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Frederico Silva Leal

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Frederico Silva Leal¹

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Abstract

This paper provides evidences of the electoral influence on fiscal policy in the Eurozone countries. Using data from EA19 in 1995-2017 and a time dummy to identify election years, it was applied a Fixed Effects model to assess its impact on fiscal instruments. According to the results, the elections seem to increase both compensations to employees and other current expenditure. In addition, the politically motivated policies seem to differ from low and highly indebted countries. Giving the electoral impact on the compensation to employees, the pro-cyclical tax strategy, and the absence of a Ricardian fiscal regime, its perceived less prudent policies from the most indebted countries. Furthermore, after countries joined the EMU, policy makers began to increase tax burden facing interest rate shocks, since they lose the ability to manipulate monetary policy.

Keywords: Political Budget Cycles, Fiscal policy, Elections, EMU, IV-GMM

JEL Codes: D72; E12; E62; H62

^{*} The usual disclaimer applies, and all remaining errors are the author sole responsibility. The opinions expressed herein are those of the author and not of his employer.

¹ ISEG – Lisbon School of Economics and Management, Universidade de Lisboa; Ministry of Economy and Digital Transition of Portugal. E-mail: goncalo-leal@hotmail.com; f.s.leal@phd.iseg.ulisboa.pt.

1. Introduction

Given the high amounts of public debt accumulated in the majority of the western European countries during the last decades, and its impact on the recent policy making, on the risk premium and on people's welfare, fiscal discipline and the sustainability of public debt became prominent issues nowadays.

Following the creation of the Economic and Monetary Union (EMU), in order to provide fiscal robustness and stability, the Maastricht Treaty was signed, requesting a stringent supranational commitment. Thus, after 1992, there were a gradual loss of fiscal autonomy of the EU member states, due to the budget-to-GDP and deficit-to-GDP criteria of 60% and 3%, that had to be met by the potential member states before their accession to the EMU and be sustained afterwards (Andrikopoulos et al., 2004).

However, despite the constraints imposed by the European Authorities, the expansionist pro-cyclical policies remained sometimes observed (see Figure 1), eroding fiscal buffers.

Among other reasons, the literature argues that this European deficit bias may come from opportunistically motivated electoral purposes, i.e. the existence of political budget cycles. As defined by Vergne (2009), the political budget cycles theory describes how fiscal policy affects the re-election probabilities of incumbent Governments.

In this context, the present article aims to explain the impact of elections on fiscal policy, how it might affect the budget composition, and if it varies according to the debt level and to the EMU membership. Additional analyses were performed to controlling hypothetical endogeneity problems.

The paper is organized as follows. Section 2 is the literature review. Section 3 presents the data analysis and some statistical consideration, and Section 4 describes the methodology and the empirical assessment. Section 5 presents robustness estimations and Section 6 concludes.

2. Literature review

2.1. Fiscal policy biases

Government debt accumulation has increased significantly since the 1970s in the majority of the European countries, resulting from a deficit bias in fiscal policy-making, which created severe consequences to the most indebted economies during the economic crisis.

That indebtedness path and the policy debate regarding its inherent risks created the need of fiscal rules to provide fiscal discipline and to enable the creation of the single currency. (Krogstrup and Wyplosz, 2009).

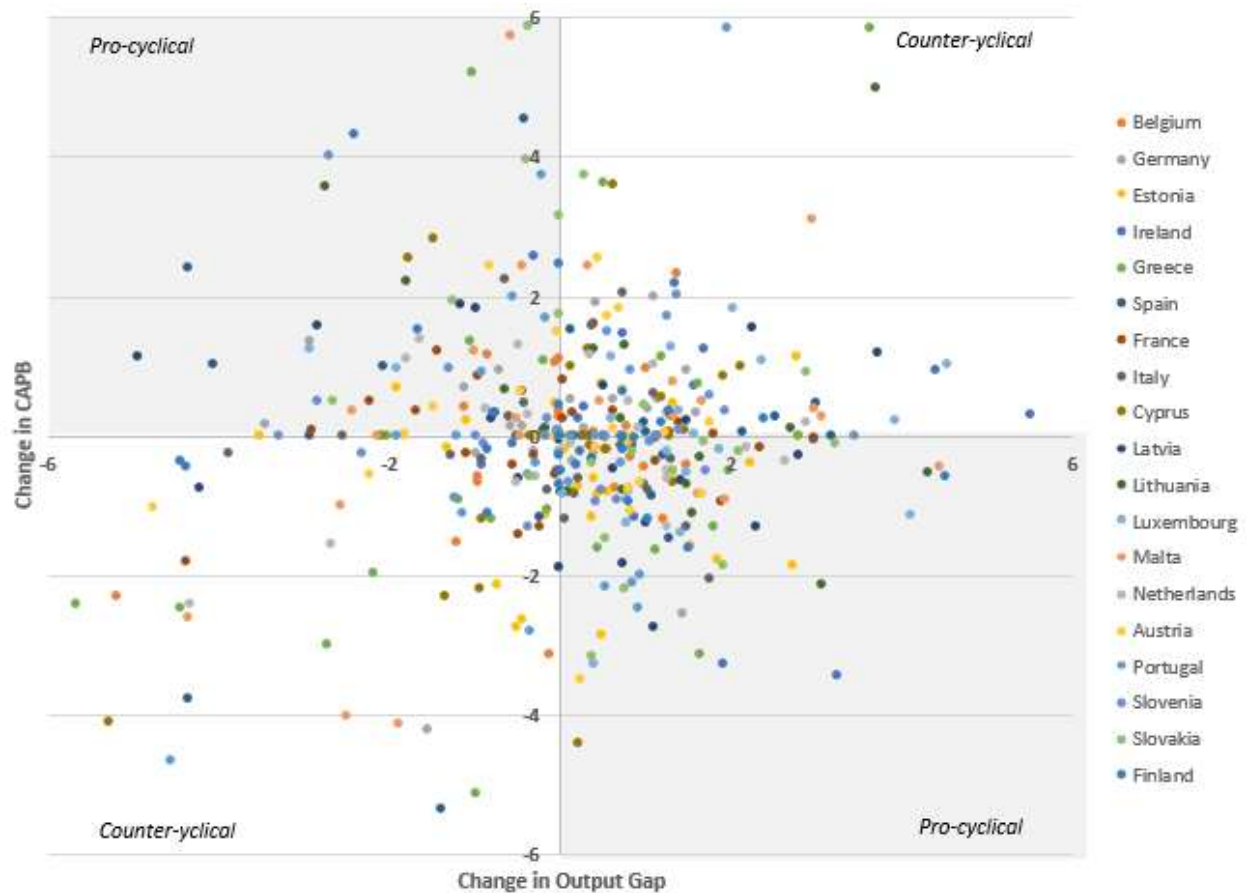
The Stability and Growth Pact and its underlying measures, was designed to constrain fiscal discretion in order to prevent national fiscal policies from having negative spillovers on other countries, to create fiscal buffers to enable the proper functioning of the automatic stabilizers (taxes and transfers) and to apply counter-cyclical policies.

Thus, since 1992, member states have gradually lost some of their fiscal autonomy, due to the debt and deficit criteria that were expected to constraint national policies, regardless of ideological differences (Andrikopoulos et al., 2004). However, those criteria were broadly criticized for its asymmetric nature, restricting downswings but not upswings, and for its weak mechanisms to prevent politically motivated fiscal policies (Buti and Van den Noord, 2003).

Despite the constraints imposed by the European Authorities, the pro-cyclical policies, i.e., fiscal expansions on positive output gaps or contractions on negative output gaps, are often observed. Then, facing recurrent expansionary bias and eroding fiscal buffers, pro-cyclical austerity measures might become unavoidable.

Figure 1 presents the fiscal policy biases in the Eurozone countries. The fiscal expansions or contractions are measured by the change in the cyclically adjusted primary balances (CAPB), and economic upswings and downswings are identified through the output gap.

Figure 1 – Pro-cyclical and counter-cyclical fiscal policies in the EA19 (1995-2017)



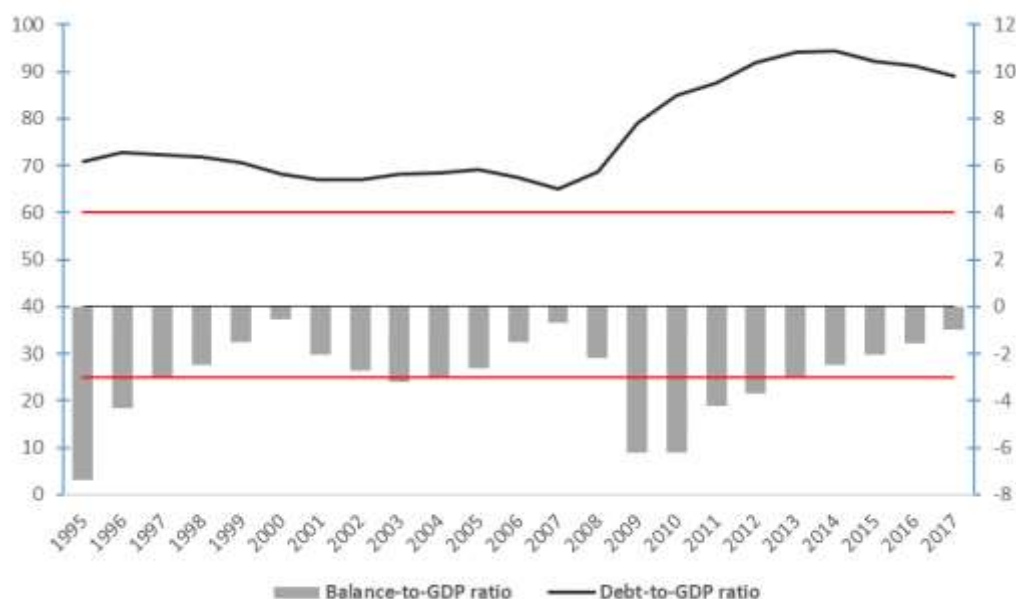
Sources: AMECO; authors' estimates.

Note: The sample includes 19 EA countries over 1995–2017. Outlier observations (above 6 percent and below –6 percent) are excluded to improve the visual representation of the scatterplot.

As a consequence, the Eurozone countries showed high differences comparing to the Maastricht reference values for the stock of public debt and for the budget deficit as a share of GDP (60% and 3%, respectively).

According to Figure 2, one can observe that, on average, the EA19 countries never achieved a debt-to-GDP ratio below the 60% and didn't meet the balance-to-GDP criteria in the years of 1995-1996, 2003, and 2009-2012.

Figure 2 – Comparison against the budget-to-GDP (right axis) and debt-to-GDP criteria (EA19 average: 1995-2017)



Sources: AMECO.

The deficit biases, the debt accumulation and the criteria's non-compliance might result, among other reasons, from political incentives during electoral years.

2.2. The role of political motivations

Democracy is an essential feature to provide political structures and has the power to induce better policies. The existence of free and regular competitive elections, incentives governments to be more efficient, weeding out incompetent politicians. However, despite the scrutiny and commitment given to the population, political parties, intending to renew their legitimacy, may have other goals during electoral periods (Vergne, 2009).

In the past few decades, the economic literature has been studying the politically motivated policies, to better understand how politicians might manipulate their policies to increase the chances of re-election (Vergne, 2009; Buti and Van den Noord, 2003). The contributions pass through studies of electoral budget cycles (Rogoff and Sibert, 1988), the analysis of the influence of political systems on the fiscal execution (Persson and Tabellini, 2002) and the models of opportunistic or partisan behavior (Sapir and Sekkat, 2002).

The political business cycle theory, based on market imperfections and information asymmetries, explains the consequences of elections. As argued in Eyraud et al. (2017), political economy factors create policy distortions that can result in suboptimal fiscal outcomes, namely through pro-cyclical spending increases, using the fiscal space needed to stabilize the business cycles during downturns. Moreover, electoral incentives could lead to the maintenance of unproductive spending and increasing distortionary taxes, jeopardizing the economic growth.

In Andrikopoulos et al. (2004) the political business cycles are split in electoral and partisan purposes. The authors argued that while electoral (opportunistic) cycles are characterized by key target and policy variables to reelect the incumbent government, regardless the ideological orientation, partisan cycles are conditioned by differences upon the ideology of the party in power and its competitors. Moreover, proportional political systems (where parties form coalition governments) are less prone to partisan cycles. Indeed, coalition governments tend to generate moderate policies but also to create larger budget deficits and build up government debt (Alesina et al., 1997).

According to the literature, the politicians' reelection and the partisan's goals create incentives to use pre-election spending, investment promises and excessive revenue forecasts to support the electoral confidence. Due to the people's imperfect understanding of financial issues, not perceiving the government intertemporal budget constraints, they would be excited by an available (disposable) income increase or better public services (Alesina and Perotti, 1995; Debrun et al., 2009).

However, the policy makers often deviate from their targets after elections, harming economic agents, who might have already adjusted their expectations and consumption. The literature also argues that electoral purposes, facing some lobby pressures, might lead to a "common pool" problem, i.e., an excessive spending to a particular group, while the costs would be spread over all the population (Eyraud et al., 2017).

Indeed, some authors concluded that governments that damage the financial position reduce their chances of re-election, arguing that voters tend to be fiscally conservative, punishing rather than rewarding high budget deficits (Drazen and Eslava, 2005).

2.3.Effects on the composition of fiscal policy

According to Buti and Van den Noord (2003) and Milesi-Ferretti et al. (2002), the literature predicts that facing an electoral period, policy makers tend to undertake short-sighted policies and apply tax cuts before elections (supposedly without clear implications for government spending). Thus, discretionary policies are expected expand in pre-election and in election years, and a stronger economic growth is expected, resulting from the optimism on growth prospects. In fact, in non-electoral years, government appears to tight fiscal policy to create safety margins to support fiscal expansions in electoral years. However, the safety margin wasn't enough in the Eurozone countries, leading them to exceed the 3% of GDP budget deficit ceiling.

The political business cycles designed in Rogoff (1990), based on information asymmetries and where the votes depend on the consumption of private and public goods, gives insights on how the current expenditure might be manipulated during electoral periods. According to the model, the incumbent strategy will depend on i) the information asymmetry about its own competence, considering that citizens are uninformed about the development of incumbent's skills and its advisors; and ii) the public investment level, since it will only be visible in the following years.

However, the voters only observe current expenditure and taxes contemporaneously. In Vergne (2009) it's argued that electoral factors have significant impacts on the allocation of public expenditure, shifting towards more visible current expenditure, such as wages and subsidies, instead of capital expenditures. Furthermore, in developing countries, whilst tax cuts have no significant impact on the voter's opinion (since the tax base is small in those countries), the expenditure measures have a special role, having a very direct and immediate impact on people's welfare.

The organized interest groups also play a role on the political business cycles, namely, to finance the electoral campaigns and to mobilize the citizens (Grossman and Helpman, 1996). According to the public expenditure targeting models, in order to conquer the lobbies' support, the incumbent government has the incentive to target investment expenditure to specific groups (instead of focus on proving its competence) (Drazen and Eslava, 2005). According to Vergne (2009), the distribution of preferences might exacerbate the political business cycle, since the larger fraction of swing voters (voters that may vote in two or more parties), the larger incentive to increase the targeted

spending before the election, namely, to favor groups with greater electoral relevance. Moreover, it is typically observed the increase in expenses in infrastructure projects (opportunistic targeted), since these are easier to target due to its geographical and sectorial specificity.

2.4. Empirical results

In Vergne (2009), both the predictions of the Rogoff's "visibility expenditure" model and the public expenditure targeting model were tested, i.e., if the hypothetical expenditure increase will be associated with current, rather than capital expenditure, or if capital expenditure will be used as a target to specific groups and locations. The results showed that policy makers will prefer to use broad-based spending rather than targeted capital spending in electoral years. Moreover, politicians prefer to change the expenditure allocation instead of increasing the budget deficit, since voters seem to punish instead of reward high deficits.

Observing 85 different economies between 1975 and 1999, Shi and Svensson (2006) concluded that the electoral impact on Government balance is larger in developing countries and small or non-existing in industrial countries, and the institutional indicators can explain large part of these differences.

Drazen and Eslava (2008) analyzing 74 countries in the period 1960-2003, tested if voters are fiscally conservative or if they punish deficit bias. Indeed, they did not find evidence of electoral benefits from fiscal expansions, both in developed and developing countries, and in different electoral systems.

For European countries, as argued by Efthyvoulou (2012), the EMU Member States appear to have a statistically more robust political budget cycle than the remaining countries. Moreover, the degree of fiscal manipulation is negatively correlated with non-economic motivated voting and positively correlated with the electoral competitiveness.

Andrikopoulos et al. (2004) tried to understand if EU countries have used fiscal policy instruments to stabilize the business cycle or if policymakers have created political business cycles focus in electoral or partisan purposes. The results show that governments were focused in pursuit of stabilization policies, to avoid inflation and unemployment increases in the 70's and 80's.

Furthermore, studying the Greek economy in the period 1974-2011, Chortareas et al. (2018) realized that despite political budget cycles have subdued after the Maastricht treaty, public finances were manipulated in electoral years, with increases in the compensation to employees. In addition, the authors concluded that snap elections affect expenses, and prolonged incumbencies have a negative influence on both primary balance and revenue, regardless the partisan's orientation/ideology.

Table 3 provides a brief summary of empirical contributions regarding political budget cycles. Accordingly, when compared to previous studies, this paper provides an updated and more detailed analysis of the impact on each fiscal instrument and provides insights into how the results may change according to the indebtedness level and to the EMU membership.

[Table 1]

3. Political budget cycles in the Eurozone countries

The first step of this research is to analyze the average fiscal statistics on the EA19, splitting the sample in electoral and non-electoral years. The assessed variables are the General Government balance, the CAPB (cyclically adjusted primary balance), debt-to-GDP ratio, real GDP growth, direct and indirect tax burden, compensation of employees, GFKF (gross fixed capital formation) and other current expenditure, which includes all the current expenditure excluding the compensation to employees. Data came from the AMECO database based on ESA 2010 to provide a more reliable and comparable information across countries and time. Table 2 presents the statistical summary.

[Table 2]

According to Table 2, Eurozone countries have, on average, worst budget balances in electoral years, with 0.32 p.p. higher deficits than in the remaining years.

Excluding the cyclical effect and the interest expenses, the European countries revealed more expansionist policies during electoral periods, presenting a CAPB of -0.13% of potential GDP.

As expected, giving the existing literature, the non-electoral years are used to recover savings (average CAPB of 0.30%). However, some doubts arise from the quality of those policies, since the average real GDP growth slows down in those years (-0.04 p.p.). Consequently, the debt-to-GDP ratio presented an increasing path in both electoral and non-electoral years, but with a higher variation in the first case (0.31 p.p.).

Regarding the other budgetary variables, the direct tax burden appears to have increased in the EA19 since 1995, with interruptions facing elections. In the remaining years, direct taxes increased, on average, 0.04 p.p. of GDP. The share of indirect taxes on GDP decreased about 0.05 p.p. in electoral years (increases at the same rate in the remaining years).

On the expenditure side, compensation to employees tends to increase 0.02 p.p. facing elections and to decrease 0.06 otherwise. This path reveals the opposite trends of taxes and the civil servants' wages, that might have led to a wealth deterioration during the last decades. The budget manipulation is even higher on the other current expenditure, with an average increase of 0.08 p.p. (-0.05 p.p. in the remaining years).

However, the investment level (gross fixed capital formations) seems to contradict the "Public expenditure targeting model", since it decreases 0.05 p.p. facing elections (increases 0.01 p.p. in non-electoral years). A possible reason for this issue is an investment delay. In order to target some groups, policy makers might present promises of investment in their electoral programs to encourage voters to keep the incumbent party in the Government. The Rogoff's "visibility expenditure" theory appears to be capable to explain the budget manipulation in Eurozone countries, evident on the compensation to employees and other current expenditure.

The Table 3 splits the fiscal variables in the year before elections from the remaining ones, to assess if the fiscal policy has a different pattern in the eve of elections, namely through expectations, income or sustainability perceptions.

[Table 3]

The results are illustrative of the influence that the electoral cycle might have on the fiscal policy strategy. When compared to the remaining years, not only the electoral year but also the year before elections appears to have some differences in both balance and budget composition.

Firstly, the statistics show that the year before elections use to be the most expansionist one. In addition, those are the years where there is a deterioration on the General Government Balances (0.1 p.p., on average) and the CAPB decreases 0.16 p.p. However, the expansionist policies weren't applied through a tax decrease or wages increases, but by an 8% increase on investment and 7% on other current expenditures.

On the other hand, in the remaining years, the incumbent uses to create a fiscal buffer, with consolidation policies (annual increases of 0.2 p.p. in the CAPB), based on tax revenue increases and cuts on public expenditure.

To understand the role of the indebtedness level in the budget manipulation, Table 4 presents fiscal statistics separated by thresholds of the debt-to-GDP ratio. The debt levels were organized as follows: lower indebted countries have debt ratios lower than 60% (complying the Maastricht treaty limits); the highly indebted countries are those that do not-comply with the treaty limit but do not have an excessive situation; the excessively indebted countries are those whose debt ratio exceeds 100% of GDP.

[Table 4]

According to Table 4, less indebted countries tend to reduce the tax burden. As expected, the election years are characterized by faster reductions, especially of indirect taxes. On the opposite direction, highly indebted countries use to increase the tax burden, but with a lower rhythm in elections. Once again, the indirect taxes are more volatile than the direct ones, changing on average 0.13 p.p. GDP in non-electoral years (remain unchanged during electoral periods). The excessively indebted countries also have an increasing tax burden path, with the exception of the direct taxes in electoral years (average change of - 0.02 p.p.).

On the expenditure side, lower indebted countries reveal an expenditure reduction path. The exception occurs in electoral years, where the compensation to employees' level remains unchanged, the current expenditures tend to decrease as a percentage of GDP, with a higher degree on non-electoral periods. The investment level has a different behavior, increasing about 0.05 p.p. year-on-year, but falling 0.11 p.p. in elections.

The highly indebted countries, despite the expenditure decrease path, increase current government spending facing elections (0.03 p.p. in compensation to employees and 0.18 p.p. on other current expenditures). The gross fixed capital formation is expected to remain unchanged, but uses to decrease 0.08 p.p. facing elections.

Lastly, excessively indebted countries present an increasing path regarding other current expenditure (reaching 0.18 p.p. variations in electoral periods). Compensation to employees increases about 0.04 p.p., decreasing 0.02 p.p. in remaining years. The investment reveals a different behavior when compared to the other groups of countries. Despite the fast investment reduction (year-on-year change of -0.24 p.p.), the pace slows down in electoral years, to -0.07 p.p.

These statistics didn't show a clear influence of the indebtedness level on the political budget cycles, when the lower and highly indebted countries are compared. The major difference comes from the tax burden developments, evidencing the consolidation strategies to reduce the debt ratio and to support the interest's expenses. However, the excessively indebted countries reveal a less prudent governance. Indeed, despite the prudence observed in non-electoral years, government spending tends to increase in elections, specially through current expenditure.

Regarding the influence of the participation in the EMU, the sample was divided between countries inside the Euro Area, and otherwise. Table 5 presents fiscal statistics before and after countries joined the monetary union.

[Table 5]

According to the results, both in the EMU and in the non-EMU, fiscal policy seems to be less stringent facing electoral years.

Countries outside EMU used to decrease the indirect tax burden during electoral years (-0.09 p.p. of GDP) and to reduce simultaneously government current spending, despite in a lower rhythm than in the remaining years (in exemption of the GFKF). The results also appear to show a strategy to substitute indirect by direct taxes, during elections.

After joining the EMU, there was a complete change on fiscal policy in electoral years. Both direct and indirect taxes fall (-0.04 and -0.03, respectively) and the current expenditures increases.

Once again, there is a reduction in the investment level as percentage of GDP (-0.13 and -0.10 p.p. inside and outside the EMU, respectively).

4. Estimation results

In order to capture the effect of the elections on fiscal policy, it was used a typical reduced form specification:²

$$\Delta y_{it} = \alpha + \beta y_{it-1} + \delta Elections_{it} + \theta X_{it} + u_{it}, \quad (1)$$

where y_{it} denotes the fiscal (dependent) variables, and y_{it-1} its lagged variable to capture the persistence of the fiscal variables. The dummy variable $Elections_{it}$ assumes 1 in election years and 0 otherwise, and X_{it} is a vector of economic control variables, namely the variation of the unemployment rate, the real GDP growth, the debt-to-GDP change in t-1, and the real long-term real interest rates. Lastly, u_{it} represents the error term.

In order to perceive how policy might manipulate the people's will, expectations and perceptions, though fiscal policy in the year before elections (see Table 3), an alternative specification was applied to capture the hypothetical influence:

$$\Delta y_{it} = \alpha + \beta y_{it-1} + \delta Elections_{it} + \varphi Elections_{it-1} + \theta X_{it} + u_{it}. \quad (2)$$

Furthermore, since the unit-root tests showed that no fiscal variable contains a unit root, there was no need to use macro and fiscal variables in differences (Appendix 4).

A Fixed Effects model was used to assess the impact of fiscal and control variables throughout time, assuming that the time-invariant characteristics are country specific. Since the Fixed Effects model removes the effect of time-invariant characteristics from the predictor variables, it might be a suitable approach. The Hausman test supported this

² Similar to the observed in Chortareas et al. (2018).

assumption, showing that the error term and the constant are not correlated with the other variables. Moreover, for all the estimations we have a redundant Fixed Effects Likelihood test, where the null hypothesis (no unobserved heterogeneity) was rejected.

The sample is composed by 19 Eurozone countries (EA19) between 1995 and 2017. The data were obtained from the EC AMECO Database (based on ESA 2010).

[Table 6]

According to Table 6, the results not considering (1) and considering (2) the influence of the year before elections in fiscal policy are particularly similar.

As expected, the lagged fiscal variables are all significantly negative.

In both output (1) and (2) the presence of elections doesn't seem to influence the presented fiscal variables. However, despite not statistically different from zero, it appears to affect negatively the primary balance, with a positive sign on primary expenditure and negative on revenue. Furthermore, the year before elections isn't significant to explain fiscal policy, but points to a saving orientation, reducing the primary expenditure.

The real GDP growth influences negatively both expenditure and revenue, but the last one in a lower level, since the policy makers are expected to use positive conjunctures to apply fiscal consolidations, reducing public spending but diminishing the tax burden at the same time.

The unemployment rate reveals the operation of automatic stabilizers. When it decreases, the government revenue increases (due to a tax base increase) and decreases the primary expenditure (substitution effect and less social benefits).

Despite not statistically different from zero, the negative parameter of lagged debt-to-GDP changes (-0.03) shows a non-Ricardian fiscal regime, since Governments aren't motivated by both stabilization and sustainability goals, i.e., there is no positive response of budget balance to a debt stock. This result contradicts the Afonso and Jalles (2019) estimates, who argued that advanced economies increase the fiscal primary balances as response to debt increases.

The long-term real interest rates, representing the cost of public financing, significantly induces fiscal consolidations. As expected, it constrains public spending and increases the government revenue as an alternative to finance expenditure.

Since there was a suspicion of reverse causality between the fiscal variables and some explanatory variables, as the variation of the long term interest rate or the real GDP growth, a IV/GMM estimation was performed for this specification. Following Vergne (2019), the instruments used are lagged levels of the dependent variable (two periods) and for the level equation. The output showed very similar results.

[Table 7]

Alternative estimates were made using fixed effects for more desegregated fiscal variables: direct and indirect taxes, compensation to employees, other current expenditures and investment. Table 8 shows the results.

[Table 8]

The output shows that the cross-section fixed effects method is justified, since the result of the Redundant Fixed Effects Test rejects the null hypothesis. The selected macroeconomic variables appear to only explain other current expenditure's variations robustly, with R-squares of 0.74-0.75.

According to the results, the presence of the year before elections only changes the impact of the electoral dummies on the fiscal policy. Whilst in (1) the electoral period increases the share of both compensations to employees (0.09) and other current expenditure (0.20) on GDP (statistically significant), in (2) it influences the compensation to employees (0.09) and the GFKF (-0.10). The year before elections is significant (-0.23) for other current expenditure.

Moreover, the tax burden is negatively influenced by unemployment, which shows the impact of the tax base increase. In addition, the indirect tax burden also depends on the

real GDP growth (negatively) and shows a Ricardian fiscal behave, since it tends to increase in response to a debt increase in the previous year.

On the current expenditures, both compensation to employees (significant in both (1) and (2)) and other current expenditure (1) tend to increase during electoral years. Furthermore, the other current expenditures tend to decrease in the year before elections. Concerning the compensation to employees, the positive unemployment correlations and negative parameters of GDP growth reveal a substitution effect. The financing cost and the lagged debt shocks also play a role, constraining public spending.

The gross fixed capital formation depends on the liquidity constraints. It shows a Ricardian fiscal behave facing lagged debt increases and is constrained by the long-run real interest rates. As presented in Table 3, it tends to decrease in electoral years.

The Table 8 estimation was repeated using the IV/GMM estimator. Table 9 shows that, once again, the results are very similar to those previously obtained.

[Table 9]

The only significant difference arises precisely from the electoral dummies. The electoral years lost their ability to significantly explain compensation to employees and investment, and became statistically significant to explain (positively) other current expenditures. In addition, the year before elections lost the negative impact on the other current expenditures.

Moving forward, to better understand how the indebted level might influence the policy maker's ability to manipulate fiscal instruments during elections, an estimation was performed splitting the most from the least indebted countries, i.e., those who comply (or not) the Maastricht Treaty limit of 60% GDP.

A fixed effects estimation is presented in Table 10.

[Table 10]

The Redundant Fixed Effects test stills rejecting the null hypothesis, justifying the use of fixed effects estimator.

Comparing to Table 8, the selected exogenous variables have a stronger ability to explain current expenditure variations (R-Square of 0.82 and 0.71, in outputs 1 and 2, respectively).

According to Table 10, the electoral influence on the fiscal policy seems to differ from low and highly indebted countries. Whilst, in countries with debt ratios above 60% of GDP, policy makers tend to manipulate compensation to employees with electoral purposes, the same do not happen for lower indebted countries, or at least, the parameter isn't statistically significant. In both (1) and (2) estimations, the other current expenditures seem to decrease in the year before elections.

Comparing the two groups of countries, one might conclude that highly indebted countries use to conduct tax policies according to the macro variables, being more volatile facing cyclical fluctuations. Whilst, the lower indebted countries (1) only the direct tax burden tends to increase facing an unemployment decrease (tax base increase), the most indebted ones (2) decrease the overall tax burden when the economy is growing, as well as the indirect taxes when the unemployment falls. Also, the tax burden increases in response to a real long-term interest rate shock, representing an alternative financing source.

The compensation to employees decreases facing both growth accelerations and interest rates increases. Moreover, it shows a Ricardian response facing debt shocks in the previous year in (2) and increases due to electoral purposes in (1).

On the other current expenditure, the fiscal policy response isn't very different between estimates, decreasing in the year before elections. Despite doesn't react in a Ricardian way facing debt shocks, it reacts counter-cyclically facing economic growth. In the highly indebted countries, it seems to reduce facing interest shocks.

Furthermore, in both cases, the GFKF negative responses to interest rate shocks, not being influenced by electoral year (despite the negative parameters, they aren't statistically significant), neither by the precedent years.

Giving the pro-cyclical tax burden, the electoral impact on the compensation to employees and the absence of a Ricardian fiscal regime, its perceived a less prudent and

stringent Governance of the highly indebted EMU countries, when compared to the remaining Member States. Moreover, the fiscal policy is dependent on the financing conditions, since all the fiscal instruments are sensitive to real long-term interest rate variations.

To understand the influence of the Eurozone membership on political budget cycles, an alternative estimation was performed splitting the sample using the EMU dummy.

[Table 11]

According to Table 11, elections only influenced (significantly) compensation to employees when countries had not yet joined the EMU (0.22). However, the year before seems to influence all the fiscal variables inside the monetary union and all parameters are statistically different from zero.

Apparently, EMU policy makers use to increase government revenue and decrease expenditure one year before elections in order to save sufficient margin to apply more expansionist policies next year. In fact, despite not significant, all the variables seem to invert the sign from one year to the other.

Contrary to the first sub-sample, before joining the Eurozone, only the compensation to employees and the GFKF changed their path in electoral periods.

Regarding the responses to economic growth accelerations, only the other current expenditure seems to significantly react, decreasing 0.18 and 0.41 in EMU and non-EMU countries, respectively. Facing unemployment rate decreases, both estimations revealed an increase on current expenditures, but also an increase on indirect tax burden on the Member States.

Furthermore, both (1) and (2) doesn't show any Ricardian response to a debt shock in $t-1$, and countries seem to become more sensitive to interest rate shocks after joining the Eurozone. Whilst when countries had an autonomous monetary policy only the compensation to employees reduced with higher financing costs and the direct taxes even decreased, tax burden is forced to increase since then (despite only indirect taxes is significant), and both investment and compensation to employees decrease.

5. Robustness

To perform a robustness test, a new fixed effects specification was performed using the elections' dummy variable to distinguish the influence of the macroeconomic control variables on the fiscal instruments. The goal is to understand how fiscal instruments might react in a different way in the presence of an electoral year.

Thus, the specification is:

$$\Delta y_{it} = \alpha_i + \beta y_{it-1} + Elections \times (\delta X_{it}) + (1 - Elections) \times (\theta X_{it}) + \mu_{it}$$

In addition to the baseline estimation (1), four additional estimations would be made, splitting the sample in countries with a debt ratio under (2) and above (3) 60% of GDP, and inside (4) and outside (5) the EMU.

A fixed effects estimation is presented in Table 12.

[Table 12]

[Table 13]

Giving the Tables 9 and 10 (output 1), one might conclude that the real GDP growth has a similar impact on primary balance during electoral and non-electoral years (0.18 – 0.20). In addition, the incumbent Government tends to deteriorate the primary balance facing unemployment increases (-0.67). During non-electoral periods, use the policy makers use to improve the balance when there is an increase in financing costs and reveal a non-Ricardian response facing a debt increase in the previous year. Thus, the Wald Test might reveal the relevance of the budgetary performance and debt control for electoral proposes in the EMU, reflecting the increasing voter's concern regarding the high amounts of public debt accumulated during the last decades, and the consequent costs on people's income and welfare.

Regarding the revenue, during electoral periods, it tends to increase in response to debt shocks (0.05), showing the Ricardian behavior of policy makers. As expected,

government revenue also increases facing falls on unemployment rate (0.06), due to the increase of the tax base and the decrease of social benefits.

However, the result is different in the absence of elections, where just the real GDP growth seems to be statistically significant (-0.11), since the government might use a positive economic moment to reduce taxes.

On the primary expenditure side, it decreases facing a faster economic growth (-0.52 during elections, -0.40 if not), and increases facing debt shocks (0.06), but only in the absence of elections. Moreover, despite not significantly different from zero, the Wald test showed that unemployment rate decreases have a more negative impact on government spending (substitution effect) in electoral years.

Comparing the results for countries with stocks of public debt under (2) and above (3) 60% of GDP, one can see that the inference of fiscal instruments on primary balance, isn't particularly different in terms of sign, but on the statistical significance and magnitude.

On the primary balance, and during electoral periods, the only significant difference is on the response to unemployment, having a stronger and statistically reaction in the less indebted countries (-0.73 against -0.59).

During the remaining period, the result inverts and the most indebted counties have a higher response (-0.94 against -0.23) to employment falls. Furthermore, whilst the less indebted countries use to deteriorate the primary balance facing increases on the indebtedness level (-0.11) and to improve it in response to a stronger economic growth (0.26), the same seems not happen in the counterfactual group.

On the revenue side, the only significant variables during elections are the lagged change on the debt ratio and the unemployment rate in the lowest indebted countries (0.10 and -0.15, respectively) and the interest rate in the most indebted ones (0.13). In the remaining period, both groups have negative responses to economic growth, but continues to exhibit different sign facing changes on the unemployment rate. When it falls, the Government revenue tends to increase in (2) (0.11) and decrease in (3) (-0.06).

Lastly, on the expenditure side, the signs of the significant parameters are similar for countries with debt ratios under and above 60% GDP, decreasing primary spending facing economic growth shocks (both in elections and in the remaining period).

Furthermore, in non-electoral years, the lower indebted countries appear to have a non-Ricardian response to positive debt shocks (0.11), increasing their expenditure.

[Table 14]

Table 14 shows that selected variables have a stronger ability to explain fiscal policy changes in countries outside the monetary union than to explain in the EMU member states, having a higher R-squares.

Comparing the estimations (4) and (5), one can observe that primary balances have different kind of responses to macroeconomic variables, depending on the EMU membership.

Facing elections, whilst the EMU member states use to improve their primary balances facing economic growth accelerations (0.33) and debt increases (0.11), the response is negative (despite not statistically significant) in the non-EMU countries.

In non-electoral years, the expansionist response to unemployment lose its significance outside the Eurozone, the economic growth became significant and there is a non-Ricardian behavior facing a debt increase. Inside the EMU, the Ricardian response ceased to be observed and the response to interest rate shock became statistically significant.

Observing the revenue and expenditure variations, the major difference found is on the revenue response to an interest rate shock. Once again, contrary to what happens in the non-Eurozone countries, the Member States use to increase their tax burden when the financing costs are higher, since don't have the ability to manipulate monetary policy to reduce it. This effect is only statistically significant during elections (+0.11 p.p. in Government revenue).

Furthermore, in non-election years, non-EMU countries use to increase their primary expenditure facing debt shocks in the precedent year (0.14), not revealing a Ricardian behave.

6. Conclusion

This paper considers the presence of political budget cycles in the Eurozone. Taking into account the influence of the debt level and of the Monetary Union on policy taking, we studied the impact of elections on fiscal policy. After a first statistical analysis, using annual data from 19 Eurozone Member States between 1995 and 2017 and a time dummy to identify electoral periods, it was applied a Fixed Effects model to assess its impact on fiscal variables, controlling the response to other macroeconomic variables' shocks, such as the unemployment, economic growth, debt variations or interest rates.

According to the results, the electoral period seems to increase the share of both compensations to employees and other current expenditure on GDP, being the last one also affected on the year before the elections. Corroborating with Vergne (2009) and the predictions of the Rogoff's "visibility expenditure" model, it shows that policy makers prefer to use current spending rather than target capital spending in electoral years.

Since there was a suspicion of reverse causality problems, a IV/GMM estimation was performed for this specification, whose output showed very similar results. The only significant difference arises from the electoral dummies, where the electoral years lost the ability to significantly explain compensation to employees and investment, and became statistically significant to explain (positively) other current expenditures. In addition, the year before elections lost the negative impact on the other current expenditures.

Furthermore, the electoral influence on the fiscal policy seems to differ from low and highly indebted countries. Whilst, in countries with debt ratios above 60% of GDP, policy makers tend to influence the compensations to employees with electoral purposes, the same does not seem to happen in the case of the less indebted countries.

Moreover, countries that are more indebted countries use to decrease the overall tax burden when the economy is growing, as well as the indirect taxes when the unemployment falls. Also, the tax burden increases in response to a real long-term interest rate shock, representing an alternative financing source.

Thus, given the pro-cyclical tax burden, the electoral impact on the compensation to employees and the absence of a Ricardian fiscal regime, its perceived a less prudent fiscal policy from the most indebted countries, when compared to the remaining Member States.

In addition, the fiscal policy is highly dependent on the financing conditions, since all the fiscal instruments are sensitive to real long-term interest rate variations.

Assessing if the primary balance might response differently to macroeconomic changes during the electoral period, the estimates have shown that in the absence of elections, the incumbent Government tends to improve its balance facing real interest rate shocks but also to deteriorate facing debt increases (contrarily to electoral years), neglecting the relevance of fiscal discipline without electoral purposes. Also, decreases on unemployment rate and growth rate accelerations influence positively the primary balance, in both groups.

Lastly, comparing fiscal responses to macro shocks before and after countries joined the EMU, it was perceived that policy makers started to increase tax burden facing interest rate shocks, since they lose the ability to manipulate monetary policy.

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Appendix 1

Table 1 – Empirical results in the related literature: summary

Authors (year)	Methodology	Sample	Period	Main Results
Gonzales (2002)	Pooled OLS	Mexico	1957-1999	- The elections affect infrastructure spending and transfers, which gets stronger under higher level of democracy.
Andrikopoulos et al. (2004)	ARMA	EU countries	1970-1998	- 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 fiscal instruments and target variables; - The EU governments have been primarily concerned with the pursuit of stabilization policies rather than with policies giving rise to political cycles.
Brender and Drazen (2005)	Fixed Effects (FE)	106 countries	1960-2001	- There are evidences of political budget cycles, but only in new democracies.
Drazen and Eslava (2005)	GMM	Government and municipalities in Colombia	1987-2000	- There is a pre-electoral increase in targeted expenditures, and voters use to respond positively.
Shi and Svensson (2006)	GMM	85 countries	1975-1995	- Political budget cycles effect is large in developing countries and small or non-existing in industrial countries, and the institutional indicators can explain large part of these differences.
Brender and Drazen (2008)	LOGIT	74 countries	1960-2003	- In developed countries and established democracies, election-year deficit spending and tax cuts are punished at the polls. A worsening of the government's fiscal balance in the election year actually reduces the probability that the leader is reelected; - In most countries loose fiscal policies over the incumbent's term of office, reflected in larger budget deficits relative to earlier periods, are associated with a statistically significant lower probability of reelection; - The real growth rate (per capita) is associated with a higher probability of reelection only in the less developed countries and in the new democracies.
Vergne (2009)	FE / GMM	45 developing countries	1975-2001	- Politicians shift the composition of pre-election spending towards current expenditure and away from capital expenditure; - They prefer to use broad-based rather than targeted spending at election times; - While political budget cycles disappear as the Government has more experience, the electoral impacts on the allocation of public spending endure.
Katsimi and Sarantides (2010)	Fixed Effects (FE)	19 high-income OECD	1972-1999	- Elections shift public spending towards current expenditures at the cost of public investment; - There is no evidence for an electoral cycle for both deficit and overall expenditures; - Endogenous elections seems to increase deficit, but not changing the composition of fiscal policy.
Chortareas et al. (2018)	OLS / Newey-West Sd.	Greece	1974-2011	- Facing elections, primary balance deteriorates via increased expenditures, where compensation to employees use to increase; - Prolonged incumbencies affect negatively the primary balance and revenues; - There is no evidence of partisan effects in Greece's fiscal policies.

Table 2– Fiscal statistics in electoral years (EA19 average: 1995-2017)

Variable	Electoral	Non-Electoral	Difference
Balance	-3.05	-2.73	-0.32
Δ Balance	0.20	0.25	-0.05
CAPB	-0.13	0.30	-0.43
ΔCAPB	-0.04	0.08	-0.12
Δ Debt	1.25	0.94	0.31
Growth	2.66	2.70	-0.04
Δ Direct Taxes	0.01	0.04	-0.03
Δ Indirect Taxes	-0.05	0.05	-0.10
Δ Compensation to Employees	0.03	-0.06	0.09
Δ GFKF	-0.05	0.01	-0.06
Δ Other Current Expenditure	0.06	-0.05	0.11
Nº Observations	114	323	

Sources: AMECO and author's calculations.

Note: All the figures are presented in percentage of GDP and growth represents the real GDP annual growth. Since the figures are based on ESA 2010, the 1995 variations might have some missing values.

Table 3 - Fiscal statistics in the year before elections (EA19 average: 1995-2017)

Variable	Electoral	Year before	Other
Balance	-3.05	-3.13	-2.37
Δ Balance	0.20	-0.10	0.31
CAPB	-0.13	-0.12	0.50
ΔCAPB	-0.04	-0.16	0.20
Δ Debt	1.25	1.13	0.91
Growth	2.66	2.71	2.70
Δ Direct Taxes	0.01	0.08	0.03
Δ Indirect Taxes	-0.05	0.06	0.05
Δ Compensation to Employees	0.03	-0.09	-0.04
Δ GFKF	-0.05	0.08	-0.02
Δ Other Current Expenditure	0.06	0.07	-0.11
Nº Observations	114	106	217

Sources: AMECO and author's calculations.

Note: All the figures are presented in percentage of GDP and growth represents the real GDP annual growth. Since the figures are based on ESA 2010, the 1995 variations might have some missing values

Table 4 – Fiscal statistics by debt-to-GDP ratio (EA19 average: 1995-2017)

Variable	Debt <60%GDP		100%>Debt >60%		Debt >100%GDP	
	Electoral	Non-Elect.	Electoral	Non-Elect.	Electoral	Non-Elect.
Δ Direct Taxes	-0.03	-0.02	0.06	0.12	-0.02	0.05
Δ Indirect Taxes	-0.13	-0.04	0.00	0.13	0.03	0.14
Δ Compensation to Employees	0.00	-0.08	0.03	-0.04	0.04	-0.02
Δ GFKF	-0.11	0.05	-0.08	0.00	-0.07	-0.24
Δ Other Current Expenditure	-0.03	-0.04	0.18	-0.12	0.18	0.04
Nº Observations	54	153	41	116	19	54

Sources: AMECO and author's calculations.

Note: All the figures are presented in percentage of GDP.

Since the figures are based on ESA 2010, the 1995 variations might have some missing values.

Table 5 – Fiscal statistics in EMU (EA19 average: 1995-2017)

Variable	EMU			Non-EMU		
	Total	Electoral	Non-Elect.	Total	Electoral	Non-Elect.
Δ Direct Taxes	0.01	-0.04	0.02	0.09	0.10	0.08
Δ Indirect Taxes	0.00	-0.03	0.01	0.09	-0.09	0.14
Δ Compensation to Employees	-0.02	0.04	-0.05	-0.06	-0.01	-0.08
Δ GFKF	-0.04	-0.13	0.00	0.02	-0.10	0.05
Δ Other Current Expenditure	0.04	0.18	-0.01	-0.13	-0.10	-0.14
Nº Observations	280	76	204	138	30	108

Sources: AMECO and author's calculations.

Note: All the figures are presented in percentage of GDP.

Since the figures are based on ESA 2010, the 1995 variations might have some missing values.

Table 6 – Baseline output

	Fiscal Instrument					
	(1)			(2)		
	Primary Balance	Δ Revenue	Δ Primary Expenditure	Primary Balance	Δ Revenue	Δ Primary Expenditure
Constant	-0.586*** (-2.841)	9.625*** (7.886)	19.05*** (11.83)	-0.627*** (-2.721)	9.689*** (7.877)	19.11*** (11.87)
Lagged Fiscal Variable	0.518*** (10.73)	-0.220*** (-7.675)	-0.428*** (-11.15)	0.519*** (10.71)	-0.221*** (-7.679)	-0.427*** (-11.13)
Elections	-0.263 (-1.035)	-0.116 (-0.951)	0.105 (0.434)	-0.229 (-0.857)	-0.134 (-1.045)	0.025 (0.098)
Year Before Elections				0.109 (0.405)	-0.059 (-0.460)	-0.266 (-1.036)
Real GDP Growth	0.189*** (4.174)	-0.142*** (-6.480)	-0.355*** (-8.212)	0.190*** (4.188)	-0.143*** (-6.488)	-0.358*** (-8.270)
Δ Unemployment Rate	-0.529*** (-4.974)	-0.184*** (-3.576)	0.285*** (2.812)	-0.528*** (-4.950)	-0.185*** (-3.588)	0.282*** (2.781)
Δ Debt-to-GDP Ratio (-1)	-0.031 (-1.104)	0.015 (1.465)	0.028 (1.104)	-0.031 (-1.082)	0.015 (1.469)	0.028 (1.100)
Real LT Interest Rate	0.115*** (2.642)	0.037* (1.771)	-0.071* (-1.712)	0.115*** (2.649)	0.036* (1.759)	-0.072* (-1.740)
N	371	371	371	371	371	371
R ²	0.66	0.29	0.46	0.66	0.29	0.47
Prob (F-stat.)	0.00	0.00	0.00	0.00	0.00	0.00
Redundant Fixed Effects Test						
t-stat.	2.30	3.28	4.41	2.30	3.29	4.37
p-val.	0.00	0.00	0.00	0.00	0.00	0.00

Note: The impacts are statistically significant at 1%, 5% and 10%, according to the classification ***, ** and * respectively (value of the t statistic in parentheses).

Table 7 – Baseline output (IV/GMM)

	Fiscal Instrument					
	(1)			(2)		
	Primary Balance	Δ Revenue	Δ Primary Expenditure	Primary Balance	Δ Revenue	Δ Primary Expenditure
Constant	-0.582*** (-2.795)	9.580*** (7.769)	19.11*** (11.79)	-0.403 (-1.252)	9.552*** (7.564)	19.19*** (11.79)
Lagged Fiscal Variable	0.525*** (10.80)	-0.219*** (-7.583)	-0.430*** (-11.14)	0.515*** (10.17)	-0.219*** (-7.505)	-0.433*** (-11.06)
Elections	-0.288 (-1.124)	-0.134 (-1.103)	0.120 (0.494)	-0.858 (-1.282)	-0.028 (-0.089)	0.405 (0.649)
Year Before Elections				-0.094 (-0.281)	-0.014 (-0.091)	-0.133 (-0.422)
Real GDP Growth	0.196*** (4.260)	-0.134*** (-6.040)	-0.354*** (-8.082)	0.195*** (4.172)	-0.134*** (-6.004)	-0.357*** (-8.079)
Δ Unemployment Rate	-0.519*** (-4.802)	-0.184*** (-3.529)	0.270*** (2.629)	-0.521*** (-4.770)	-0.184*** (-3.525)	0.267*** (2.592)
Δ Debt-to-GDP Ratio (-1)	-0.025 (-0.867)	0.015 (1.430)	0.025 (0.954)	-0.029 (-0.985)	0.015 (1.435)	0.026 (1.005)
Real LT Interest Rate	0.118*** (2.642)	0.049** (2.299)	-0.061 (-1.430)	0.118*** (2.617)	0.049** (2.281)	-0.062 (-1.448)
N	365	365	365	365	365	365
R ²	0.66	0.29	0.47	0.65	0.29	0.46

Note: The impacts are statistically significant at 1%, 5% and 10%, according to the classification ***, ** and * respectively (value of the t statistic in parentheses). The instruments used are lagged levels of the dependent variable (two periods) and for the level equation.

Table 8– Estimation by instrument

	Fiscal Instrument									
	(1)					(2)				
	Δ Direct Taxes	Δ Indirect Taxes	Δ Compensation to Employees	Δ Other Current Expenditure	Δ GFKF	Δ Direct Taxes	Δ Indirect Taxes	Δ Compensation to Employees	Δ Other Current Expenditure	Δ GFKF
Constant	2.939*** (7.529)	2.338*** (5.953)	2.872*** (8.375)	8.287*** (16.01)	1.140*** (7.464)	2.995*** (7.639)	2.381*** (6.019)	2.873*** (8.367)	8.330*** (16.23)	1.166*** (7.553)
Lagged Fiscal Instrument	-0.262*** (-7.559)	-0.176*** (-5.884)	-0.243*** (-7.607)	-0.262*** (-14.71)	-0.294*** (-7.526)	-0.263*** (-7.607)	-0.178*** (-5.928)	-0.242*** (-7.588)	-0.261*** (-14.75)	-0.294*** (-7.531)
Elections	-0.021 (-0.294)	-0.081 (-1.356)	0.088** (2.129)	0.201** (2.487)	-0.080 (-1.367)	-0.053 (-0.695)	-0.099 (-1.572)	0.085** (1.953)	0.133 (1.580)	-0.101* (-1.648)
Year Before Elections						-0.106 (-1.364)	-0.059 (-0.924)	-0.010 (-0.241)	-0.227*** (-2.677)	-0.070 (-1.137)
Real GDP Growth	-0.009 (-0.736)	-0.026** (-2.426)	-0.086*** (-11.61)	-0.272*** (-18.81)	-0.003 (-0.313)	-0.011 (-0.846)	-0.027** (-2.496)	-0.087*** (-11.58)	-0.275*** (-19.13)	-0.004 (-0.404)
Δ Unemployment Rate	-0.130*** (-4.235)	-0.086*** (-3.408)	0.035** (2.005)	0.033 (0.973)	0.015 (0.624)	-0.131*** (-4.276)	-0.087*** (-3.439)	0.035** (1.994)	0.031 (0.915)	0.015 (0.592)
Δ Debt-to-GDP Ratio t-1	0.005 (0.814)	0.013** (2.524)	-0.013*** (-3.401)	0.033*** (4.141)	-0.011** (-2.128)	0.005 (0.820)	0.013** (2.525)	-0.013*** (-3.397)	0.033*** (4.166)	-0.011** (-2.117)
Real LT Interest Rate	0.010 (0.846)	0.013 (1.311)	-0.020*** (-2.774)	-0.027* (-1.958)	-0.033*** (-3.212)	0.010 (0.815)	0.013 (1.285)	-0.020*** (-2.777)	-0.028** (-2.053)	-0.033*** (-3.241)
N	371	371	371	383	383	371	371	371	371	371
R ²	0.23	0.19	0.52	0.74	0.20	0.24	0.19	0.52	0.75	0.22
Redundant Fixed Effects Test										
t-stat.	3.73	2.17	4.63	8.14	2.25	3.73	2.18	4.61	8.11	2.28
p-val	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: The impacts are statistically significant at 1%, 5% and 10%, according to the classification ***, ** and * respectively (value of the t statistic in parentheses).

Table 9– Estimation by instrument (IV/GMM)

	Fiscal Instrument					
	(1)			(2)		
	Δ Direct Taxes	Δ Indirect Taxes	Δ Compensation to Employees	Δ Other Current Expenditure	Δ GKF	Δ GKF
Constant	2.981*** (7.095)	2.313*** (5.761)	2.904*** (8.274)	8.028*** (13.45)	1.171*** (7.358)	1.185*** (7.421)
Lagged Fiscal Instrument	-0.273*** (-7.377)	-0.178*** (-5.857)	-0.245*** (-7.605)	-0.260*** (-12.79)	-0.322*** (-7.671)	-0.316*** (-7.744)
Elections	0.368 (1.529)	0.067 (0.353)	0.100 (0.760)	1.002*** (3.791)	0.161 (0.880)	0.047 (0.314)
Year Before Elections						
					-0.047 (-0.493)	-0.023 (-0.303)
Real GDP Growth	-0.008 (-0.601)	-0.026** (-2.383)	-0.087*** (-11.52)	-0.272*** (-16.39)	-0.008 (-0.085)	-0.001 (-0.100)
Δ Unemployment Rate	-0.122*** (-3.811)	-0.095*** (-3.698)	0.037** (2.110)	0.033 (0.864)	-0.122*** (-3.934)	0.023 (0.883)
Δ Debt-to-GDP Ratio t-1	0.007 (1.080)	0.012** (2.356)	-0.012*** (-3.043)	0.033*** (3.532)	0.007 (1.109)	-0.011** (-2.117)
Real LT Interest Rate	0.006 (0.461)	0.018* (1.772)	-0.023*** (-3.081)	-0.028* (-1.719)	-0.032*** (-3.007)	-0.032*** (-3.031)
N	365	365	365	365	365	365
R ²	0.17	0.19	0.52	0.67	0.23	0.21
					0.20	0.74

Note: The impacts are statistically significant at 1%, 5% and 10%, according to the classification ***, ** and * respectively (value of the t statistic in parentheses). The instruments used are lagged levels of the dependent variable (two periods) and for the level equation.

Table 10– Estimation by debt-to-GDP ratio

	Fiscal Instrument									
	(1)					(2)				
	Debt < 60% GDP					Debt > 60% GDP				
	Δ Direct Taxes	Δ Indirect Taxes	Δ Compensation to Employees	Δ Other Current Expenditure	Δ GKF	Δ Direct Taxes	Δ Indirect Taxes	Δ Compensation to Employees	Δ Other Current Expenditure	Δ GKF
Constant	2.640*** (4.638)	2.849*** (4.408)	3.326*** (6.808)	10.08*** (13.04)	2.018*** (6.867)	3.545*** (6.309)	3.082*** (5.632)	2.784*** (5.716)	8.825*** (10.37)	0.988*** (5.519)
Lagged Fiscal Instrument	-0.249*** (-4.553)	-0.223*** (-4.398)	-0.289*** (-6.044)	-0.352*** (-11.79)	-0.452*** (-6.688)	-0.296*** (-6.365)	-0.230*** (-5.544)	-0.233*** (-5.389)	-0.258*** (-9.594)	-0.305*** (-6.046)
Elections	-0.102 (-0.889)	-0.135 (-1.339)	0.050 (0.864)	0.157 (1.311)	-0.149 (-1.529)	-0.080 (-0.828)	-0.088 (-1.150)	0.137** (2.328)	0.135 (1.219)	-0.007 (-0.104)
Year Before Elections	-0.111 (-0.950)	-0.121 (-1.176)	0.058 (0.994)	-0.206* (-1.682)	-0.083 (-0.849)	-0.133 (-1.387)	-0.038 (-0.500)	-0.089 (-1.528)	-0.230** (-2.094)	-0.056 (-0.769)
Real GDP Growth	-0.008 (-0.504)	-0.007 (-0.467)	-0.090*** (-9.759)	-0.256*** (-14.05)	-0.023 (-1.569)	-0.033* (-1.656)	-0.045*** (-2.895)	-0.075*** (-6.292)	-0.291*** (-12.92)	0.017 (1.115)
Δ Unemployment Rate	-0.184*** (-4.070)	-0.037 (-0.984)	0.036 (1.584)	0.075 (1.642)	-0.001 (-0.051)	-0.071 (-1.617)	-0.154*** (-4.306)	0.036 (1.354)	-0.010 (-0.218)	-0.005 (-0.150)
Δ Debt-to-GDP Ratio t-1	-0.004 (-0.306)	0.019 (1.567)	-0.028*** (-3.907)	0.028* (1.880)	0.008 (0.793)	-0.001 (-0.184)	0.007 (1.214)	0.000 (0.182)	0.044*** (4.532)	-0.002 (-0.323)
Real LT Interest Rate	-0.005 (-0.296)	-0.001 (-0.098)	-0.014* (-1.677)	-0.002 (-0.160)	-0.034** (-2.372)	0.051*** (2.697)	0.045*** (2.968)	-0.034*** (-2.915)	-0.083*** (-3.752)	-0.032** (-2.158)
N	175	175	175	175	175	196	196	196	196	196
R ²	0.37	0.20	0.69	0.82	0.29	0.27	0.32	0.44	0.71	0.30
Redundant Fixed Effects Test										
t-stat.	2.27	1.44	3.74	7.08	1.85	3.81	3.27	4.17	6.32	2.86
p-val.	0.01	0.14	0.00	0.00	0.04	0.01	0.00	0.00	0.00	0.00

Note: The impacts are statistically significant at 1%, 5% and 10%, according to the classification ***, ** and * respectively (value of the t statistic in parentheses).

Table 11– Estimation by EMU membership

	Fiscal Instrument									
	(1)					(2)				
	EMU					1-EMU				
	Δ Direct Taxes	Δ Indirect Taxes	Δ Compensation to Employees	Δ Other Current Expenditure	Δ GKF	Δ Direct Taxes	Δ Indirect Taxes	Δ Compensation to Employees	Δ Other Current Expenditure	Δ GKF
Constant	3.768*** (6.539)	2.115*** (4.463)	2.280*** (5.976)	7.355*** (12.73)	1.149*** (6.113)	1.784** (2.602)	2.190** (2.064)	4.955*** (5.495)	12.01*** (11.17)	2.053*** (4.645)
Lagged Fiscal Instrument	-0.318*** (-6.633)	-0.162*** (-4.482)	-0.189*** (-5.346)	-0.217*** (-11.40)	-0.307*** (-6.076)	-0.163** (-2.186)	-0.150* (-1.836)	-0.429*** (-5.078)	-0.447*** (-10.41)	-0.444*** (-4.748)
Elections	-0.086 (-1.046)	-0.046 (-0.747)	0.064 (1.438)	0.133 (1.503)	-0.096 (-1.358)	-0.039 (-0.211)	-0.141 (-0.783)	0.223** (2.071)	0.211 (1.143)	-0.027 (-0.183)
Year Before Elections	0.045*** (2.681)	0.025** (1.983)	-0.024*** (-2.657)	-0.063*** (-3.469)	-0.031** (-2.053)	-0.021 (-0.991)	-0.025 (-1.190)	-0.018 (-1.386)	0.013 (0.605)	-0.055*** (-3.022)
Real GDP Growth	-0.096 (-1.146)	-0.041 (-0.663)	-0.051 (-1.136)	-0.184** (-2.049)	-0.019 (-0.264)	-0.222 (-1.259)	-0.116 (-0.675)	0.121 (1.179)	-0.412** (-2.320)	-0.165 (-1.188)
Δ Unemployment Rate	-0.015 (-1.016)	-0.038*** (-3.269)	-0.091*** (-10.81)	-0.306*** (-18.37)	-0.006 (-0.461)	-0.032 (-1.190)	-0.013 (-0.505)	-0.079*** (-4.674)	-0.223*** (-8.317)	-0.026 (-1.120)
Δ Debt-to-GDP Ratio t-1	-0.124*** (-3.404)	-0.163*** (-5.877)	0.044** (2.206)	0.019 (0.498)	0.027 (0.799)	-0.169*** (-2.727)	0.047 (0.824)	0.068* (1.822)	0.098 (1.653)	0.004 (0.092)
Real LT Interest Rate	0.006 (0.844)	0.019*** (3.586)	-0.011** (-2.551)	0.034*** (3.950)	-0.016*** (-2.676)	-0.044** (-2.219)	0.011 (0.603)	-0.047*** (-3.899)	0.017 (0.797)	0.014 (0.927)
N	273	273	273	273	273	98	98	98	98	98
R ²	0.23	0.27	0.51	0.75	0.21	0.51	0.33	0.71	0.87	0.38
Redundant Fixed Effects Test										
t-stat.	3.05	1.33	3.08	6.72	1.52	2.41	1.58	2.97	4.44	1.16
p-val.	0.00	0.17	0.00	0.00	0.09	0.00	0.09	0.00	0.00	0.32

Note: The impacts are statistically significant at 1%, 5% and 10%, according to the classification ***, ** and * respectively (value of the t statistic in parentheses).

Table 12– Robustness Estimation (Debt)

Fiscal Instrument									
(1)			(2)			(3)			
			Debt < 60% GDP			Debt > 60% GDP			
	Primary Balance	Δ Revenue	Δ Primary Expenditure	Primary Balance	Δ Revenue	Δ Primary Expenditure	Primary Balance	Δ Revenue	Δ Primary Expenditure
Constant	-0.620** (-3.170)	8.536*** (6.752)	18.43*** (10.58)	-0.726*** (-3.251)	12.13*** (5.616)	18.72*** (9.602)	-0.667* (-1.912)	8.749*** (5.306)	18.17*** (5.831)
α Lagged Fiscal Instrument	0.545*** (11.15)	-0.194*** (-6.204)	-0.411*** (-9.026)	0.462*** (6.335)	-0.273*** (-4.987)	-0.416*** (-7.678)	0.498*** (6.339)	-0.204*** (-4.946)	-0.402*** (-5.200)
β ₁ Real GDP Growth	0.196** (2.546)	-0.012 (-0.330)	-0.522*** (-6.936)	0.121* (1.665)	-0.036 (-0.518)	-0.403*** (-4.938)	0.378** (2.354)	0.036 (0.780)	-0.643*** (-4.427)
β ₂ Δ Unemployment Rate	-0.672*** (-3.090)	-0.056* (-1.928)	0.065 (1.100)	-0.726*** (-3.271)	-0.150** (-2.425)	-0.062 (-0.776)	-0.592 (-1.479)	-0.002 (-0.080)	0.109 (1.077)
β ₃ Δ Debt-to-GDP t-1	0.079 (1.599)	0.048** (2.277)	-0.040 (-0.858)	-0.004 (-0.058)	0.104** (2.133)	0.027 (0.477)	0.084 (1.092)	0.015 (0.762)	-0.086 (-1.101)
β ₄ Real LT Interest Rate	0.078 (1.061)	0.063 (1.364)	-0.149 (-1.621)	0.010 (0.107)	-0.028 (-0.307)	-0.098 (-0.879)	0.123 (1.053)	0.132*** (2.750)	-0.123 (-0.828)
δ ₁ Real GDP Growth	0.183*** (3.887)	-0.113*** (-5.843)	-0.397*** (-10.42)	0.256*** (5.386)	-0.080*** (-3.073)	-0.402*** (-12.97)	0.091 (0.995)	-0.174*** (-6.134)	-0.369*** (-4.193)
δ̄ ₂ Δ Unemployment Rate	-0.488*** (-4.077)	-0.001 (-0.073)	-0.021 (-0.440)	-0.229* (-1.755)	-0.105** (-2.311)	-0.085 (-1.391)	-0.941*** (-4.368)	0.062* (1.898)	-0.021 (-0.238)
No Elections	-0.061** (-1.972)	0.002 (0.180)	0.062** (2.175)	-0.110** (-2.379)	0.023 (0.771)	0.114*** (3.072)	-0.029 (-0.642)	-0.011 (-0.790)	0.025 (0.558)
δ̄ ₃ Δ Debt-to-GDP t-1	0.107** (2.233)	0.009 (0.368)	0.000 (0.016)	0.074 (1.600)	0.025 (0.726)	-0.036 (-0.877)	0.154 (1.576)	0.016 (0.419)	0.152 (1.261)
N	372	372	372	175	176	176	196	196	196
R ²	0.67	0.27	0.47	0.77	0.30	0.67	0.36	0.46	0.39
Redundant Fixed Effects Test									
t-stat.	2.08	2.51	3.58	2.49	2.04	3.62	1.34	3.05	1.99
p-val.	0.00	0.00	0.00	0.00	0.02	0.00	0.19	0.00	0.02

Note: The impacts are statistically significant at 1%, 5% and 10%, according to the classification ***, ** and * respectively (value of the t statistic in parentheses).

Table 13– Wald Tests (Table 12: output 1)

Wald Test			
Primary Balance			
	Null Hypotesis	t-stat.	p-val.
$\beta_1 - \delta_1 = 0$	Real GDP Growth	0.16	0.87
$\beta_2 - \delta_2 = 0$	Δ Unemployment Rate	-0.75	0.46
$\beta_3 - \delta_3 = 0$	Δ Debt-to-GDP t-1	2.75	0.01
$\beta_4 - \delta_4 = 0$	Real LT Interest Rate	-0.36	0.72
Revenue			
	Null Hypotesis	t-stat.	p-val.
$\beta_1 - \delta_1 = 0$	Real GDP Growth	2.48	0.01
$\beta_2 - \delta_2 = 0$	Δ Unemployment Rate	-2.48	0.01
$\beta_3 - \delta_3 = 0$	Δ Debt-to-GDP t-1	1.83	0.07
$\beta_4 - \delta_4 = 0$	Real LT Interest Rate	1.06	0.29
Primary Expenditure			
	Null Hypotesis	t-stat.	p-val.
$\beta_1 - \delta_1 = 0$	Real GDP Growth	-1.56	0.12
$\beta_2 - \delta_2 = 0$	Δ Unemployment Rate	2.04	0.04
$\beta_3 - \delta_3 = 0$	Δ Debt-to-GDP t-1	-2.03	0.04
$\beta_4 - \delta_4 = 0$	Real LT Interest Rate	-1.50	0.14

Table 14 – Robustness Estimation (EMU)

Fiscal Instrument									
(1)			(4)			(5)			
			EMU			non - EMU			
	Primary Balance	Δ Revenue	Δ Primary Expenditure	Primary Balance	Δ Revenue	Δ Primary Expenditure	Primary Balance	Δ Revenue	Δ Primary Expenditure
α	Constant	-0.620*** (-3.170)	8.536*** (6.752)	18.43*** (10.58)	-0.668*** (-2.797)	8.022*** (4.877)	-0.554* (-1.743)	9.238*** (3.100)	24.14*** (8.375)
	Lagged Fiscal Instrument	0.545*** (11.15)	-0.194*** (-6.204)	-0.411*** (-9.026)	0.559*** (9.793)	-0.185*** (-4.747)	0.142 (1.302)	-0.213** (-2.571)	-0.580*** (-6.678)
	β ₁ Real GDP Growth	0.196** (2.546)	-0.012 (-0.330)	-0.522*** (-6.936)	0.324*** (3.179)	-0.042 (-0.944)	-0.050 (-0.461)	-0.017 (-0.170)	-0.477*** (-3.801)
	β ₂ Δ Unemployment Rate	-0.672*** (-3.090)	-0.056* (-1.928)	0.065 (1.100)	-0.659** (-2.524)	-0.031 (-0.993)	-0.872** (-2.540)	-0.081 (-0.858)	0.087 (0.670)
Elections	β ₃ Δ Debt-to-GDP t-1	0.079 (1.599)	0.048** (2.277)	-0.040 (-0.858)	0.108* (1.776)	0.024 (1.059)	-0.063 (-0.749)	0.111 (1.593)	-0.007 (-0.088)
	β ₄ Real LT Interest Rate	0.078 (1.061)	0.063 (1.364)	-0.149 (-1.621)	0.103 (1.112)	0.112** (2.166)	-0.098 (-0.948)	-0.054 (-0.449)	-0.184 (-1.243)
No Elections	δ ₁ Real GDP Growth	0.183*** (3.887)	-0.113*** (-5.843)	-0.397*** (-10.42)	0.176*** (2.676)	-0.092*** (-3.619)	0.191*** (3.279)	-0.161*** (-4.434)	-0.399*** (-8.845)
	δ ₂ Δ Unemployment Rate	-0.488*** (-4.077)	-0.001 (-0.073)	-0.021 (-0.440)	-0.901*** (-5.311)	0.021 (0.797)	-0.060 (-0.419)	-0.024 (-0.350)	-0.034 (-0.344)
	δ ₃ Δ Debt-to-GDP t-1	-0.061** (-1.972)	0.002 (0.180)	0.062** (2.175)	-0.024 (-0.655)	0.002 (0.142)	-0.218*** (-3.831)	-0.036 (-0.865)	0.137** (2.553)
	δ ₄ Real LT Interest Rate	0.107** (2.233)	0.009 (0.368)	0.000 (0.016)	0.148* (1.905)	0.058 (1.523)	-0.020 (-0.419)	-0.052 (-1.106)	-0.070 (-1.201)
Redundant Fixed Effects Test									
N	372	372	372	372	273	273	99	99	99
R ²	0.67	0.27	0.47	0.68	0.27	0.43	0.83	0.45	0.73
t-stat.	2.08	2.51	3.58	1.38	1.89	2.13	3.14	0.94	2.38
p-val.	0.00	0.00	0.00	0.14	0.02	0.01	0.00	0.54	0.01

Note: The impacts are statistically significant at 1%, 5% and 10%, according to the classification ***, ** and * respectively (value of the t statistic in parentheses).

Appendix 2

Table A2– Elections Characteristics

Country	Electoral Years	Nº of Elections	Heads of Government	Type
Belgium	1995; 1999; 2004; 2007; 2009; 2010; 2014	7	Prime-Minister	Federal
Germany	1998; 2002; 2005; 2009; 2013; 2017	6	Chancellor	Federal
Estonia	1995; 1999; 2003; 2007; 2011; 2015	6	Prime-Minister	Parliamentary
Ireland	1997; 2002; 2007; 2011; 2016	5	Prime-Minister	General Elections
Greece	1996; 2000; 2004; 2007; 2009; 2012; 2015	7	Prime-Minister	Parliamentary
Spain	1996; 2000; 2004; 2008; 2011; 2015; 2016	7	Prime-Minister	General Elections
France	1997; 2002; 2007; 2012; 2017	5	President	Presidential
Italy	1996; 2001; 2006; 2008; 2013	5	President	General Elections
Cyprus	1998; 2003; 2008; 2013	4	President	Presidential
Latvia	1995; 1998; 2002; 2006; 2010; 2011; 2014	7	Prime-Minister	Parliamentary
Lithuania	1996; 2000; 2004; 2008; 2012; 2016	6	Prime-Minister	Parliamentary
Luxembourg	1999; 2004; 2009; 2013	4	Prime-Minister	General Elections
Malta	1996; 1998; 2003; 2008; 2013; 2017	6	Prime-Minister	General Elections
Netherlands	1998; 2002; 2003; 2006; 2010; 2012; 2017	7	Prime-Minister	General Elections
Austria	1995; 1999; 2002; 2006; 2008; 2013; 2017	7	Chancellor	Parliamentary
Portugal	1995; 1999; 2002; 2005; 2009; 2011; 2015	7	Prime-Minister	Parliamentary
Slovenia	1996; 2000; 2004; 2008; 2011; 2014	6	Prime-Minister	Parliamentary
Slovakia	1998; 2002; 2006; 2010; 2012; 2016	6	Prime-Minister	Parliamentary
Finland	1995; 1999; 2003; 2007; 2011; 2015	6	Prime-Minister	Parliamentary

Appendix 3

Table A3 – Summary statistics, full panel, 1995-2017

STATISTICS	Mean	Median	Maximum	Minimum	Std. Dev.	Kurtosis	Observ.
Balance	-2.75	-2.55	6.86	-32.06	3.69	-1.52	437
Primary balance	-0.05	0.16	9.57	-29.23	3.45	14.9	437
Debt	60.62	58.88	178.91	3.66	35.93	3.28	437
Real GDP growth	2.72	2.74	25.12	-14.81	3.68	9.13	437
Unemployment rate	9.22	8.40	27.50	1.90	4.45	5.19	435
Real LT interest rate	2.35	2.07	24.40	-12.35	3.33	13.39	396
Direct taxes	10.91	10.59	20.47	4.35	3.15	2.35	437
Indirect Taxes	12.89	12.86	17.15	8.45	1.63	2.45	437
Compensation to employees	10.94	10.87	15.00	7.03	1.82	2.19	437
GFKF	3.58	3.68	6.32	1.55	1.03	2.51	437
Other current expenditure	28.81	28.93	39.70	14.00	5.96	1.94	437

Appendix 4

Table A4 – Unit Root Tests

Variable	Method	Statistic	Prob.	Obs
Balance	Levin, Lin & Chu t	-2.03	0.02	399
	Fisher	87.21	0.00	
CAPB	Levin, Lin & Chu t	-2.69	0.00	399
	Fisher	74.56	0.00	
Direct Taxes	Levin, Lin & Chu t	-2.06	0.02	399
	Fisher	59.86	0.01	
Indirect Taxes	Levin, Lin & Chu t	-1.05	0.15	399
	Fisher	52.06	0.06	
Compensation to Employees	Levin, Lin & Chu t	-4.08	0.00	399
	Fisher	76.11	0.00	
GFKF	Levin, Lin & Chu t	-1.58	0.06	399
	Fisher	63.46	0.01	
Other C. Expenditure	Levin, Lin & Chu t	-3.45	0.00	399
	Fisher	68.97	0.00	
Primary Balance	Levin, Lin & Chu t	-2.06	0.02	399
	Fisher	75.05	0.00	
Revenue	Levin, Lin & Chu t	-0.97	0.16	399
	Fisher	51.76	0.07	
Prim. Expenditure	Levin, Lin & Chu t	-2.45	0.01	399
	Fisher	65.99	0.00	

Note: The values are statistically significant at 1%, 5% and 10%.. Levin, Lin & Chu t method for common unit root process, and Fisher tests for individual unit root process.