current taxes on income and wealth, excluding social security); TI = indirect taxes (current taxes on imports and production). T = TD + TI. TYP = taxes on income of individuals, TYC = taxes on profits of corporations, TP = taxes on the use, ownership or transfer of property, TGS = taxes on the production, leasing, transfer, delivery or sales of goods, TSS = excise taxes, TOS = TI – (TGS + TSS), and GDP = gross domestic product. Additional details on the tax variables are given in Section 3. Symbols \bar{X} , s and V denote the average value, standard deviation and coefficient of variation, respectively, of the variables appearing in the respective columns. Due to rounding errors, the structures of taxes, TD/T and TI/T, may not add up to 100.

2. Methodology

According to the expectations hypotheses embodied in the PBC models, these can be classified as first or second-generation models. In the former group are the electoral cycle (EC) and the partisan cycle (PC) models. In the second group are the rational electoral (REC) and the rational partisan cycle (RPC) models.

Concerning first generation models, the EC models emphasize the incumbent political party's intention to secure reelection by maximizing its expected vote share at the next election. To that end, the models hypothesize a backward-looking private sector that judges the government by its past track record, and a short-sighted government systematically fooling a myopic electorate by judiciously exploiting a short-run Phillips curve trade-off during its tenure in office. The resulting EC hypothesis to be tested is: Governments, regardless of ideological orientation, adopt expansionary (contractionary) policies in the late (early) year(s) of their term in office in order to depress the rate of unemployment (inflation) at the expense of a higher inflation (more unemployment). On the other hand, the PC models stress that incumbents follow partisan macroeconomic policies. That is, they assign different weights to inflation and unemployment, since they represent different pressure groups with dissimilar preferences, incentives and objectives. The emerging testable EC hypothesis states that socialist or left wing parties give greater weight to unemployment than inflation vis-à-vis right wing or liberal parties. The parties might maintain these policies during their tenure in office. However, they switch to opportunistic policies if their reelection is in jeopardy (Frey and Schneider, 1978).

Regarding models of the second generation, the REC models emphasize the role of temporary information asymmetries in explaining electoral cycles in macroeconomic policy instruments, e.g. taxes, transfers, government consumption spending and money growth, rather than in indicators of economic performance (Rogoff and Sibert, 1988; Rogoff, 1990).

On account of their information advantages, the incumbent governments have an incentive to try to signal their competence in pre-election periods by manipulating the policy instruments. Their ulterior motive is to revert to their traditional policy actions after the election. That is, the end result of their pre-election actions is to fool the public and create cycles in the policy instruments, and, conceivably affect the real variables before the election. The RPC models consider two ideologically different parties, notably socialists versus liberals, with ideologies, objectives and incentives known to an informed and rational public.

In the context of a short- run Phillips curve tradeoff, socialists are expected to be more averse to unemployment and less averse to inflation than liberals. In turn, rational voters anticipate the incentives of the alternative policymakers and form their expectations accordingly. In brief, RPC models predict a transitory expansion (contraction) at the beginning of a socialist (liberal) administration and a tapering off in the effects of their different policies on inflation and unemployment in the later part of their term in office. Inflation is predicted to be permanently higher with socialist rather than with liberal administrations. For a survey and overview see Gärtner (1994).

In our empirical analysis we search for basic stylized facts of electoral and partisan cycles, retrospective or rational, in tax instruments and key target variables across EU economies. To extract the cycle component of a time series, we employ the widely used Hodrick-Prescott (1980, 1997) univariate, detrending procedure, hereafter referred to as HP filter. This is a cyclical filter designed to derive a smoothed trend, τ_t , from a given time series z_t , where z_t stands for the series of any tax or target variable considered and is expressed in logarithms, unless it is in percentage form. The smoothed trend represents the growth component of series z_t . Any deviation of the actual time series from its smoothed trend defines the cycle component of the series, $devz_t$ hereinafter. In the empirical analysis we focus upon this variable and try to explain it in terms of political dummies and other relevant regressors.

The smoothed trend or growth component of a time series z_t , $t = 1, \dots, T$, τ_t , is obtained from the solution of the convex minimization detrending problem:

$$\min_{\tau_t} \sum_{t=1}^T (z_t - \tau_t)^2 + \lambda \sum_{t=2}^{T-1} [(\tau_{t+1} - \tau_t) - (\tau_t - \tau_{t-1})]^2, \lambda > 0 \quad (1)$$

The deviation $z_t - \tau_t$ is the filtered series and the Lagrange multiplier λ is a smoothing parameter. At the annual frequency, a value of the smoothing parameter λ equal to 100 is most often used (Backus and Kehoe (1992), Ravn and Uhlig (1997)).²

In the empirical analysis, we focus upon variable $devz_t$ and try to explain it in terms of political dummies and other relevant regressors. Earlier studies have used as regressands the

² Theoretically, λ can take any value from zero to infinity. When λ is equal to infinity (zero) the solution to the constrained minimization problem is a linear trend (the original series). Recently, Ravn and Uhlig (1997) have strongly recommended a new HP filter adjustment rule, according to which any value of λ between 6.25 and 8.25 is a reasonable choice. Their finding is in agreement with the Baxter and King (1995) proposition that the HP filter approximates the ideal band-pass filter when $\lambda = 10$.

rates of change of z_t 's or their ratios to GDP, and as arguments of the relevant regressions political and non-political dummies. For instance, Alesina and Roubini (1992, 1993), Alesina and Peroti (1995) and Schuknecht (2000) have regressed fiscal variables or their ratios to GDP on political and non-political dummies.

In order to detect electoral or partisan cycle regularities of tax and target variables, we employ the following procedure. First, we apply HP filtering for each target- and tax instrument variable and get the series $devz_t$. Second, we estimate the regression model (2) at various levels of disaggregation of the variables involved.

$$devz_{it} = \alpha_i devz_{i,t-1} + \sum_{p=1}^q \beta_p d_{ipt} + \gamma d_{Mt} + \delta d_M^* + \varepsilon_{it} \quad (2)$$

where $devz_{it}$ stands for the cycle component of the time series z_{it} of each tax and target variable $i, i=1, \dots, 13$, per EU country.³ Symbol d_{ipt} denotes the pre- and post- election year political dummy variables specific to each EU member country examined (see Section 3). In this expression, variables $devz_{i,t-1}$ and d_{ipt} stand for the persistence of the cycle and the effects of the political factors, respectively. Variables d_{Mt} and d_M^* , are two dummies intended to capture the impact of the Treaty of Maastricht (1992) on the dependent variable. In particular, d_{Mt} measures the possible change in the amplitude of the cycle due to the Maastricht criteria; it takes a zero value before 1992 and a value of one otherwise. Variable d_M^* is an interaction dummy intended to capture whether the political effects on the dependent variable have been neutralized or weakened in pre-election periods in the aftermath of the Treaty. The interaction dummy is defined as the product $d_M^* = d_{Mt} \cdot d_e$, where d_e is a pre-election year dummy variable (see end of section 3 for details). The last term in (2) is an error term with the usual properties.

3. The data

Our empirical analysis concerns eleven EU member countries, notably, Belgium, Denmark, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, Spain and the UK. It is based on a sample of 33 annual observations covering 1965-1997. There are five target variables and eight tax instruments. The target variables include gross domestic product, GDP , personal disposable income, YD , private consumption expenditure, C , and the

³ To avoid overburdening the analysis with symbols, a country specific subscript is omitted from all variables in (2).

rates of unemployment u and inflation (rate of change of GDP deflator) π . The tax variables include direct taxes (current taxes on income and wealth) TD and indirect taxes (taxes linked to imports and production) TI as well as their most important sub-categories. In the group of direct taxes included are personal income taxes, TYP , corporate income taxes, TYC , and property taxes, TP . In the group of indirect taxes included are taxes on general goods and services, TGS , taxes on specific goods and services, TSS , and taxes on other goods and services, TOS . With the exception of the rates of unemployment and inflation, which are in percentage form, the remaining variables are expressed in 1990 prices. The data come from the OECD publications *National Accounts, Volume II* (variables GDP , YD and C), and *Revenue Statistics* (all tax variables) and the Commission of the European Communities, *European Economy* (the remaining variables).⁴

The dates of parliamentary elections and the types of the government formed are given in Table 2. An overview on the information in this table reveals the following: (1) Three countries, namely Belgium, Italy, Luxembourg and the Netherlands, have proportional type political systems, which have given rise to coalition governments. (2) The remaining countries have a majoritarian system that interchanges two parties in power. (3) In two countries, Ireland and Portugal, the two major parties have been non-socialist (Fianna Fail and Fine Gael-Labor party) and non-conservative (Socialist and Social Democratic), respectively. (4) In France, the control of the presidency and the government has not always been in the hands of the same party (cohabitation). (5) In three countries, notably Greece, Portugal and Spain, the parliamentary system was suspended for a number of years (Greece, 1967-74) or was revived in the mid-seventies (Portugal, 1975; Spain, 1977). Finally, Germany was reunified in 1989.

On the basis of the outcomes of the national elections (Table 2), we constructed the pre- and post election year dummy variables reported in Tables A-2 and A-3 in the Appendix. In

⁴ Variables TYP and TYC include taxes levied on income of individuals and profits (gross income minus allowable tax relieves) on corporations, taxes levied on capital gains and gains from gambling. Variable TP covers recurrent and non-recurrent taxes on the use, ownership or transfer of property. TGS stands for all taxes, other than import and export duties, levied on the production, leasing, transfer, delivery or sales of a wide range of goods and/or the rendering of a wide range of services, irrespective of whether they are domestically produced or imported and irrespective of the stage of production or distribution at which they are levied, i.e. value-added taxes, sales taxes and multi-stage cumulative taxes. TSS includes excise taxes, taxes on profits generated and transferred from fiscal monopolies, customs and import duties as well as taxes on exports, foreign exchange transactions, investment goods and betting stakes and special taxes on services, which do not form part of a general tax. TOS is a residual tax item on receipts from goods and services. Finally, $TD = TYP + TYC + TP$ and $TI = TGS + TSS + TOS$. All variables in levels are expressed at national currencies.

doing so we divided particular calendar years according to the proportion of total months in a year that each party spent in power. The calculations were based on the definition of the election year as the 12- month period ending at the end of the month of the election. Thus, d_{ec} and d_{es} are the election-year dummies associated with the incumbent government – conservative (liberal) and socialist, respectively – administering the election; d_{nc} and d_{ns} are the respective post-election year dummies. These political dummy variables were used in regression equations designed to test for partisan cycles in the EU countries (sub-section 4.2). For the respective regressions intended to test for electoral cycles, we collapsed the above pre-election year dummies d_{ec} and d_{es} , and the post-election year ones, i.e. d_{nc} and d_{ns} , into two dummy variables, notably d_e and d_n , respectively (sub-section 4.1).⁵ Finally, an additional dummy, d_D , for Greece, Portugal and Spain was employed. This variable accounted for the time intervals these three countries were governed by dictatorial governments, and takes a unit value for the periods these countries were under dictatorial rule and zero otherwise.⁶

⁵ For the construction of the dummy variables see also Alogoskoufis et.al. (1992).

⁶ Variable d_D assumes the value one from 1967 (April) to 1974 (July) in the case of Greece, and for the years before 1975 (April) and 1977 (July) for Portugal and Spain, respectively.

Table 2. Dates of Parliamentary Elections in EU Countries

Year	BEL	DEN	FRA	GER	GRE	IRE	ITA	NET	POR	SPA	UK
1964		9:SOC	CON	CON	2:SOC			COL	D	D	10:LAB
1965	5:COL			9:COL		4:FF			D	D	
1966		11:CON							D	D	4:LAB
1967			3:CON		4:D			2:COL	D	D	
1968	3:COL	1:CON	6:CON		D		5:COL		D	D	
1969				9:SOC	D	6:FF			D	D	
1970					D				D	D	6:CON
1971	11:COL	9:MINS			D			4:COL	D	D	
1972				11:SOC	D		5:COL	11:COL	D	D	
1973		12:MINS	3:CON		D	2:FGL			D	D	
1974	3:COL				11:CON				D	D	2:10:LAB
1975		1:SOC							4:SOC	D	
1976				10:SOC			6:COL		4:SOC	D	
1977	4:COL	2:SOC			10:CON	6:FF		5:COL		6:CON	
1978	12:COL		3:CON								
1979		10:SOC					6:COL		12:SPD	3:CON	5:CON
1980			6:SOC	10:SOC					10:SPD		
1981	11:COL	12:SOC			6:SOC	6:FGL		5:COL			
1982						2:11:FF		9:COL		10:SOC	
1983				3:CON			6:COL		4:SOC		6:CON
1984		1:CON									
1985	10:COL				6:SOC				10:SPD		
1986			3:CON					5:COL		6:SOC	
1987	12:COL	9:CON		1:CON		3:FF	6:COL		7:SPD		6:CON
1988		5:CON	3:SOC								
1989					6:COL	6:FF		9:COL		10:SOC	
1990		12:CON		12:CON	4:CON						
1991	11:COL								10:SPD		
1992						11:FF	4:COL				4:CON
1993			3:CON		10:SOC					6:MINS	
1994		9:SOC		10:CON			3:COL	5:COL			
1995	5:COL								10:SOC		
1996					9:SOC		4:COL			3:CON	
1997			6:SOC			6:FF					5:LAB

Sources: *Chronicle of Parliamentary Elections*, Publications of the Inter-Parliamentary Union, Geneva, Switzerland, annual issues.

Notes: a. Numbers in cells, preceding types of government, indicate months of election. D = dictatorship era.

b. Abbreviations of types of government:

1. COL = coalition, 2. CON = conservative, 3. LAB = labor, 4. FF = Fianna Fail coalition, 5. FGL = Fine Gael + labor coalition, 6. SPD = social democratic (right), 7. MINS = minority-socialist, 8. SOC = socialist.

c. In Ireland (1982), the UK (1974) and Greece (1989) two elections took place, in which FF and FGL, respectively, in Ireland; New Democracy (conservatives) in Greece; and LAB in the UK won the elections.

4. Empirical results

The empirical analysis is aimed at the detection of electoral and/or partisan cycle regularities. The respective results are discussed in sub-sections 4.1 and 4.2. The effects of the Treaty of Maastricht on these cycles are given in sub-section 4.3.

4.1. Electoral cycle regularities

In order to detect the impact of pre-electoral policies on the formation of cycles of tax instruments and target variables in the individual member countries of the EU, regardless of the ideology of the government in power, we estimate the following version of the regression model (2):

$$devz_{it} = \alpha_i devz_{i,t-1} + \sum_{p=1}^q \beta_p d_{ipt} + \gamma d_{Mt} + \delta d_M^* + \zeta d_D + \varepsilon_{it} \quad (3)$$

where $devz_{it}$ is the cycle component of the time series of the tax and target variables examined. The explanatory variables examined in the country regressions are: (a) the lagged dependent variable; (b) political dummy variables, idiosyncratic to the country under consideration; (c) a dummy variable d_{Mt} taking a zero value before 1992 (Treaty of Maastricht) and a unit value otherwise, and an interaction dummy d_M^* , i.e., the product of d_{Mt} and the political dummy d_{et} (see below). For the case of Germany, variable d_M is redefined to account for the reunification of the country in December 1989. In this case it assumes the values zero and one before 1990 and afterwards, respectively. The country political dummies d_{ipt} are defined as d_{et} and d_{nt} ; they represent the pre-election 12-month period and the post election years, but the last one, of the incumbent government, respectively. Variables $devz_{i,t-1}$, d_{Mt} , d_M^* , and d_D were used for controlling for the influence of all factors other than the political factors in the $devz_{it}$ equation. In the estimation of equation (3), we choose $ARMA(p, q)$ specifications as the “best” procedure for reducing short-run noise in all cases in which OLS estimates were not satisfactory.⁷

⁷ In fact, the various versions of equation (3) were estimated with OLS. To all estimated regressions that performed well in terms of the autocorrelation, heteroscedasticity and CUSUM (cumulative sum of squares) tests, we applied the Newey-West procedure. In all remaining cases we experimented with the ARMA approach. This approach involves an iterative three-stage procedure of identification, estimation and diagnostic checking. Model identification tools such as SACF (sample autocorrelation function), SPCF (sample partial autocorrelation function) were used for identifying adequate models. For model selection we used Schwartz’s SBC as the model selection criterion. The optimal order of the model is chosen by the value of m , which is a function of p and q , so that $SBC(m)$ is minimum.

For simplicity, after controlling for the other factors potentially influencing the electoral cycles of the tax- and the target variables mentioned above, the discussion is mainly restricted to the statistically significant estimates of the pre- and post-election year political dummies, as well as the effects of the Treaty of Maastricht on the cycles in question. In that respect, we present only the direction (signs: plus or minus) of the statistically significant coefficients at the 5% probability level of the political dummies in Tables 3-5.

4.1.1. Direct taxes and their components

The regression results for the electoral cycle regularities in total direct taxes and their major components are reported in Table 3 (columns 1-4). On an overall basis, these results suggest that the great majority of the governments in power in the EU countries have not significantly propagated political business cycles. The estimates indicate that the insignificant coefficients of the political regressors d_e and d_n have counted for approximately 85% of all estimated coefficients of these regressors. This fact alone suggests the robustness of our findings. These findings are in agreement with the tax policies pursued by the EU nations in the 1980s and the early 1990s for the purpose of reducing their large deficits, which were accumulated in the 1970s by means of stabilization policies.⁸ In the remaining cases, where the political regressors have significantly affected the cycles of the tax variables, the results were mixed. From among these, it is of interest to note that governments in Spain reduced the cycle of the corporate income tax in pre-election periods but increased it afterwards. On the other hand, governments in Denmark and Germany increased the cycles of property taxes, and personal income taxes, respectively, before elections and reduced them in post-election periods.

⁸ See, for instance, Saunders and Klau (1985), Graham and Seldom (1990) and Aldcroft (2001).

TABLE 3: Testing for Electoral Cycles via Regression (3)

Countries, Dummies	Tax Variables								Target Variables				
	TD (1)	TYP (2)	TYC (3)	TP (4)	TI (5)	TGS (6)	TSS (7)	TOS (8)	GDP (9)	YD (10)	C (11)	u (12)	π (13)
BEL: d_e
d_n
DEN: d_e	+
d_n	-
FRA: d_e	-	...	-	-	...	-
d_n	+	...	+	+
GER: d_e	+
d_n
GRE: d_e	...	+	-
d_n	+
IRE: d_e	+	+	+	...	+	+	+
d_n	...	-	-	-
ITA: d_e	-	-	-	-
d_n	+	+	+
NET: d_e	-
d_n
POR: d_e	-	-	-	-	-
d_n	-	-	...	-	+	+	...	+
SPA: d_e	...	-	+	-
d_n	...	+	+
U.K: d_e	-	+	-
d_n	+

Note: The definitions of the tax-and target variables appearing in the various cells are given in Section 3. The statistically significant coefficients, at the 5% level, are reported by their plus or minus signs. The three dots, ... , signify statistically insignificant coefficients.

4.1.2. Indirect taxes and their components

The statistically significant estimates of the political regressors in Table 4 (columns 5-8) represent only the 24% of all relevant estimated coefficients. From these, only the results pertaining to the cycles of total indirect taxes in Greece, taxes on general goods and

services in France and Italy, taxes on specific goods and services in Spain and taxes on other goods and services in France and Portugal are consistent with the electoral cycle hypothesis.

4.1.3.Target variables

Finally, the statistically significant coefficients associated with the cycles of the target variables (Table 3, columns 9-13) do not exceed 15% of all related estimates. These latter estimates suggest that incumbent governments have managed to decrease in pre-election periods the cycles of real GDP in France and Italy, real disposable income in Italy, real private consumption expenditure in Portugal and the rate of inflation in the UK, but increased them in post election periods. In Ireland, government actions led to increases of the cycle of the rate of inflation before elections and decreases after elections.

In relation to the above results, earlier studies employing different country samples and time periods have detected evidence for electoral cycles in tax instruments. In particular, Tufte (1978), using the 1961-72 US data, found that tax increases were *most probable* in post- than pre-election years (our emphasis). Poterba (1994), using US data at the state level for the 1988-92 period, confirmed the hypothesis that tax increases are significantly smaller prior to gubernatorial elections than afterwards. Pack (1987, 1988) provides evidence for politically motivated business cycles on the revenue- but not on the expenditure side of the budget in the US for the 1957-81 time span. By using panel data from a sample of twenty OECD countries for the 1960-87 period, Alesina and Roubini (1993) provide evidence of electoral-type cycles on monetary and fiscal (taxes, government spending) variables. Yoo (1998) finds a political tax cycle in Japan during the 1953-92 period. Schuknecht (2000), using a sample of twenty-four developing countries for the 1973-92 period, finds that incumbent governments tend to increase public investment rather than lowering taxes prior to elections.

4.2. Partisan cycle regularities

To detect whether conservative (liberal) or socialist administrations have exerted political influence on the cycles of the tax and target variables, we estimated an alternative version of the regression model (3).⁹ In that version we reinterpreted the political dummies d_{ipt} to account for the potential impact on the economy of each of the two parties, when in power, before and after the elections. The construction of the political dummy variables at issue is discussed in Section 3. As in the preceding section, we present only the direction (signs: plus or minus) of the statistically significant coefficients of the political dummies in Table 4.¹⁰

The regression results for partisan-cycle regularities in tax instruments and target variables are reported in Table 4. The results are similar to those discussed for the electoral cycle regularities. This implies that the great majority of the EU governments, conservative or socialist, did not significantly affect the cycles of the tax- and target variables involved. In the following subsections we briefly discuss results consistent with partisan cycles.

4.2.1. Direct and indirect taxes and their components

The statistically significant coefficients in the partisan cycle regressions concerning direct taxes and their components indicate that (a) conservatives in Spain decreased the cycle of the corporate income tax before election periods and increased it after elections; and (b) socialists in Germany and Spain reduced the cycle of direct taxes and property taxes, respectively in pre- election periods but reversed their policies after elections. Concerning indirect taxes, conservatives in Portugal (Social Democrats) and Spain reduced the cycles of taxes on specific goods and services in pre-election periods, but reversed their policies afterwards. Similar policies were pursued by socialist administrations in France and Germany in relation to the cycle of taxes on other goods and services. The remaining results do not conform to the requirements of partisan cycles. Hence, no case can be made for partisan cycle regularities in direct and indirect taxes throughout the EU for the period of the sample.

4.2.2 Target variables

The statistically significant estimates for the target variables indicate that both parties (taken separately), when in power, have mainly reduced the partisan cycles of the variables

⁹ The three countries with a proportional political system, notably, Belgium, Italy and the Netherlands, are not examined here.

¹⁰ The detailed estimates of the above cycles of tax- and target variables as functions of the political dummies and other non-political regressors are available upon request.

involved (Table 4, columns 9-13). More specifically, in pre-election periods, socialists in France, Germany and Ireland (Fine-Gael/Labor coalition), and conservatives in Portugal (Social Democrats) and Spain have reduced the cycles of various categories of the target variables cited in Table 4. It is of interest to note here that most conservative governments

TABLE 4: Testing for Partisan Cycles via Regression (3)

Countries, Dummies	Tax Variables								Target Variables				
	TD (1)	TYP (2)	TYC (3)	TP (4)	TI (5)	TGS (6)	TSS (7)	TOS (8)	GDP (9)	YD (10)	C (11)	u (12)	π (13)
DEN:dec	-
des	+
dnc
dns	...	-	-
FRA:dec	+	+	-
des	...	-	-	-	-	-	...	+	-
dnc
dns	+	+
GER:dec	-
des	-	-	...	-	...	-	-
dnc
dns	+	+
GRE:dec	+	...	-	-
des	-	-
dnc	+	+	-	...
dns	-	-
IRE:dec	+	...	-	+	+	+	+	+	...	-
des	...	+	+	+	...	+	...	-	-
dnc	-
dns	-	-	...	+	+	+
POR:dec	-	...	-	-	...	-
des	+	+	...
dnc	+	+	+	+	-
dns	-	-	...	-	-	...	+	+
SPA:dec	-	...	-	...	-	...	-	-	-	...	+
des	+	-	+
dnc	+	+
dns	+	+	...	+
U.K:dec	+	+
des	-	-
dnc	-
dns	+	+	+	+

Note: The definitions of the tax-and target variables appearing in the various cells are given in Section 3. The statistically significant coefficients, at the 5% level, are reported by their plus or minus signs. The three dots, ... , signify statistically insignificant coefficients.

reduced the cycle of the rate of inflation in pre-election periods. In conclusion, the empirical evidence does not lend support to partisan cycle regularities in the key target variables examined in the EU countries under consideration during the period of the sample.

4.2.3 Treaty of Maastricht and cycles of instruments and targets

The impact of the Treaty of Maastricht on the cycles of the tax instruments and the target variables examined, as measured by the statistically significant coefficients of the dummy variables d_M and d_M^* (regression 3) in the eleven EU member countries, is reported in Table 5. The statistically significant estimates correspond to about 15% of all cases considered. This suggests that the impact of the Treaty of Maastricht on the cycles in question in the post 1992 era has been limited. This is justified by the fact that most of the countries involved had already been in a process of tax policy convergence, long before the initiation of the Treaty, with the ultimate objective of forming the EMU in the future.¹¹

TABLE 5: Impact of Treaty of Maastricht on Cycles of Tax- and Target Variables

Dummies in regressions of:

Countries	Tax Variables				Target Variables			
	$d_M > 0$	$d_M < 0$	$d_M^* > 0$	$d_M^* < 0$	$d_M > 0$	$d_M < 0$	$d_M^* > 0$	$d_M^* < 0$
BEL	...	...	TD,TYP,TYC	...	...	...	YD	...
DEN	...	TD	...	...	...	...	C	...
FRA	...	TGS	TI, TGS	...	...	GDP,C	GDP,YD, C	...
GER	...	...	...	...	...	...	...	...
GRE	...	...	TI	TYP	...	...	...	...
IRE	TSS	...	...	...	π	...	...	...
ITA	TYP	...	TP	...	...	YD	YD, π	...
NET	...	TYP	TYP	...	...	...	...	...
POR	TD,TYP	...	TGS,TOS	TD,TYP	...	π	...	...
SPA	...	TYP	TYP,TYC	TGS	...	...	...	u
UK	TP	...	TGS	...	...	...	Π	...

Note: The definitions of the tax-and target variables appearing in the various cells are given in Section 3. The statistically significant coefficients (5% level) of the Maastricht related dummies in the EU country regressions of the cycles of the variables at issue are reported by their plus or minus signs. The three dots, ..., signify statistically insignificant coefficients.

¹¹ The source of the information in this table is estimates of regression (3) in association with the search of electoral cycles. Degrees of freedom problems prevented comparable estimates for the case of partisan cycles.

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5. Summary and conclusion

In this paper we have searched for electoral and partisan cycle regularities in tax instruments and target variables in eleven EU member countries for the 1965-1997 period. The conclusion emerging from the empirical analysis does not lend support to the presence of electoral- or partisan cycle type hypotheses in the EU. Indications of political business cycles in the tax instruments and the target variables used are scanty. The great majority of the results suggest that the national governments of the EU countries did not take policy actions leading to the creation of electoral or partisan cycles in tax instruments and target variables. Our findings rather suggest that the EU governments have been primarily concerned with the pursuit of stabilization policies rather than with policies giving rise to political cycles, with the intent of curing the inflation and unemployment problems of the 1970s and 1980s. This result is encouraging, in the sense that it underlies a convergence of the tax policies pursued by the majority of the individual member countries of the Union in the pre-1997 period. It therefore facilitates the task of the European Commission in leading toward a federal type tax policy in the EMU in the future.

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APPENDIX

Table A- 1. Election and Post Election Year Dummy Variables Used in the Estimation of Partisan Cycles-Type Regressions, EU 1964-1997

Year	Denmark				France				Germany				Greece			
	d _{ec}	d _{es}	d _{nc}	d _{ns}	d _{ec}	d _{es}	d _{nc}	d _{ns}	d _{ec}	d _{es}	d _{nc}	d _{ns}	d _{ec}	d _{es}	d _{nc}	d _{ns}
1964	0.00	0.75	0.00	0.25	0.00	0.00	1.00	0.00	0.25	0.00	0.75	0.00	0.00	0.00	0.00	1.00
1965	0.08	0.00	0.00	0.92	0.00	0.00	1.00	0.00	0.75	0.00	0.25	0.00	0.00	0.00	0.00	1.00
1966	0.92	0.00	0.08	0.00	0.75	0.00	0.25	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
1967	0.92	0.00	0.08	0.00	0.25	0.00	0.75	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
1968	0.08	0.00	0.92	0.00	0.50	0.00	0.50	0.00	0.00	0.25	0.75	0.00	0.00	0.00	0.00	0.00
1969	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.75	0.00	0.25	0.00	0.00	0.00	0.00
1970	0.00	0.25	0.00	0.75	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
1971	0.00	0.75	0.00	0.25	0.00	0.00	1.00	0.00	0.00	0.08	0.00	0.92	0.00	0.00	0.00	0.00
1972	0.00	0.00	0.00	1.00	0.75	0.00	0.25	0.00	0.00	0.92	0.00	0.08	0.00	0.00	0.00	0.00
1973	0.00	1.00	0.00	0.00	0.25	0.00	0.75	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
1974	0.00	0.92	0.00	0.08	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.17	0.00	0.08	0.00
1975	0.00	0.08	0.00	0.92	0.00	0.00	1.00	0.00	0.00	0.17	0.00	0.83	0.00	0.00	1.00	0.00
1976	0.00	0.83	0.00	0.17	0.00	0.00	1.00	0.00	0.00	0.83	0.00	0.17	0.08	0.00	0.92	0.00
1977	0.00	0.17	0.00	0.83	0.75	0.00	0.25	0.00	0.00	0.00	0.00	1.00	0.92	0.00	0.08	0.00
1978	0.00	0.17	0.00	0.83	0.25	0.00	0.75	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
1979	0.00	0.83	0.00	0.17	0.00	0.00	1.00	0.00	0.00	0.17	0.00	0.83	0.00	0.00	1.00	0.00
1980	0.00	0.00	0.00	1.00	0.00	0.50	0.50	0.00	0.00	0.83	0.00	0.17	0.17	0.00	0.83	0.00
1981	0.00	1.00	0.00	0.00	0.00	0.50	0.00	0.50	0.00	0.00	0.00	1.00	0.83	0.00	0.00	0.17
1982	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.75	0.00	0.00	0.25	0.00	0.00	0.00	1.00
1983	0.92	0.00	0.00	0.08	0.00	0.00	0.00	1.00	0.25	0.00	0.75	0.00	0.00	0.00	0.00	1.00
1984	0.08	0.00	0.92	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.50	0.00	0.50
1985	0.00	0.00	1.00	0.00	0.75	0.00	0.00	0.25	0.00	0.00	1.00	0.00	0.00	0.50	0.00	0.50
1986	0.25	0.00	0.75	0.00	0.25	0.00	0.75	0.00	0.92	0.00	0.08	0.00	0.00	0.00	0.00	1.00
1987	0.75	0.00	0.25	0.00	0.00	0.75	0.25	0.00	0.08	0.00	0.92	0.00	0.00	0.00	0.00	1.00
1988	0.42	0.00	0.58	0.00	0.00	0.00	0.00	0.75	0.00	0.00	1.00	0.00	0.00	0.50	0.00	0.50
1989	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.50	0.00	0.50
1990	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.33	0.00	0.67	0.00
1991	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00
1992	0.00	0.00	1.00	0.00	0.75	0.00	0.00	0.25	0.00	0.00	1.00	0.00	0.17	0.00	0.83	0.00
1993	0.00	0.25	0.75	0.00	0.25	0.00	0.75	0.00	0.17	0.00	0.83	0.00	0.83	0.00	0.00	0.17
1994	0.00	0.75	0.00	0.25	0.00	0.00	1.00	0.00	0.83	0.00	0.17	0.00	0.00	0.00	0.00	1.00
1995	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.25	0.00	0.75
1996	0.00	0.00	0.00	1.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00	0.00	0.00	0.75	0.00	0.25
1997	0.00	0.00	0.00	1.00	0.00	0.50	0.00	0.50	0.00	0.25	0.75	0.00	0.00	0.00	0.00	1.00

Table A- 1 (continued) Election and Post Election Year Dummy Variables Used in the Estimation of Partisan Cycles-Type Regressions, EU 1964-97

Year	Ireland				Portugal				Spain				United Kingdom			
	d _{ec}	d _{es}	d _{nc}	d _{ns}	d _{ec}	d _{es}	d _{nc}	d _{ns}	d _{ec}	d _{es}	d _{nc}	d _{ns}	d _{ec}	d _{es}	d _{nc}	d _{ns}
1964	0.67	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.67
1965	0.33	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.00	0.33
1966	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.67
1967	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
1968	0.50	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
1969	0.50	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.50
1970	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.50	0.00
1971	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
1972	0.00	0.83	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
1973	0.00	0.17	0.00	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.83	0.17	0.00
1974	0.00	0.00	0.00	1.00	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.83
1975	0.00	0.00	0.00	1.00	0.00	0.33	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
1976	0.50	0.00	0.00	0.50	0.00	0.33	0.00	0.67	0.50	0.00	0.00	0.00	0.00	0.00	0.00	1.00
1977	0.50	0.00	0.50	0.00	0.00	0.00	0.00	1.00	0.50	0.00	0.50	0.00	0.00	0.00	0.00	1.00
1978	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.75	0.00	0.25	0.00	0.58	0.00	0.00	0.42
1979	0.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.25	0.00	0.75	0.00	0.42	0.00	0.58	0.00
1980	0.00	0.50	0.50	0.00	0.17	0.00	0.83	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00
1981	0.00	0.50	0.00	0.50	0.00	0.00	1.00	0.00	0.00	0.17	0.83	0.00	0.00	0.00	1.00	0.00
1982	0.00	0.92	0.00	0.08	0.00	0.67	0.33	0.00	0.00	0.83	0.00	0.17	0.50	0.00	0.50	0.00
1983	0.00	0.00	0.00	1.00	0.00	0.33	0.00	0.67	0.00	0.00	0.00	1.00	0.50	0.00	0.50	0.00
1984	0.08	0.00	0.00	1.00	0.17	0.00	0.00	0.83	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
1985	0.00	0.00	0.00	1.00	0.83	0.00	0.17	0.00	0.00	0.50	0.00	0.50	0.00	0.00	1.00	0.00
1986	0.75	0.00	0.00	0.25	0.00	0.42	0.58	0.00	0.00	0.50	0.00	0.50	0.50	0.00	0.50	0.00
1987	0.25	0.00	0.75	0.00	0.00	0.58	0.00	0.42	0.00	0.00	0.00	1.00	0.50	0.00	0.50	0.00
1988	0.00	0.50	0.50	0.00	0.00	0.00	1.00	0.00	0.00	0.17	0.00	0.83	0.00	0.00	1.00	0.00
1989	0.00	0.50	0.00	0.50	0.00	0.00	1.00	0.00	0.00	0.83	0.00	0.17	0.00	0.00	1.00	0.00
1990	0.00	0.00	0.00	1.00	0.17	0.00	0.83	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
1991	0.17	0.00	0.00	0.83	0.83	0.00	0.17	0.00	0.00	0.00	0.00	1.00	0.67	0.00	0.33	0.00
1992	0.83	0.00	0.17	0.00	0.00	0.00	1.00	0.00	0.00	0.50	0.00	0.50	0.33	0.00	0.67	0.00
1993	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.50	0.00	0.50	0.00	0.00	1.00	0.00
1994	0.00	0.00	1.00	0.00	0.00	0.17	0.83	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
1995	0.00	0.00	1.00	0.00	0.00	0.83	0.00	0.17	0.75	0.00	0.00	0.25	0.00	0.00	1.00	0.00
1996	0.50	0.00	0.50	0.00	0.00	0.00	0.00	1.00	0.25	0.00	0.75	0.00	0.00	0.58	0.42	0.00
1997	0.50	0.00	0.50	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.42	0.00	0.58

Source: Chronicle of Parliamentary Elections, Publications of the Inter-Parliamentary Union, Geneva, Switzerland (annual issues) for the years 1964-1990 and 1991-97.

Note: All countries with proportional political systems are not included in this analysis. Sweden is also not included due to her late accession to the EU. See text.

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Table A-2. Election and Post Election Year Dummy Variables Used in the Estimation of Electoral Cycles-Type Regressions, EU 1964-97

Year	Belgium		Italy		Netherlands	
	d _e	d _n	d _e	d _n	d _e	d _n
1965	0.42	0.58	0.00	1.00	0.00	1.00
1966	0.00	1.00	0.00	1.00	0.83	0.17
1967	0.75	0.25	0.58	0.42	0.17	0.83
1968	0.25	0.75	0.42	0.58	0.00	1.00
1969	0.00	1.00	0.00	1.00	0.00	1.00
1970	0.08	0.92	0.00	1.00	0.67	0.33
1971	0.92	0.08	0.58	0.42	0.33	0.67
1972	0.00	1.00	0.42	0.58	0.92	0.08
1973	0.75	0.25	0.00	1.00	0.00	1.00
1974	0.25	0.75	0.00	1.00	0.00	1.00
1975	0.00	1.00	0.50	0.50	0.00	1.00
1976	0.67	0.33	0.50	0.50	0.58	0.42
1977	0.33	0.67	0.00	1.00	0.42	0.58
1978	1.00	0.00	0.50	0.50	0.00	1.00
1979	0.00	1.00	0.50	0.50	0.00	1.00
1980	0.08	0.92	0.00	1.00	0.58	0.42
1981	0.92	0.08	0.00	1.00	0.42	0.58
1982	0.00	1.00	0.50	0.50	0.75	0.25
1983	0.00	1.00	0.50	0.50	0.00	1.00
1984	0.17	0.83	0.00	1.00	0.00	1.00
1985	0.83	0.17	0.00	1.00	0.58	0.42
1986	0.00	1.00	0.50	0.50	0.42	0.58
1987	1.00	0.00	0.50	0.50	0.00	1.00
1988	0.00	1.00	0.00	1.00	0.25	0.75
1989	0.00	1.00	0.00	1.00	0.75	0.25
1990	0.08	0.92	0.00	1.00	0.00	1.00
1991	0.92	0.08	0.67	0.33	0.00	1.00
1992	0.00	1.00	0.33	0.67	0.00	1.00
1993	0.00	1.00	0.75	0.25	0.58	0.42
1994	0.58	0.42	0.25	0.75	0.42	0.58
1995	0.42	0.58	0.67	0.33	0.00	1.00
1996	0.00	1.00	0.33	0.67	0.00	1.00
1997	0.00	1.00	0.00	1.00	0.58	0.42

Source: Own calculations based on Table 2.

Note: See Table A-1.

TAXATION AND POLITICAL BUSINESS CYCLES IN EU ECONOMIES

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Abstract

This paper examines whether incumbent national governments of eleven member states of the European Union manipulated the tax policy instruments at their disposal in order to create national political business cycles, opportunistic or partisan. The empirical evidence, based on data concerning the 1965-97 period, does not support this hypothesis. Rather, it appears that governments have pursued stabilization policies.

JEL classification numbers: E3, E6, H8

Keywords: Tax instruments; Target variables; Elections; Electoral cycles; Partisan cycles; Stabilization policies.

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TAXATION AND POLITICAL BUSINESS CYCLES IN EU ECONOMIES

1. Introduction

This paper examines whether the national governments of the European Union (EU) member states have used tax policies as a means for the stabilization of their economies or for their reelection by creating national political business cycles (PBCs). If they have caused PBCs did these cycles exhibit comparable patterns over time and, perhaps, narrower in amplitude in the post-Maastricht (1992) era than in the preceding period? And in that case could these cycles be identified as being of an electoral-type or a partisan-type? Answers to such questions may illuminate the perspectives of the European Monetary Union (EMU) states in respect to the coordination of their tax policies toward an eventual implementation of a federal-type fiscal organization in the years to come. These issues are examined for democratic societies with majoritarian and proportional political systems. The former systems have to do with two major political parties alternating in power; the latter involve a larger number of smaller parties and coalition governments.

The benchmark year 1992 has triggered an era of rising expectations for a gradual loss of fiscal autonomy of the EU member states, due to the budget-to-GDP and deficit-to-GDP criteria imposed by the Treaty of Maastricht. These criteria comprise a subset of the conditions required by the member states prior to their accession to the EMU and have to be sustained afterwards. Consequently, these requirements are to be reflected in the economic policies of national governments, regardless of ideological differences, and, hence, in less prominent national PBCs caused by tax policies in the post-1992 era relative to the preceding period (see also Alesina et al., 1997, chap.10).

Political business cycle models feature the idea that, in majoritarian systems, governments acting in favor of their own political interests and/or the interests of particular pressure groups tend to stimulate aggregate demand in pre-election periods. Their actual policies before elections can give rise to electoral (opportunistic) or partisan cycles. Electoral cycles are defined as the persistent cyclical patterns of key target- and policy variables regardless of the ideological orientation of the incumbent government (Nordhaus, 1975; Lindbeck, 1976). Partisan cycles are defined as the persistent differences in such patterns conditional upon the ideology of the party in power (see, for instance, Hibbs, 1977, and Haynes and Stone, 1990). Both types of models make use of an exploitable Phillips curve. In terms of voters' expectations, these models are considered as retrospective and naive. The counterparts of

these models based on rational expectations are classified as rational electoral (Rogoff and Sibert, 1988, and Rogoff, 1990) and rational partisan models (Alesina 1987, Alesina and Roubini 1993). Proportional political systems, with several parties forming coalition governments, are not prone to yield partisan cycles. Through policy moderation, coalition governments are slow to react to shocks due to the veto power by their members over the choice of policies [Alesina (1987) and Alesina et al. (1997) and the literature cited therein]. Moreover, they have a tendency to create larger budget deficits and build up government debt [Alesina et al. (1997)]. For a different view see De Haan and Sturm (1977).

The empirical evidence in connection with PBCs caused by tax instruments is mixed. Among the studies lending support to this view are Tufte (1978), Mikesel (1978), Pack (1988), Bizer and Durlauf (1989), Cox and McCubbins (1991), Poterba (1994) and Yoo (1998). Against this view argue Brennan and Buchanan (1980), Hicks (1984), Karran (1985) and Frohlich and Oppenheimer (1990). With the exception of Yoo, who is concerned with the Japanese case, the other studies deal with the US economy. Most recently, Schuknecht (2000) has examined fiscal policies in pre-election periods in twenty-four developing countries. His work indicates increasing public expenditures rather than lowering taxes as a major political choice in pre-election periods.

Empirical evidence from the majority of eleven member states of the EU reveals a narrowing of the divergences observed in the evolution of the structures of direct and indirect taxes from the early 1970s to the late 1990s (post Maastricht period) as the coefficients of variation in Table 1 indicate.¹ A question is whether the above changes reflect stabilization through tax policies or are intended pre-election period actions of incumbent governments seeking to improve their reelection prospects. In the latter case, it is of interest to investigate whether the changes observed during the 1965-97 period can be distinguished in accord with the ideological position of the incumbent governments, liberal and socialist, and/or coalition type.

We shall examine the pre- and post-election period influences of incumbent governments on the cycles of key target variables and tax instruments as well as the two major components of the latter, direct and indirect taxes, in the EU member states during the 1970-97 period.

¹ From the fifteen member states of the EU, our analysis excludes Luxembourg due to data unavailability as well as Austria, Finland and Sweden are not examined due to the length of our data set (1965-1997) and their so-to-speak late accession (1995) in the EU. A longer time period was not available due to the lack of statistical data concerning various categories of the variables employed in the countries of the sample. For the same reasons, the ten new members of the EU as of spring 2003 are also not examined.

Methodological issues are discussed in the following section and a description of the data is provided in Section 3. The empirical results are discussed in Section 4. Conclusions and policy implications are in the last section.

**Table 1: Structure and Percentage Shares of Tax Instruments in GDP,
European Union States 1968-1997**

Countries/dates	TD/T	TYP/T	TYC/T	TP/T	TI/T	TGS/T	TSS/T	TOS/T	T/GDP	TD/IT
BEL:1968-73	50.9	36.3	10.0	4.6	49.1	29.6	16.6	2.9	24.3	1.04
1993-97	60.1	46.5	9.6	4.0	39.9	22.9	12.9	4.0	30.5	1.51
DEN:1968-73	60.0	51.0	2.8	6.2	40.0	18.0	18.7	3.4	39.0	1.50
1993-97	65.5	56.9	4.7	3.8	34.5	20.8	12.0	1.8	48.1	1.90
FRA:1968-73	35.7	19.9	9.4	6.5	64.3	43.7	19.1	1.4	20.5	0.56
1993-97	46.1	26.4	9.3	10.5	53.9	34.1	17.6	2.2	22.6	0.86
GER:1968-73	55.2	40.9	8.6	5.7	44.8	23.6	18.7	2.5	23.2	1.23
1993-97	53.4	43.1	5.7	4.7	46.6	29.4	15.4	1.8	26.6	1.15
GRE:1968-73	32.9	14.6	3.6	14.7	67.1	26.1	41.0	0.0	14.0	0.49
1993-97	34.4	18.9	9.8	5.7	65.6	37.7	27.9	0.0	19.7	0.52
IRE:1968-73	45.5	23.1	7.8	14.6	54.5	14.0	40.4	0.1	26.1	0.83
1993-97	54.4	38.0	10.9	5.5	45.6	25.1	20.5	0.0	28.6	1.19
ITA:1968-73	40.6	18.9	11.3	10.3	59.4	21.7	34.3	3.5	16.3	0.68
1993-97	60.2	38.5	13.6	8.1	39.8	20.2	15.4	4.2	28.8	1.51
NET:1968-73	58.5	42.0	10.8	5.6	41.5	21.2	19.9	2.4	24.2	1.41
1993-97	54.2	33.0	14.1	7.1	45.8	26.1	15.2	4.5	26.4	1.18
POR:1968-73	40.5	34.2	-	6.3	59.5	13.2	43.2	3.0	13.6	0.68
1993-97	40.8	37.4	-	3.4	59.2	30.7	27.6	0.9	24.7	0.69
SPA:1968-73	43.9	19.1	14.2	10.6	56.1	31.6	24.4	0.2	10.4	0.78
1993-97	55.0	36.8	9.4	8.8	45.0	25.1	16.1	3.8	21.8	1.22
UK:1968-73	64.6	38.4	9.7	16.5	35.4	8.0	24.6	2.8	28.3	1.82
1993-97	56.9	32.4	11.4	13.1	43.1	24.1	17.0	2.0	28.8	1.32
Statistics										
1968-73										
\bar{X}	48.01	30.75	8.83	4.63	51.99	22.92	27.03	2.03	24.15	1.01
s	10.24	11.75	3.45	0.71	10.24	9.73	10.45	1.49	6.82	0.43
V	0.21	0.38	0.39	0.46	0.20	0.42	0.39	0.73	0.28	0.43
1993-97										
\bar{X}	52.82	37.08	10.32	4.07	47.17	26.94	17.96	2.28	20.05	1.19
s	8.82	9.84	3.44	0.25	8.82	5.36	5.23	1.61	7.10	0.38
V	0.17	0.27	0.33	0.44	0.19	0.20	0.29	0.71	0.35	0.32

Source: OECD, *Revenue Statistics*, various issues.

Notes: Country initials refer to eleven states of EU. Symbol – indicates that Portuguese data do not distinguish between TYP and TYC (see definitions of variables, below). The tax categories at issue are included in TYP.

Definitions of variables: TD = direct taxes (current taxes on income and wealth, excluding social security); TI = indirect taxes (current taxes on imports and production). T = TD + TI. TYP = taxes on income of individuals, TYC = taxes on profits of corporations, TP = taxes on the use, ownership or transfer of property, TGS = taxes on the production, leasing, transfer, delivery or sales of goods, TSS = excise taxes, TOS = TI – (TGS + TSS), and GDP = gross domestic product. Additional details on the tax variables are given in Section 3. Symbols \bar{X} , s and V denote the average value, standard deviation and coefficient of variation, respectively, of the variables appearing in the respective columns. Due to rounding errors, the structures of taxes, TD/T and TI/T, may not add up to 100.

2. Methodology

According to the expectations hypotheses embodied in the PBC models, these can be classified as first or second-generation models. In the former group are the electoral cycle (EC) and the partisan cycle (PC) models. In the second group are the rational electoral (REC) and the rational partisan cycle (RPC) models.

Concerning first generation models, the EC models emphasize the incumbent political party's intention to secure reelection by maximizing its expected vote share at the next election. To that end, the models hypothesize a backward-looking private sector that judges the government by its past track record, and a short-sighted government systematically fooling a myopic electorate by judiciously exploiting a short-run Phillips curve trade-off during its tenure in office. The resulting EC hypothesis to be tested is: Governments, regardless of ideological orientation, adopt expansionary (contractionary) policies in the late (early) year(s) of their term in office in order to depress the rate of unemployment (inflation) at the expense of a higher inflation (more unemployment). On the other hand, the PC models stress that incumbents follow partisan macroeconomic policies. That is, they assign different weights to inflation and unemployment, since they represent different pressure groups with dissimilar preferences, incentives and objectives. The emerging testable EC hypothesis states that socialist or left wing parties give greater weight to unemployment than inflation vis-à-vis right wing or liberal parties. The parties might maintain these policies during their tenure in office. However, they switch to opportunistic policies if their reelection is in jeopardy (Frey and Schneider, 1978).

Regarding models of the second generation, the REC models emphasize the role of temporary information asymmetries in explaining electoral cycles in macroeconomic policy instruments, e.g. taxes, transfers, government consumption spending and money growth, rather than in indicators of economic performance (Rogoff and Sibert, 1988; Rogoff, 1990).

On account of their information advantages, the incumbent governments have an incentive to try to signal their competence in pre-election periods by manipulating the policy instruments. Their ulterior motive is to revert to their traditional policy actions after the election. That is, the end result of their pre-election actions is to fool the public and create cycles in the policy instruments, and, conceivably affect the real variables before the election. The RPC models consider two ideologically different parties, notably socialists versus liberals, with ideologies, objectives and incentives known to an informed and rational public.

In the context of a short- run Phillips curve tradeoff, socialists are expected to be more averse to unemployment and less averse to inflation than liberals. In turn, rational voters anticipate the incentives of the alternative policymakers and form their expectations accordingly. In brief, RPC models predict a transitory expansion (contraction) at the beginning of a socialist (liberal) administration and a tapering off in the effects of their different policies on inflation and unemployment in the later part of their term in office. Inflation is predicted to be permanently higher with socialist rather than with liberal administrations. For a survey and overview see Gärtner (1994).

In our empirical analysis we search for basic stylized facts of electoral and partisan cycles, retrospective or rational, in tax instruments and key target variables across EU economies. To extract the cycle component of a time series, we employ the widely used Hodrick-Prescott (1980, 1997) univariate, detrending procedure, hereafter referred to as HP filter. This is a cyclical filter designed to derive a smoothed trend, τ_t , from a given time series z_t , where z_t stands for the series of any tax or target variable considered and is expressed in logarithms, unless it is in percentage form. The smoothed trend represents the growth component of series z_t . Any deviation of the actual time series from its smoothed trend defines the cycle component of the series, $devz_t$ hereinafter. In the empirical analysis we focus upon this variable and try to explain it in terms of political dummies and other relevant regressors.

The smoothed trend or growth component of a time series z_t , $t = 1, \dots, T$, τ_t , is obtained from the solution of the convex minimization detrending problem:

$$\min_{\tau_t} \sum_{t=1}^T (z_t - \tau_t)^2 + \lambda \sum_{t=2}^{T-1} [(\tau_{t+1} - \tau_t) - (\tau_t - \tau_{t-1})]^2, \lambda > 0 \quad (1)$$

The deviation $z_t - \tau_t$ is the filtered series and the Lagrange multiplier λ is a smoothing parameter. At the annual frequency, a value of the smoothing parameter λ equal to 100 is most often used (Backus and Kehoe (1992), Ravn and Uhlig (1997)).²

In the empirical analysis, we focus upon variable $devz_t$ and try to explain it in terms of political dummies and other relevant regressors. Earlier studies have used as regressands the

² Theoretically, λ can take any value from zero to infinity. When λ is equal to infinity (zero) the solution to the constrained minimization problem is a linear trend (the original series). Recently, Ravn and Uhlig (1997) have strongly recommended a new HP filter adjustment rule, according to which any value of λ between 6.25 and 8.25 is a reasonable choice. Their finding is in agreement with the Baxter and King (1995) proposition that the HP filter approximates the ideal band-pass filter when $\lambda = 10$.

rates of change of z_t 's or their ratios to GDP, and as arguments of the relevant regressions political and non-political dummies. For instance, Alesina and Roubini (1992, 1993), Alesina and Perotti (1995) and Schuknecht (2000) have regressed fiscal variables or their ratios to GDP on political and non-political dummies.

In order to detect electoral or partisan cycle regularities of tax and target variables, we employ the following procedure. First, we apply HP filtering for each target- and tax instrument variable and get the series $devz_t$. Second, we estimate the regression model (2) at various levels of disaggregation of the variables involved.

$$devz_{it} = \alpha_i devz_{i,t-1} + \sum_{p=1}^q \beta_p d_{ipt} + \gamma d_{Mt} + \delta d_M^* + \varepsilon_{it} \quad (2)$$

where $devz_{it}$ stands for the cycle component of the time series z_{it} of each tax and target variable $i, i=1, \dots, 13$, per EU country.³ Symbol d_{ipt} denotes the pre- and post- election year political dummy variables specific to each EU member country examined (see Section 3). In this expression, variables $devz_{i,t-1}$ and d_{ipt} stand for the persistence of the cycle and the effects of the political factors, respectively. Variables d_{Mt} and d_M^* , are two dummies intended to capture the impact of the Treaty of Maastricht (1992) on the dependent variable. In particular, d_{Mt} measures the possible change in the amplitude of the cycle due to the Maastricht criteria; it takes a zero value before 1992 and a value of one otherwise. Variable d_M^* is an interaction dummy intended to capture whether the political effects on the dependent variable have been neutralized or weakened in pre-election periods in the aftermath of the Treaty. The interaction dummy is defined as the product $d_M^* = d_{Mt} \cdot d_e$, where d_e is a pre-election year dummy variable (see end of section 3 for details). The last term in (2) is an error term with the usual properties.

3. The data

Our empirical analysis concerns eleven EU member countries, notably, Belgium, Denmark, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, Spain and the UK. It is based on a sample of 33 annual observations covering 1965-1997. There are five target variables and eight tax instruments. The target variables include gross domestic product, GDP , personal disposable income, YD , private consumption expenditure, C , and the rates of

³ To avoid overburdening the analysis with symbols, a country specific subscript is omitted from all variables in (2).

unemployment u and inflation (rate of change of GDP deflator) π . The tax variables include direct taxes (current taxes on income and wealth) TD and indirect taxes (taxes linked to imports and production) TI as well as their most important sub-categories. In the group of direct taxes included are personal income taxes, TYP , corporate income taxes, TYC , and property taxes, TP . In the group of indirect taxes included are taxes on general goods and services, TGS , taxes on specific goods and services, TSS , and taxes on other goods and services, TOS . With the exception of the rates of unemployment and inflation, which are in percentage form, the remaining variables are expressed in 1990 prices. The data come from the OECD publications *National Accounts, Volume II* (variables GDP , YD and C), and *Revenue Statistics* (all tax variables) and the Commission of the European Communities, *European Economy* (the remaining variables).⁴

The dates of parliamentary elections and the types of the government formed are given in Table 2. An overview on the information in this table reveals the following: (1) Three countries, namely Belgium, Italy, Luxembourg and the Netherlands, have proportional type political systems, which have given rise to coalition governments. (2) The remaining countries have a majoritarian system that interchanges two parties in power. (3) In two countries, Ireland and Portugal, the two major parties have been non-socialist (Fianna Fail and Fine Gael-Labor party) and non-conservative (Socialist and Social Democratic), respectively. (4) In France, the control of the presidency and the government has not always been in the hands of the same party (cohabitation). (5) In three countries, notably Greece, Portugal and Spain, the parliamentary system was suspended for a number of years (Greece, 1967-74) or was revived in the mid-seventies (Portugal, 1975; Spain, 1977). Finally, Germany was reunified in 1989.

On the basis of the outcomes of the national elections (Table 2), we constructed the pre- and post election year dummy variables reported in Tables A-2 and A-3 in the Appendix. In doing so we divided particular calendar years according to the proportion of total months in a

⁴ Variables TYP and TYC include taxes levied on income of individuals and profits (gross income minus allowable tax relieves) on corporations, taxes levied on capital gains and gains from gambling. Variable TP covers recurrent and non-recurrent taxes on the use, ownership or transfer of property. TGS stands for all taxes, other than import and export duties, levied on the production, leasing, transfer, delivery or sales of a wide range of goods and/or the rendering of a wide range of services, irrespective of whether they are domestically produced or imported and irrespective of the stage of production or distribution at which they are levied, i.e. value-added taxes, sales taxes and multi-stage cumulative taxes. TSS includes excise taxes, taxes on profits generated and transferred from fiscal monopolies, customs and import duties as well as taxes on exports, foreign exchange transactions, investment goods and betting stakes and special taxes on services, which do not form part of a general tax. TOS is a residual tax item on receipts from goods and services. Finally, $TD = TYP + TYC + TP$ and $TI = TGS + TSS + TOS$. All variables in levels are expressed at national currencies.

year that each party spent in power. The calculations were based on the definition of the election year as the 12- month period ending at the end of the month of the election. Thus, d_{ec} and d_{es} are the election-year dummies associated with the incumbent government – conservative (liberal) and socialist, respectively – administering the election; d_{nc} and d_{ns} are the respective post-election year dummies. These political dummy variables were used in regression equations designed to test for partisan cycles in the EU countries (sub-section 4.2). For the respective regressions intended to test for electoral cycles, we collapsed the above pre-election year dummies d_{ec} and d_{es} , and the post-election year ones, i.e. d_{nc} and d_{ns} , into two dummy variables, notably d_e and d_n , respectively (sub-section 4.1).⁵ Finally, an additional dummy, d_D , for Greece, Portugal and Spain was employed. This variable accounted for the time intervals these three countries were governed by dictatorial governments, and takes a unit value for the periods these countries were under dictatorial rule and zero otherwise.⁶

⁵ For the construction of the dummy variables see also Alogoskoufis et.al. (1992).

⁶ Variable d_D assumes the value one from 1967 (April) to 1974 (July) in the case of Greece, and for the years before 1975 (April) and 1977 (July) for Portugal and Spain, respectively.

Table 2. Dates of Parliamentary Elections in EU Countries

Year	BEL	DEN	FRA	GER	GRE	IRE	ITA	NET	POR	SPA	UK
1964		9:SOC	CON	CON	2:SOC			COL	D	D	10:LAB
1965	5:COL			9:COL		4:FF			D	D	
1966		11:CON							D	D	4:LAB
1967			3:CON		4:D			2:COL	D	D	
1968	3:COL	1:CON	6:CON		D		5:COL		D	D	
1969				9:SOC	D	6:FF			D	D	
1970					D				D	D	6:CON
1971	11:COL	9:MINS			D			4:COL	D	D	
1972				11:SOC	D		5:COL	11:COL	D	D	
1973		12:MINS	3:CON		D	2:FGL			D	D	
1974	3:COL				11:CON				D	D	2:10:LAB
1975		1:SOC							4:SOC	D	
1976				10:SOC			6:COL		4:SOC	D	
1977	4:COL	2:SOC			10:CON	6:FF		5:COL		6:CON	
1978	12:COL		3:CON								
1979		10:SOC					6:COL		12:SPD	3:CON	5:CON
1980			6:SOC	10:SOC					10:SPD		
1981	11:COL	12:SOC			6:SOC	6:FGL		5:COL			
1982						2:11:FF		9:COL		10:SOC	
1983				3:CON			6:COL		4:SOC		6:CON
1984		1:CON									
1985	10:COL				6:SOC				10:SPD		
1986			3:CON					5:COL		6:SOC	
1987	12:COL	9:CON		1:CON		3:FF	6:COL		7:SPD		6:CON
1988		5:CON	3:SOC								
1989					6:COL	6:FF		9:COL		10:SOC	
1990		12:CON		12:CON	4:CON						
1991	11:COL								10:SPD		
1992						11:FF	4:COL				4:CON
1993			3:CON		10:SOC					6:MINS	
1994		9:SOC		10:CON			3:COL	5:COL			
1995	5:COL								10:SOC		
1996					9:SOC		4:COL			3:CON	
1997			6:SOC			6:FF					5:LAB

Sources: Years 1964-1990, Andrikopoulos and Prodromidis (1996). Years 1991-1997, *Chronicle of Parliamentary Elections*, Publications of the Inter-Parliamentary Union, Geneva, Switzerland, annual issues.

Notes: a. Numbers in cells, preceding types of government, indicate months of election. D = dictatorship era.
b. Abbreviations of types of government:
1. COL = coalition, 2. CON = conservative, 3. LAB = labor, 4. FF = Fianna Fail coalition,
5. FGL = Fine Gael + labor coalition, 6. SPD = social democratic (right), 7. MINS = minority-socialist, 8. SOC = socialist.
c. In Ireland (1982), the UK (1974) and Greece (1989) two elections took place, in which FF and FGL, respectively, in Ireland; New Democracy (conservatives) in Greece; and LAB in the UK won the elections.

4. Empirical results

The empirical analysis is aimed at the detection of electoral and/or partisan cycle regularities. The respective results are discussed in sub-sections 4.1 and 4.2. The effects of the Treaty of Maastricht on these cycles are given in sub-section 4.3.

4.1. Electoral cycle regularities

In order to detect the impact of pre-electoral policies on the formation of cycles of tax instruments and target variables in the individual member countries of the EU, regardless of the ideology of the government in power, we estimate the following version of the regression model (2):

$$devz_{it} = \alpha_i devz_{i,t-1} + \sum_{p=1}^q \beta_p d_{ipt} + \gamma d_{Mt} + \delta d_M^* + \zeta d_D + \varepsilon_{it} \quad (3)$$

where $devz_{it}$ is the cycle component of the time series of the tax and target variables examined. The explanatory variables examined in the country regressions are: (a) the lagged dependent variable; (b) political dummy variables, idiosyncratic to the country under consideration; (c) a dummy variable d_{Mt} taking a zero value before 1992 (Treaty of Maastricht) and a unit value otherwise, and an interaction dummy d_M^* , i.e., the product of d_{Mt} and the political dummy d_{et} (see below). For the case of Germany, variable d_M is redefined to account for the reunification of the country in December 1989. In this case it assumes the values zero and one before 1990 and afterwards, respectively. The country political dummies d_{ipt} are defined as d_{et} and d_{nt} ; they represent the pre-election 12-month period and the post election years, but the last one, of the incumbent government, respectively. Variables $devz_{i,t-1}$, d_{Mt} , d_M^* , and d_D were used for controlling for the influence of all factors other than the political factors in the $devz_{it}$ equation. In the estimation of equation (3), we choose $ARMA(p, q)$ specifications as the “best” procedure for reducing short-run noise in all cases in which OLS estimates were not satisfactory.⁷

⁷ In fact, the various versions of equation (3) were estimated with OLS. To all estimated regressions that performed well in terms of the autocorrelation, heteroscedasticity and CUSUM (cumulative sum of squares) tests, we applied the Newey-West procedure. In all remaining cases we experimented with the ARMA approach. This approach involves an iterative three-stage procedure of identification, estimation and diagnostic checking. Model identification tools such as SACF (sample autocorrelation function), SPCF (sample partial autocorrelation function) were used for identifying adequate models. For model selection we used Schwartz’s SBC as the model selection criterion. The optimal order of the model is chosen by the value of m , which is a function of p and q , so that $SBC(m)$ is minimum.

For simplicity, after controlling for the other factors potentially influencing the electoral cycles of the tax- and the target variables mentioned above, the discussion is mainly restricted to the statistically significant estimates of the pre- and post-election year political dummies, as well as the effects of the Treaty of Maastricht on the cycles in question. In that respect, we present only the direction (signs: plus or minus) of the statistically significant coefficients at the 5% probability level of the political dummies in Tables 3-5.

4.1.1. Direct taxes and their components

The regression results for the electoral cycle regularities in total direct taxes and their major components are reported in Table 3 (columns 1-4). On an overall basis, these results suggest that the great majority of the governments in power in the EU countries have not significantly propagated political business cycles. The estimates indicate that the insignificant coefficients of the political regressors d_e and d_n have counted for approximately 85% of all estimated coefficients of these regressors. This fact alone suggests the robustness of our findings. These findings are in agreement with the tax policies pursued by the EU nations in the 1980s and the early 1990s for the purpose of reducing their large deficits, which were accumulated in the 1970s by means of stabilization policies.⁸ In the remaining cases, where the political regressors have significantly affected the cycles of the tax variables, the results were mixed. From among these, it is of interest to note that governments in Spain reduced the cycle of the corporate income tax in pre-election periods but increased it afterwards. On the other hand, governments in Denmark and Germany increased the cycles of property taxes, and personal income taxes, respectively, before elections and reduced them in post-election periods.

⁸ See, for instance, Saunders and Klau (1985), Graham and Seldom (1990) and Aldcroft (2001).

TABLE 3: Testing for Electoral Cycles via Regression (3)

Countries, Dummies	Tax Variables								Target Variables				
	TD (1)	TYP (2)	TYC (3)	TP (4)	TI (5)	TGS (6)	TSS (7)	TOS (8)	GDP (9)	YD (10)	C (11)	u (12)	π (13)
BEL: d_e
d_n
DEN: d_e	+
d_n	-
FRA: d_e	-	...	-	-	...	-
d_n	+	...	+	+
GER: d_e	+
d_n
GRE: d_e	...	+	-
d_n	+
IRE: d_e	+	+	+	...	+	+	+
d_n	...	-	-	-
ITA: d_e	-	-	-	-
d_n	+	+	+
NET: d_e	-
d_n
POR: d_e	-	-	-	-	-
d_n	-	-	...	-	+	+	...	+
SPA: d_e	...	-	+	-
d_n	...	+	+
U.K: d_e	-	+	-
d_n	+

Note: The definitions of the tax-and target variables appearing in the various cells are given in Section 3. The statistically significant coefficients, at the 5% level, are reported by their plus or minus signs. The three dots, ..., signify statistically insignificant coefficients.

4.1.2. Indirect taxes and their components

The statistically significant estimates of the political regressors in Table 4 (columns 5-8) represent only the 24% of all relevant estimated coefficients. From these, only the results pertaining to the cycles of total indirect taxes in Greece, taxes on general goods and

services in France and Italy, taxes on specific goods and services in Spain and taxes on other goods and services in France and Portugal are consistent with the electoral cycle hypothesis.

4.1.3.Target variables

Finally, the statistically significant coefficients associated with the cycles of the target variables (Table 3, columns 9-13) do not exceed 15% of all related estimates. These latter estimates suggest that incumbent governments have managed to decrease in pre-election periods the cycles of real GDP in France and Italy, real disposable income in Italy, real private consumption expenditure in Portugal and the rate of inflation in the UK, but increased them in post election periods. In Ireland, government actions led to increases of the cycle of the rate of inflation before elections and decreases after elections.

In relation to the above results, earlier studies employing different country samples and time periods have detected evidence for electoral cycles in tax instruments. In particular, Tufte (1978), using the 1961-72 US data, found that tax increases were *most probable* in post- than pre-election years (our emphasis). Poterba (1994), using US data at the state level for the 1988-92 period, confirmed the hypothesis that tax increases are significantly smaller prior to gubernatorial elections than afterwards. Pack (1987, 1988) provides evidence for politically motivated business cycles on the revenue- but not on the expenditure side of the budget in the US for the 1957-81 time span. By using panel data from a sample of twenty OECD countries for the 1960-87 period, Alesina and Roubini (1993) provide evidence of electoral-type cycles on monetary and fiscal (taxes, government spending) variables. Yoo (1998) finds a political tax cycle in Japan during the 1953-92 period. Schuknecht (2000), using a sample of twenty-four developing countries for the 1973-92 period, finds that incumbent governments tend to increase public investment rather than lowering taxes prior to elections.

4.2. Partisan cycle regularities

To detect whether conservative (liberal) or socialist administrations have exerted political influence on the cycles of the tax and target variables, we estimated an alternative version of the regression model (3).⁹ In that version we reinterpreted the political dummies d_{ipt} to account for the potential impact on the economy of each of the two parties, when in power, before and after the elections. The construction of the political dummy variables at issue is discussed in Section 3. As in the preceding section, we present only the direction (signs: plus or minus) of the statistically significant coefficients of the political dummies in Table 4.¹⁰

The regression results for partisan-cycle regularities in tax instruments and target variables are reported in Table 4. The results are similar to those discussed for the electoral cycle regularities. This implies that the great majority of the EU governments, conservative or socialist, did not significantly affect the cycles of the tax- and target variables involved. In the following subsections we briefly discuss results consistent with partisan cycles.

4.2.1. Direct and indirect taxes and their components

The statistically significant coefficients in the partisan cycle regressions concerning direct taxes and their components indicate that (a) conservatives in Spain decreased the cycle of the corporate income tax before election periods and increased it after elections; and (b) socialists in Germany and Spain reduced the cycle of direct taxes and property taxes, respectively in pre- election periods but reversed their policies after elections. Concerning indirect taxes, conservatives in Portugal (Social Democrats) and Spain reduced the cycles of taxes on specific goods and services in pre-election periods, but reversed their policies afterwards. Similar policies were pursued by socialist administrations in France and Germany in relation to the cycle of taxes on other goods and services. The remaining results do not conform to the requirements of partisan cycles. Hence, no case can be made for partisan cycle regularities in direct and indirect taxes throughout the EU for the period of the sample.

4.2.2 Target variables

The statistically significant estimates for the target variables indicate that both parties (taken separately), when in power, have mainly reduced the partisan cycles of the variables involved (Table 4, columns 9-13). More specifically, in pre-election periods, socialists in

⁹ The three countries with a proportional political system, notably, Belgium, Italy and the Netherlands, are not examined here.

France, Germany and Ireland (Fine-Gael/Labor coalition), and conservatives in Portugal (Social Democrats) and Spain have reduced the cycles of various categories of the target variables cited in Table 4. It is of interest to note here that most conservative governments

TABLE 4: Testing for Partisan Cycles via Regression (3)

Countries, Dummies	Tax Variables								Target Variables				
	TD (1)	TYP (2)	TYC (3)	TP (4)	TI (5)	TGS (6)	TSS (7)	TOS (8)	GDP (9)	YD (10)	C (11)	<i>u</i> (12)	π (13)
DEN: dec	-
des	+
dnc
dns	...	-	-
FRA:dec	+	+	-
des	...	-	-	-	-	-	...	+	-
dnc
dns	+	+
GER:dec	-
des	-	-	...	-	...	-	-
dnc
dns	+	+
GRE:dec	+	...	-	-
des	-	-
dnc	+	+	-	...
dns	-	-
IRE:dec	+	...	-	+	+	+	+	+	...	-
des	...	+	+	+	...	+	...	-	-
dnc	-
dns	-	-	...	+	+	+
POR:dec	-	...	-	-	...	-
des	+	+	...
dnc	+	+	+	+	-
dns	-	-	...	-	-	...	+	+
SPA:dec	-	...	-	...	-	...	-	-	-	...	+
des	+	-	+
dnc	+	+
dns	+	+	...	+
U.K:dec	+	+
des	-	-
dnc	-
dns	+	+	+	+

Note: The definitions of the tax-and target variables appearing in the various cells are given in Section 3. The statistically significant coefficients, at the 5% level, are reported by their plus or minus signs. The three dots, ... , signify statistically insignificant coefficients.

¹⁰ The detailed estimates of the above cycles of tax- and target variables as functions of the political dummies and other non-political regressors are available upon request.

reduced the cycle of the rate of inflation in pre-election periods. In conclusion, the empirical evidence does not lend support to partisan cycle regularities in the key target variables examined in the EU countries under consideration during the period of the sample¹¹.

4.2.3 Treaty of Maastricht and cycles of instruments and targets

The impact of the Treaty of Maastricht on the cycles of the tax instruments and the target variables examined, as measured by the statistically significant coefficients of the dummy variables d_{Mt} and d_M^* (regression 3) in the eleven EU member countries, is reported in Table 5. The statistically significant estimates correspond to about 15% of all cases considered. This suggests that the impact of the Treaty of Maastricht on the cycles in question in the post 1992 era has been limited. This is justified by the fact that most of the countries involved had already been in a process of tax policy convergence, long before the initiation of the Treaty, with the ultimate objective of forming the EMU in the future.¹²

TABLE 5: Impact of Treaty of Maastricht on Cycles of Tax- and Target Variables

Dummies in regressions of:

Countries	Tax Variables				Target Variables			
	$d_{Mt} > 0$	$d_{Mt} < 0$	$d_M^* > 0$	$d_M^* < 0$	$d_{Mt} > 0$	$d_{Mt} < 0$	$d_M^* > 0$	$d_M^* < 0$
BEL	...	...	TD,TYP,TYC	...	...	...	YD	...
DEN	...	TD	...	...	...	...	C	...
FRA	...	TGS	TI, TGS	...	...	GDP,C	GDP,YD, C	...
GER	...	...	...	...	...	...	...	...
GRE	...	...	TI	TYP	...	...	...	...
IRE	TSS	...	...	...	π	...	...	...
ITA	TYP	...	TP	...	...	YD	YD, π	...
NET	...	TYP	TYP	...	...	...	...	...
POR	TD,TYP	...	TGS,TOS	TD,TYP	...	π	...	...
SPA	...	TYP	TYP,TYC	TGS	...	...	...	u
UK	TP	...	TGS	...	...	...	π	...

Note: The definitions of the tax-and target variables appearing in the various cells are given in Section 3. The statistically significant coefficients (5% level) of the Maastricht related dummies in the EU country regressions of the cycles of the variables at issue are reported by their plus or minus signs. The three dots, ..., signify statistically insignificant coefficients.

¹¹ Following different methodologies, Heckelman (2001) and Bratsiotis (2000) cannot find conclusive evidence in support of the rational partisan model in the cases of the UK (for GDP growth and unemployment) and Greece (for inflation), respectively.

¹² The source of the information in this table is estimates of regression (3) in association with the search of electoral cycles. Degrees of freedom problems prevented comparable estimates for the case of partisan cycles.

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5. Summary and conclusion

In this paper we have searched for electoral and partisan cycle regularities in tax instruments and target variables in eleven EU member countries for the 1965-1997 period. The conclusion emerging from the empirical analysis does not lend support to the presence of electoral- or partisan cycle type hypotheses in the EU. Indications of political business cycles in the tax instruments and the target variables used are scanty. The great majority of the results suggest that the national governments of the EU countries did not take policy actions leading to the creation of electoral or partisan cycles in tax instruments and target variables. Our findings rather suggest that the EU governments have been primarily concerned with the pursuit of stabilization policies rather than with policies giving rise to political cycles, with the intent of curing the inflation and unemployment problems of the 1970s and 1980s. This result is encouraging, in the sense that it underlies a convergence of the tax policies pursued by the majority of the individual member countries of the Union in the pre-1997 period. It therefore facilitates the task of the European Commission in leading toward a federal type tax policy in the EMU in the future.

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APPENDIX

Table A- 1. Election and Post Election Year Dummy Variables Used in the Estimation of Partisan Cycles-Type Regressions, EU 1964-1997

Year	Denmark				France				Germany				Greece			
	d _{ec}	d _{es}	d _{nc}	d _{ns}	d _{ec}	d _{es}	d _{nc}	d _{ns}	d _{ec}	d _{es}	d _{nc}	d _{ns}	d _{ec}	d _{es}	d _{nc}	d _{ns}
1964	0.00	0.75	0.00	0.25	0.00	0.00	1.00	0.00	0.25	0.00	0.75	0.00	0.00	0.00	0.00	1.00
1965	0.08	0.00	0.00	0.92	0.00	0.00	1.00	0.00	0.75	0.00	0.25	0.00	0.00	0.00	0.00	1.00
1966	0.92	0.00	0.08	0.00	0.75	0.00	0.25	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
1967	0.92	0.00	0.08	0.00	0.25	0.00	0.75	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
1968	0.08	0.00	0.92	0.00	0.50	0.00	0.50	0.00	0.00	0.25	0.75	0.00	0.00	0.00	0.00	0.00
1969	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.75	0.00	0.25	0.00	0.00	0.00	0.00
1970	0.00	0.25	0.00	0.75	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
1971	0.00	0.75	0.00	0.25	0.00	0.00	1.00	0.00	0.00	0.08	0.00	0.92	0.00	0.00	0.00	0.00
1972	0.00	0.00	0.00	1.00	0.75	0.00	0.25	0.00	0.00	0.92	0.00	0.08	0.00	0.00	0.00	0.00
1973	0.00	1.00	0.00	0.00	0.25	0.00	0.75	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
1974	0.00	0.92	0.00	0.08	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.17	0.00	0.08	0.00
1975	0.00	0.08	0.00	0.92	0.00	0.00	1.00	0.00	0.00	0.17	0.00	0.83	0.00	0.00	1.00	0.00
1976	0.00	0.83	0.00	0.17	0.00	0.00	1.00	0.00	0.00	0.83	0.00	0.17	0.08	0.00	0.92	0.00
1977	0.00	0.17	0.00	0.83	0.75	0.00	0.25	0.00	0.00	0.00	0.00	1.00	0.92	0.00	0.08	0.00
1978	0.00	0.17	0.00	0.83	0.25	0.00	0.75	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
1979	0.00	0.83	0.00	0.17	0.00	0.00	1.00	0.00	0.00	0.17	0.00	0.83	0.00	0.00	1.00	0.00
1980	0.00	0.00	0.00	1.00	0.00	0.50	0.50	0.00	0.00	0.83	0.00	0.17	0.17	0.00	0.83	0.00
1981	0.00	1.00	0.00	0.00	0.00	0.50	0.00	0.50	0.00	0.00	0.00	1.00	0.83	0.00	0.00	0.17
1982	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.75	0.00	0.00	0.25	0.00	0.00	0.00	1.00
1983	0.92	0.00	0.00	0.08	0.00	0.00	0.00	1.00	0.25	0.00	0.75	0.00	0.00	0.00	0.00	1.00
1984	0.08	0.00	0.92	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.50	0.00	0.50
1985	0.00	0.00	1.00	0.00	0.75	0.00	0.00	0.25	0.00	0.00	1.00	0.00	0.00	0.50	0.00	0.50
1986	0.25	0.00	0.75	0.00	0.25	0.00	0.75	0.00	0.92	0.00	0.08	0.00	0.00	0.00	0.00	1.00
1987	0.75	0.00	0.25	0.00	0.00	0.75	0.25	0.00	0.08	0.00	0.92	0.00	0.00	0.00	0.00	1.00
1988	0.42	0.00	0.58	0.00	0.00	0.00	0.00	0.75	0.00	0.00	1.00	0.00	0.00	0.50	0.00	0.50
1989	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.50	0.00	0.50
1990	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.33	0.00	0.67	0.00
1991	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00
1992	0.00	0.00	1.00	0.00	0.75	0.00	0.00	0.25	0.00	0.00	1.00	0.00	0.17	0.00	0.83	0.00
1993	0.00	0.25	0.75	0.00	0.25	0.00	0.75	0.00	0.17	0.00	0.83	0.00	0.83	0.00	0.00	0.17
1994	0.00	0.75	0.00	0.25	0.00	0.00	1.00	0.00	0.83	0.00	0.17	0.00	0.00	0.00	0.00	1.00
1995	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.25	0.00	0.75
1996	0.00	0.00	0.00	1.00	0.00	0.50	0.50	0.00	0.00	0.00	1.00	0.00	0.00	0.75	0.00	0.25
1997	0.00	0.00	0.00	1.00	0.00	0.50	0.00	0.50	0.00	0.25	0.75	0.00	0.00	0.00	0.00	1.00

Table A- 1 (continued) Election and Post Election Year Dummy Variables Used in the Estimation of Partisan Cycles-Type Regressions, EU 1964-97

Year	Ireland				Portugal				Spain				United Kingdom			
	d _{ec}	d _{es}	d _{nc}	d _{ns}	d _{ec}	d _{es}	d _{nc}	d _{ns}	d _{ec}	d _{es}	d _{nc}	d _{ns}	d _{ec}	d _{es}	d _{nc}	d _{ns}
1964	0.67	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.67
1965	0.33	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.00	0.33
1966	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.67
1967	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
1968	0.50	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
1969	0.50	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.50
1970	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.50	0.00
1971	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
1972	0.00	0.83	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
1973	0.00	0.17	0.00	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.83	0.17	0.00
1974	0.00	0.00	0.00	1.00	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.83
1975	0.00	0.00	0.00	1.00	0.00	0.33	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
1976	0.50	0.00	0.00	0.50	0.00	0.33	0.00	0.67	0.50	0.00	0.00	0.00	0.00	0.00	0.00	1.00
1977	0.50	0.00	0.50	0.00	0.00	0.00	0.00	1.00	0.50	0.00	0.50	0.00	0.00	0.00	0.00	1.00
1978	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.75	0.00	0.25	0.00	0.58	0.00	0.00	0.42
1979	0.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.25	0.00	0.75	0.00	0.42	0.00	0.58	0.00
1980	0.00	0.50	0.50	0.00	0.17	0.00	0.83	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00
1981	0.00	0.50	0.00	0.50	0.00	0.00	1.00	0.00	0.00	0.17	0.83	0.00	0.00	0.00	1.00	0.00
1982	0.00	0.92	0.00	0.08	0.00	0.67	0.33	0.00	0.00	0.83	0.00	0.17	0.50	0.00	0.50	0.00
1983	0.00	0.00	0.00	1.00	0.00	0.33	0.00	0.67	0.00	0.00	0.00	1.00	0.50	0.00	0.50	0.00
1984	0.08	0.00	0.00	1.00	0.17	0.00	0.00	0.83	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
1985	0.00	0.00	0.00	1.00	0.83	0.00	0.17	0.00	0.00	0.50	0.00	0.50	0.00	0.00	1.00	0.00
1986	0.75	0.00	0.00	0.25	0.00	0.42	0.58	0.00	0.00	0.50	0.00	0.50	0.50	0.00	0.50	0.00
1987	0.25	0.00	0.75	0.00	0.00	0.58	0.00	0.42	0.00	0.00	0.00	1.00	0.50	0.00	0.50	0.00
1988	0.00	0.50	0.50	0.00	0.00	0.00	1.00	0.00	0.00	0.17	0.00	0.83	0.00	0.00	1.00	0.00
1989	0.00	0.50	0.00	0.50	0.00	0.00	1.00	0.00	0.00	0.83	0.00	0.17	0.00	0.00	1.00	0.00
1990	0.00	0.00	0.00	1.00	0.17	0.00	0.83	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
1991	0.17	0.00	0.00	0.83	0.83	0.00	0.17	0.00	0.00	0.00	0.00	1.00	0.67	0.00	0.33	0.00
1992	0.83	0.00	0.17	0.00	0.00	0.00	1.00	0.00	0.00	0.50	0.00	0.50	0.33	0.00	0.67	0.00
1993	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.50	0.00	0.50	0.00	0.00	1.00	0.00
1994	0.00	0.00	1.00	0.00	0.00	0.17	0.83	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
1995	0.00	0.00	1.00	0.00	0.00	0.83	0.00	0.17	0.75	0.00	0.00	0.25	0.00	0.00	1.00	0.00
1996	0.50	0.00	0.50	0.00	0.00	0.00	0.00	1.00	0.25	0.00	0.75	0.00	0.00	0.58	0.42	0.00
1997	0.50	0.00	0.50	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.42	0.00	0.58

Source: Own calculations based on Andrikopoulos and Prodromidis (1996) and *Chronicle of Parliamentary Elections*, Publications of the Inter-Parliamentary Union, Geneva, Switzerland (annual issues) for the years 1964-1990 and 1991-97, respectively.

Note: All countries with proportional political systems are not included in this analysis. Sweden is also not included due to her late accession to the EU. See text.

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Table A-2. Election and Post Election Year Dummy Variables Used in the Estimation of Electoral Cycles-Type Regressions, EU 1964-97

Year	Belgium		Italy		Netherlands	
	d _e	d _n	d _e	d _n	d _e	d _n
1965	0.42	0.58	0.00	1.00	0.00	1.00
1966	0.00	1.00	0.00	1.00	0.83	0.17
1967	0.75	0.25	0.58	0.42	0.17	0.83
1968	0.25	0.75	0.42	0.58	0.00	1.00
1969	0.00	1.00	0.00	1.00	0.00	1.00
1970	0.08	0.92	0.00	1.00	0.67	0.33
1971	0.92	0.08	0.58	0.42	0.33	0.67
1972	0.00	1.00	0.42	0.58	0.92	0.08
1973	0.75	0.25	0.00	1.00	0.00	1.00
1974	0.25	0.75	0.00	1.00	0.00	1.00
1975	0.00	1.00	0.50	0.50	0.00	1.00
1976	0.67	0.33	0.50	0.50	0.58	0.42
1977	0.33	0.67	0.00	1.00	0.42	0.58
1978	1.00	0.00	0.50	0.50	0.00	1.00
1979	0.00	1.00	0.50	0.50	0.00	1.00
1980	0.08	0.92	0.00	1.00	0.58	0.42
1981	0.92	0.08	0.00	1.00	0.42	0.58
1982	0.00	1.00	0.50	0.50	0.75	0.25
1983	0.00	1.00	0.50	0.50	0.00	1.00
1984	0.17	0.83	0.00	1.00	0.00	1.00
1985	0.83	0.17	0.00	1.00	0.58	0.42
1986	0.00	1.00	0.50	0.50	0.42	0.58
1987	1.00	0.00	0.50	0.50	0.00	1.00
1988	0.00	1.00	0.00	1.00	0.25	0.75
1989	0.00	1.00	0.00	1.00	0.75	0.25
1990	0.08	0.92	0.00	1.00	0.00	1.00
1991	0.92	0.08	0.67	0.33	0.00	1.00
1992	0.00	1.00	0.33	0.67	0.00	1.00
1993	0.00	1.00	0.75	0.25	0.58	0.42
1994	0.58	0.42	0.25	0.75	0.42	0.58
1995	0.42	0.58	0.67	0.33	0.00	1.00
1996	0.00	1.00	0.33	0.67	0.00	1.00
1997	0.00	1.00	0.00	1.00	0.58	0.42

Source: Own calculations based on Table 2.

Note: See Table A-1.

Submitted Manuscript. Page 16 of original manuscript:

- (1) At the end of the third line from above, the following footnote (number 11) should be added:

Following different methodologies, Heckelman (2001) and Bratsiotis (2000) cannot find conclusive evidence in support of the rational partisan model in the cases of the UK (for GDP growth and unemployment) and Greece (for inflation), respectively.

- (2) References. **Two additional articles have been added.**

Bratsiotis, G.J., 2000. Political Parties and Inflation in Greece: The Metamorphosis of the Socialist Party on the Way to EMU. *Applied Economics Letters*, 7, 451-454.

Heckelman, J.C., 2001. The Econometrics of Rational Partisan Theory. *Applied Economics*, 33, 417-426.