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MASTER´S FINAL WORK

DISSERTATION

THE DETERMINANTS OF THE FISCAL POLICY STANCE: EVIDENCE FROM THE EU COUNTRIES

PEDRO DAVID TORRES COELHO

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SUPERVISION:

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Abstract

The main objective of this dissertation is to study the connection between the fiscal policy stance and four variables: Fiscal Rules; Government Decentralization; Financial Stress; Electoral Calendar. The empirical analysis had as sample the 28 member countries of the European Union and covers the period between 1990 and 2017. The estimators used were the Ordinary Least Squares and the Two-Stage Least Squares for an unbalanced panel dataset. Provided the database and the estimation method, we tested the hypothesis of a positive connection between the fiscal policy stance indicators (primary balance, primary expenditure and cyclically adjusted primary balance) and a high number of fiscal rules application; a high level of government decentralization; a lower financial stress index; inexistence of parliamentary elections in the year of analysis.

According with the results obtained throughout this study, we found a negative relation between the fiscal policy stance and the taxation decentralization level. Besides, we discovered that in the years with an increase in the financial stress the indicators of fiscal policy stance showed a deterioration in their levels. Regarding the rest of the studied variables, no statistically significant result was obtained to prove any relation between them and the budgetary outcomes.

Keywords: Fiscal policy; Decentralization; Fiscal Rules; Financial Stress; Elections; EU-28

JEL Codes: C33, E32, E62, G15, H62, H77

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Abbreviations

2SLS - Two-Stage Least Squares

CAPB – Cyclically Adjusted Primary Balance

CLIFS – Country-Level Index of Financial Stress

EC – European Commission

ECB – European Central Bank

EMU – European Monetary Union

EU – European Union

FPS – Fiscal Policy Stance

FRI – Fiscal Rules Index

FSI – Financial Stress Index

IV-FE – Instrumental Variable – Fixed Effects

OLS – Ordinary Least Squares

PB – Primary Balance

PE – Primary Expenditure

SGP – Stability and Growth Pact

TFEU - Treaty on the Functioning of the European Union

1. Introduction

In the last decade, the European Union member countries have faced the worst economic recession ever since its creation and the impact that it had on the public budgets has raised some concerns about their sustainability and led public debt to record values (Tagkalakis, 2012). After the intervention of the policy makers, came the monetary authority (ECB) that with the adoption of flexible policies reverted the cycle of recession that was installed in the EU (Beyer et al., 2017). However, such intervention by the monetary authorities has exhausted almost all the options of these institutions to support the future economic growth and reverse the next negative cycle of the economy, which highlights the relevance of the fiscal policy for the future.[1].

It is with this scenario that we considered relevant to distinguish which ones are the main variables of the fiscal policy that might improve it or restrain it. The most studied are the fiscal rules; the financial crisis; the electoral cycle and the degree of government decentralization (Afonso & Hauptmeier, 2009; Tagkalakis, 2012).

In the European Union, each country conducts its own fiscal policy, which means that in an economic union this fact could generate some malfunction within its stability if a member country did not maintain a proper fiscal discipline. Consequently, the European institutions have created some supranational rules within the Stability and Growth Pact in 1997 to ensure that such discipline is kept[2]. Therefore, it is of most relevance to assess the impact of such rules have had in the budget balances.

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[1] See the President of the ECB recent declarations.
[2] Protocol 12 of the TFEU provides further details on the excessive deficit procedure, including the reference values on deficit and debt.

Besides the fiscal rules, in the last years there has been an increasing interest by the governments and by the public finance literature in fiscal decentralization programs. These are based on the redistribution of expenditure functions and/or transference of some revenue sources to the local governments. In the European Union, there are countries that have also decided to adopt such strategy to improve their efficiency and reduce their deficits with such gains. Member countries such as Germany, Spain or Belgium are characterized by a higher fiscal decentralization (Afonso & Hauptmeier, 2009). So, it is important to study whether a more decentralized country can ensure better fiscal results.

Another well-known potential determinant of the fiscal policy is the significance of the electoral cycles. According with the literature, there are two different models that support the idea that the electoral cycles might have an impact on the fiscal policy, the "opportunistic" and the "partisan" (Alesina & Roubini, 1992). The opportunistic models defend that the policy makers tend to maximize their popularity in the previous year of election to ensure its re-election, while the partisan ones argue that when in power different parties defend different interests and therefore, the macroeconomic results might be different based on distinct fiscal policies.

All these topics are based on political decisions or derived from it. However, one cannot ignore the impact of certain events such as the financial crisis caused by the Subprime speculation. Such incident, led to many difficulties of the financial system in keeping their support to the economy and have forced many governments to intervene in some of those institutions to avoid a further contamination to the whole system

([Tagkalakis, 2012](#)). These interventions included equity injections, subsidies, asset purchases and loan guarantees, with the losses of the banking sector being covered by the governments that were forced to assume large deficits not only caused by these assistances, but also by the automatic stabilizers that stood negative due to the social impacts of the crisis.

It is with these four main variables that we developed this study that not only covers a wider time-period when compared with the previous ones, but also uses different sources to some of the variables that provide a more accurate information about their impact on the fiscal policy.

The structure of this work can be described as it follows: In section 2 we provide a literature review in which we describe the previous studies related with the fiscal policy stance and its relationship with the four variables that we are now analysing. The section 3 provides a summary regarding all the variables and dataset that we will use in the empirical study. In section 4, it is described our approach and model used to provide an empirical analysis and are presented the main outcomes of it. Section 5 summarizes the main conclusions of this dissertation.

2. Related literature

2.1. Fiscal Rules

Several different authors have defended and concluded that fiscal outcomes are influenced by these four variables, although the obtained results are not always the same. In the literature, there have been several attempts to explain the effects of the numerical fiscal rules on the fiscal policy ([Ayuso et al., 2007](#); [Debrun et al., 2008](#);

Szymanska, 2016) including some who have concluded that the expenditure rules (that

regulate the level of public expenditure) are much more effective (Ayuso, 2012), given

that this part of the public budget is much easier to control by the governments.

The most usual definition of a fiscal rule cited by the literature is the one

defended by Kopits & Symansky (1998), that specifies a fiscal rule as a permanent

constraint on fiscal policy characterized in terms of an indicator of overall fiscal

performance. These authors have also classified the fiscal policy rules in three major

types, the balanced-budget or deficit rules, the borrowing rules and the debt or reserve

rules.

The application of such rules may generate trade-offs, as Debrun et al. (2008)

defended. The first one is associated to the fact that these (mainly the balanced-budget

ones) can create a tension between the objective of a proper fiscal discipline and the

adoption of a certain fiscal positions appropriated to the economic cycle. The second

trade-off is related to the relation between low deficits and the preservation of enough

public investment to maintain a proper supply of public goods. There is also another

trade-off associated to the fiscal rules that might compromise the budgetary

transparency, due to the fact that these can lead to lower official deficits values thanks

to one-off measures, operations outside the budget and via creative accountability.

In general, all outcomes point to a positive impact of the fiscal rules on the

budgetary balances. Ayuso et al. (2007) has concluded that there is link between

numerical rules and the public budget balances, in which an increase in the share of

government finances covered by such rules leads to lower deficits. Afonso & Guimarães

(2014) showed that countries with a higher fiscal rules index tend to have better cyclically adjusted primary balances, however there was no evidences that the causality runs from the fiscal rule index (FRI) to the CAPB results. Debrun et al. (2008) was also able to find such connection, though the impact of the fiscal rules weakens when the dependent variable is the level of public debt instead of the budget balance. Afonso & Hauptmeier (2009) has detailed that the existence of fiscal rules positively contributes to a higher responsiveness of primary surpluses to government indebtedness.

Ayuso (2012) has dedicated his study to the impact of the fiscal rules on the expenditure side and tried to describe the reason behind the fact that these rules seem to be more effective than the others. The expenditure rules characteristics allow better control of the public finances, since, according with the author, the expense side of the government budget is the one that the policy makers are able to control in a most direct form. These types of rules are simpler to formulate and control, which allows a better transparency on the governments' accountability. Afonso & Guimarães (2014) could also conclude that an expenditure rule index was able to explain the developments of the public primary expenditure, and therefore makes the development of more rules focused on that side of the budget justifiable.

2.2. Government Decentralization

Alongside with the fiscal rules, the degree of government decentralization has been the subject of many studies of its impact on the public finances of a country. Over the years, the number of countries that are adopting decentralization policies are increasing (Mello, 2000), however what's truly happening, according with Oates (1999) is an increasing complexity and specialization of the structure of the public sector.

The idea that a higher decentralization level leads to benefits in a country has its origin in two different models. Baskaran (2010) shows that these models are the Theorem of the Decentralization and the Public Choice. The first one defends that a decentralized offer of public goods is capable of solving the problems of several inhabitants and regions with different cultures, while the second refers the importance that a separated state has on the economy due to a competition between regions that restricts the ability to reduce or increase taxes.

Some studies point to a successful result of that strategy in terms of the level of public debt (Baskaran, 2010; Horováthová et al., 2012). Mello (2000) claims that a decentralized country can obtain gains of efficiency and a reduction on the costs of information and transaction due to the fact that a local government has a better knowledge of the true needs of their population than a centralized government.

However, the decentralization also has its disadvantages. Prud'homme (1995) has tried to identify the negative side of that procedure. The first weakness of a decentralization process to the public finances, according with that author, is the idea that the decentralization leads to gains of efficiency, which according with his study, can be criticised because this fact assumes several hypotheses that are not always suitable to a developing country, and it focus solely on the efficiency in the demand side but ignores the one on the supply side. The author also refers that with the decentralization, the level of corruption on a country will increase, since it is more likely that it happens on a local level than in a national level.

Baskaran (2010) also presented some disadvantages of a decentralization process, which includes, a restrained central government that has a lower ability to conduct stabilization policies, and a competition between regions that may lead to higher deficits in a local level.

The most common method of measuring the decentralization level of a country is the share of the local governments spending and/or revenue on the national budget (Afonso & Hauptmeier, 2009). Stegarescu (2005) defends an alternative way to assess the level of decentralization in a country, in which the vertical structure of the government has more importance than the one that is given by the conventional method. The fact that a government concedes higher shares of revenue/expenditure of the public budget to local governments does not necessarily means a higher decentralization level, since the action of the lower levels of government may be restrained by certain rules of the central government.

2.3. Political Cycle

The importance that the political cycle has on the balance of the public budget has been studied throughout the years based on the initial work of Nordhaus (1974) relating the economic cycle and the political cycle according with the elections. In the pre-election periods, there is an improvement in the level of unemployment in the countries under review, whereas after the elections this level has deteriorated, which means that in a perfect democracy with retrospective evaluation of the parties it is possible to claim that they tend to take unfair decisions to the future generations. The author also claims that there is a predictable pattern of policy in which, there is a relative

austerity in the early years of the mandate, and it ends with an expansionary policy before the elections.

Alesina & Roubini (1992) differentiate the two models that appear in the literature about the political cycle in the opportunistic or the partisan incentives of the policymakers. The first one defends that a policymaker maximizes its popularity or the probability of re-election, while the second shows that different parties in power will lead consequently to different policies according with their supporting groups. In the results obtained in their study there is no opportunist cycle on the part of the governments that relates the occurrence of elections with the level of output and/or the level of unemployment. However, there is a political cycle associated with the type of elected government that has some influence on the economic cycle.

Afonso & Hauptmeier (2009) were also able to identify a negative influence that a coming election has on the improvement of the primary balance, as a response to higher levels of debt. The same effect was verified on the CAPB, however the primary spending almost did not suffer any modifications under the same conditions.

2.4. Financial Stress

Recently, an increasing number of studies about the impact of the financial crisis on the fiscal stance of different countries was done. Tagkalakis (2012) has concluded that a financial crisis leads to an increase in the debt stock and the size of the financial sector significantly affects the negative effects of such event. Furceri & Zdzienicka (2010) were also able to find a negative relation in which bank crises are associated with a significant and lasting increase in public debt.

Tagkalakis (2012) showed that such negative impacts of the financial crisis have

had its origins in the support packages that governments were forced to give to the

financial system in order to prevent a systematic impact of the financial crisis in all the

sectors of the economy of a country.

It is based on the outcomes obtained by these authors that we can stablish a

connection between the fiscal policy stance and the four variables that we will analyse

in the following sections.

3. Data and Methodology

3.1 Data

The database developed for this study covers annual data of the 28 European

Union member countries between 1990 and 2017[3]: Austria, Belgium, Bulgaria, Croatia,

Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary,

Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal,

Romania, Slovakia, Slovenia, Spain, Sweden and United Kingdom.

Most of the information regarding the macroeconomic variables were collected

from the AMECO dataset (Table B. I) whereas the data regarding decentralization of the

government was collected from the Eurostat database. The CLIFS – Country-Level Index

of Financial Stress developed by the European Central Bank was used as measurement

for financial market crisis indicator, while the information regarding the electoral

calendar of the member countries was collected using the data provided by Döring,

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[3] To cover all the stages of the European integration and taking into account that this was the maximum timespan of some datasets, a time period of 1990-2017 was considered, though for most of the countries there´s a lack of macroeconomic information before 1995.

Holger & Manow (2018). To assess the impact of the fiscal rules on the fiscal policy

stance it was used the Standardised Fiscal Rules Index[4] published by the European

Commission.

3.2 Fiscal Policy Stance

To evaluate the fiscal policy stance of the EU member countries we used two

governmental indicators, the primary balance and the primary expenditure. The primary

balance its used due to a broader coverage that it has of all the components of the public

budget, while at the same time excludes the impact of the interest related expenditures

that the government it is not capable to control directly (Afonso & Hauptmeier, 2009).

Following some studies (Afonso & Guimarães, 2014; Debrun et al., 2008), we also

complemented our analysis using the primary expenditure as a good indicator of the

fiscal policy stance, given that the expenditures side of the government budget can be

easily controlled by the public authorities when compared with the revenues.

Afterwards, we used the cyclically adjusted primary balance[5] as a robustness test

to our model due to the direct link that it has with the primary balance. The main

difference of these indicators is the fact that the CAPB excludes all the effects that might

be associated to the cyclical behaviour of the economy and therefore expose the part of

the public budget that is connected to the government policies.

3.3 Fiscal Rules

The use of an index to evaluate the impact that the fiscal rules might have in the

fiscal position of the governments is widely proposed by previous studies (Afonso &

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[4] This index is obtained based on each rule strength, coverage and weight.
[5] Szymanska (2016) and other authors have also used this indicator as a dependent fiscal variable.

Guimarães, 2014; Afonso & Hauptmeier, 2009; Szymanska, 2016). In this study we used the FRI computed and compiled by the European Commission. This index is based on information that the EC collected directly from the European Union member countries. The Commission took into consideration all types of numerical fiscal rules at all levels of the government from 1990 until 2017.

According with this dataset the number of numerical fiscal rules has considerably increased when compared the number of rules in force at the beginning of the 1990s to the ones in 2017 (Graph B. I). Throughout these years, the majority of these rules were focused on the budget-balance and only recently the number of expenditure and debt related rules started to increase considerably. The number of revenue rules remain residual during the entire dataset.

Based on the data collected for the year of 2017, most of the rules are put into force to the general government and within those, the budget-balance are the most commonly applied (Graph B. II). A similar scenario can be found when took into consideration the rules applied to the local government (the second most common). Only in the central government the budget-balance rules are surpassed by the expenditure ones.

3.4 Government Decentralization

The level of decentralization of the 28 EU member countries can be measured in three different point of views[6] to assess which one might have a bigger impact on the fiscal policy of these countries. On our baseline model we estimated the connection

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[6] Other studies such as Afonso & Hauptmeier (2009) adopted similar methodology.

between the fiscal policy and the expenditure decentralization (EXPDEC). Furthermore, we also assessed the link between the fiscal stance and the revenue decentralization (REVDEC) and taxation decentralization (TAXDEC).

To determine the level of sub-national share of government for each one of those variables we took into consideration the data provided by Eurostat for the total expenditure, total revenue and sum of taxes (direct, indirect and capital), for three different levels of government (Central - S1311; Regional – S1312; Local – S1313). Data regarding the social security (S1314) was also available, however this was not considered for this study since it provides an overall service that is not directly linked to decisions of the other sub-sectors of the government (Afonso & Hauptmeier, 2009). For any of those decentralization variables, we have, for country i and period t:

(1) $$Dec_{it} = \frac{S1312_{it} + S1313_{it}}{S1311_{it} + S1312_{it} + S1313_{it}}$$

Based on the results obtained in (1) for every EU member countries (Table B. II), throughout the period of this analysis it is possible to conclude that countries such as Germany and Spain present values above 50% for the share of revenue and expenditure allocated to sub-national authorities. On the other hand, countries such as Greece and Ireland don't even reach a 10% level of share in revenues and expenditures of the general government.

3.5 Electoral Cycle

To test the relationship between the electoral cycle and the fiscal policy position we took into consideration the information provided by the Parlgov database stable version of 2018. This dataset is composed by all relevant information that can be

retrieved from elections held in all EU and most OECD democracies (37 countries). In its

wider range, it covers the period of 1901 – 2017 for some countries.

Following Afonso & Hauptmeier (2009), the influence of the electoral cycle in the

fiscal policy stance of the EU member countries can be evaluated by using a dummy

variable, defined as follows

$$(2) \quad Elections_{it} = \begin{cases} 1, if\ the\ Member\ State\ i\ held\ parlamentary\ elections\ in\ t \\ 0, otherwise \end{cases}$$

3.6 Financial Stress

The connection between the financial market indicators and the fiscal policy

stance is assessed in this study based on the CLIFS, an index published on a monthly

basis by the European Central Bank for each of the EU member country and it includes

six, mainly market-based, financial stress measures that capture three financial market

segments: equity markets, bond markets and foreign exchange markets. In addition,

when aggregating the sub-indices, the CLIFS takes the co-movement across market

segments into account. Given the monthly basis of the CLIFS, the variable FSI used in this

study is computed based on the yearly average of that index. Similar approach was used

by Tagkalakis (2012), with a different database.

The effects of the 2007 – 2008 financial crisis and its subsequent consequences

can then be evaluated using the information collected in this index. According with the

data provided by the ECB it is possible to observe that the effects of such event were

visible not only in the largest economies of the European Union such as Germany,

France, United Kingdom and Spain but also in other countries such as Ireland, Portugal

and Greece (Graph B. III to Graph B. IX).

3.7 Control Variables

To assess the impact of certain events on the fiscal policy stance of the EU

member countries, a series of Dummy variables were considered. We included the

following events in our study:

- The impact of the early stages of the European Monetary Union (1994 –
  1998) was measured using the variable EMU defined as it follows for country
  i and period t (Ayuso et al., 2007; Debrun et al., 2008):

$$(3) \quad EMU_{it} = \begin{cases} 1, if \ the \ country \ i \ is \ a \ founder \ member \ of \ the \ EMU \\ 0, otherwise \end{cases}$$

- The introduction of the Stability and Growth Pact it's evaluated in this study
  using the variable SGP and it is defined for country i and period t as (Ayuso et
  al., 2007; Debrun et al., 2008):

$$(4) \quad SGP_{it} = \begin{cases} 1, if \ the \ country \ is \ a \ member \ of \ the \ Euro \ Area \ after \ 1998 \\ 0, otherwise \end{cases}$$

- As an effect of the consecutive enlargements of the European Union after
  2003 it is important to evaluate the impact it has in the new member
  countries. Therefore, the variable ENL was used to assess such impact and it
  is defined for country i and period t as it follows (Ayuso et al., 2007; Debrun
  et al., 2008):

$$(5) \quad ENL_{it} = \begin{cases} 1, if \ the \ country \ is \ a \ new \ EU \ member \ state \ after \ 2003 \\ 0, otherwise \end{cases}$$

As an indicator for the cyclical economic conditions we used the lagged Output gap measured as the difference between the actual and potential gross domestic product ([Tagkalakis, 2012](#)). The lagged Debt-to-GDP was used to control past developments in government debt.

3.8 Descriptive statistics

Table I presents the descriptive statistics for the variables considered in this study. Furthermore, Table B. IV shows the averages of each variables per country.

Table I - Descriptive Statistics, 1990-2017

Variables		N	MEAN	SD	MIN	MAX
Primary Balance (%)	PB	657	-0.064	3.307	-29.231	9.570
Primary Expenditure (%)	PE	657	42.221	6.415	21.254	62.254
Cyclically Adjusted Primary Balance (%)	CAPB	644	0.158	3.089	-27.012	9.425
Debt-to-GDP (%)	Debt	645	55.962	32.685	3.664	178.907
Output Gap (%)	Gap	699	-0.317	3.291	-15.901	17.084
Expenditure Decentralization Level (%)	EXPDEC	638	27.861	13.742	0.969	63.759
Revenue Decentralization Level (%)	REVDEC	638	29.318	13.841	1.068	62.883
Taxation Decentralization Level (%)	TAXDEC	638	14.654	12.543	0	52.168
Elections Dummy	Elections	784	0.269	0.444	0	1
Financial Stress Index	FSI	646	0.131	0.089	0.018	0.603
Standardised Fiscal Rules Index	Rules	784	0.001	1.001	-0.949	3.404
European Monetary Union Dummy	EMU	784	0.077	0.266	0	1
Stability and Growth Pact Dummy	SGP	784	0.357	0.479	0	1
Enlargement Dummy	ENL	784	0.213	0.410	0	1

The average Debt-to-GDP ratio for the 28 EU member countries is 55.962% which means that the European governments are fulfilling, on average, the 60% limit[7] for this macroeconomic indicator stablished by the Stability and Growth Pact. However, as we can see in the Table B. IV there are countries such as Greece whose debt level reached, on average, more than the double of that limit, which means that as an Euro Area member it is not complying with the SGP throughout the period in analysis.

In terms of the Decentralization Indexes, it is possible to observe that, on average, EU member countries tend to have a higher decentralization levels for revenues than for expenditures. Concerning the Output Gap, it presents a negative value, which suggests that, on average, the actual economic output is below the economy's full capacity for output.

Regarding the FSI and considering its range, one can say that, on average, the level of financial stress in the EU member countries remain low (since its mean it's closer to the minimum level observed), however one cannot ignore the effect that the financial crisis had on this index as we mentioned before.

By analysing Table B. III, it is possible to conclude that our baseline model it is not affected by Multicollinearity given that none of the correlation coefficients between the independent variables shows a value above 0.8[8].

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[7] According with the Protocol 12 of the TFEU.
[8] According with Gujarati (2003, p.359) a level of Pearson's correlation coefficient above 0.8 reveals a multicollinearity issue in the model.

To test the stationarity of the variables, we followed Afonso & Hauptmeier (2009) approach and applied the Im-Pesaran-Shin panel unit root test. The results (stated in Table B. V), indicate that the Debt variable it's the only one presenting a nonstationary behaviour and therefore, we considered its difference in the model (Baskaran, 2010) since it presented a better outcome on the mentioned test.

4. Empirical Strategy and Results

4.1 Econometric Approach

In this empirical study, the main hypothesis that we want to assess are:

- H1: A higher fiscal rule index (i.e. stronger and wider rules) have a positive influence on the government fiscal policy;

- H2: Higher levels of expenditure decentralization result in better and sustainable budgetary behaviour by the member countries;

- H3: When the member country held parliamentary elections, this event resulted in an expansionary fiscal policy by the government in that year;

- H4: An increase in the financial stress is associated to a deterioration of the fiscal policy stance of the EU member country.

The most common method used to test econometrically the impact of the explanatory variables on the fiscal policy of the government is through the creation of a fiscal reaction function. According with Bohn (1998), a country fiscal policy can be essentially described as the response of the primary balance to three determinants: cyclical fluctuations; past developments in government debt; institutional (political) determinants or temporary events.

Therefore, to test the hypothesis previously presented, we estimate the following equation:

$$(6) \qquad FPS_{it} = \alpha_i + \beta_1 \Delta Debt_{it-1} + \beta_2 Gap_{it-1} + \beta_3 EXPDEC_{it} + \beta_4 Election_{it} +$$
$$\beta_5 FSI_{it} + \beta_6 Rules_{it} + \beta_7 Control_{it} + \varepsilon_{it}$$

Where the dependent variable FPS is a proxy for the alternatives measures of the fiscal policy stance (primary balance and primary expense) of the member country i (i = 1, 2, … , 28) and year t (t = 1990, 1991, … , 2017). Whereas the explanatory variables are ΔDebt, Gap, EXPDEC, Election, FSI, Rules and Control. ΔDebt stands for the lagged change in debt-to-GDP ratio (Tagkalakis, 2012), Gap represents the lagged output gap in percentage of the potential GDP, EXPDEC represents the government expenditure decentralization, Election represents a dummy variable for the electoral calendar, FSI the value of the financial stress index and Rules the value of the fiscal rules index. Control represents a set of dummy variables that might have additional explanatory power focused on specific events. α represents the individual effects of each country and ε stands for a time- and country-specific error term.

Considering the absence of data for some variables in certain years and countries (we can perceive this fact by analysing the difference between the number of observations in Table I), it is possible to conclude that we are estimating an unbalanced panel. Furthermore, we can consider our panel dynamic, given that our model uses lagged explanatory variables. Therefore, our panel data assumes a dynamic unbalanced specification (Baltagi, 2005).

Based on this consideration, we excluded the LSDVC[9] method, since it is not compatible with an unbalanced panel data. A Breusch and Pagan Lagrangian multiplier test for random effects was performed and its results showed that a random effects model it was not appropriated. Forwardly, we performed the Modified Wald test for groupwise heteroskedasticity in fixed effect regression model and it detected the presence of heteroskedasticity and therefore the need to robust our standard errors. Following Afonso & Guimarães (2014) we adopted a fixed effects estimator in our baseline model.

4.2 Empirical Results

In Table II it is presented the results of the regression based on the fiscal reaction function. Firstly, we used the primary balance as our measure of the fiscal policy stance and regressed it with each one of the variables independently. From columns (1) – (4) of the Table II the results of our regression show that the primary balance is only statistically influenced by the financial stress index, i.e. as the FSI increases by 1 the Primary Balance tend to be affected by -10.4058% of GDP. The relation between these variables supports the idea that in the event of a financial crisis policy makers tend to adjust the fiscal policy to reduce the impact of such incident (Tagkalakis, 2012).

In column (5) all the variables in study are combined in the regression without the control variables for certain events. The results remain the same as the previous ones in terms of statistical significance, with only the FSI presenting a strong statistical connection with the dependent variable, with its coefficient showing a negative relation between the FSI and the PB.

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[9] According with the Judson and Owen (1999) approximation.

According with the results presented in column (6), where all variables are combined (including the event-related ones), it is possible to conclude that once again only the FSI presents a strong statistical relation with the dependent variable. Regarding the event-related dummies, a slightly significant coefficient was obtained for both the EMU and the ENL, which means that the 15 countries that were on the run to the EMU tend to present an improvement in the primary balance as well as the countries that joined the EU afterwards.

Table II - OLS (Fixed Effects) results for the fiscal policy stance (primary balance)

Variables	OLS (1)	OLS (2)	OLS (3)	OLS (4)	OLS (5)	OLS (6)
Primary Balance (-1)	0.5728*** (0.0694)	0.5719*** (0.0619)	0.6033*** (0.0689)	0.5703*** (0.0621)	0.5972*** (0.0806)	0.5871*** (0.0819)
Δ Debt-to-GDP (-1)	-0.1168** (0.0476)	-0.1233** (0.0471)	-0.0465 (0.0454)	-0.1203** (0.0462)	-0.0488 (0.0459)	-0.0453 (0.0468)
Output Gap (-1)	-0.1236*** (0.0249)	-0.1228*** (0.0281)	-0.0665* (0.0375)	-0.1108*** (0.0304)	-0.0749* (0.0374)	-0.0661 (0.0416)
EXPDEC	0.0346 (0.0481)				0.0444 (0.0554)	0.0531 (0.0512)
Election		-0.2684 (0.1954)			-0.1301 (0.2073)	-0.1247 (0.2031)
FSI			-10.4058*** (2.2109)		-10.6446*** (2.5400)	-10.6138*** (2.5077)
Rules				0.1466 (0.0892)	-0.0732 (0.0877)	-0.0143 (0.1091)
EMU						0.9342** (0.3404)
SGP						-0.2805 (0.4078)
ENL						0.5870* (0.3263)
constant	-0.9231 (1.3382)	0.1164*** (0.0415)	1.3637*** (0.2902)	0.0114 (0.0383)	0.1813 (1.3866)	-0.1782 (1.2480)
Number of Observations	575	579	544	579	540	540
Number of Countries	28	28	28	28	28	28
Prob>F	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Note: Robust standard errors in parentheses; ***significance at the 1% level; **significance at the 5% level; *significance at the 10% level

Considering the primary expenditure as our measure for the fiscal policy stance the results of the regression using the same fixed effects estimator are presented in Table III.

Table III - OLS (Fixed Effects) results for the fiscal policy stance (primary expenditure)

Variables	OLS (1)	OLS (2)	OLS (3)	OLS (4)	OLS (5)	OLS (6)
Primary Expenditure (-1)	0.6219***	0.6302***	0.6231***	0.6307***	0.6193***	0.6123***
	(0.0675)	(0.0656)	(0.0804)	(0.0671)	(0.0824)	(0.0811)
Δ Debt-to-GDP (-1)	0.1097*	0.1136**	0.0549	0.1113*	0.0573	0.0505
	(0.0553)	(0.0545)	(0.0527)	(0.0543)	(0.0524)	(0.0523)
Output Gap (-1)	0.0789	0.0794	0.0101	0.0710	0.0197	0.0066
	(0.0550)	(0.0553)	(0.0650)	(0.0605)	(0.0682)	(0.0717)
EXPDEC	-0.0327				-0.0249	-0.0385
	(0.0365)				(0.0342)	(0.0340)
Election		0.0780			-0.0278	-0.0381
		(0.1791)			(0.1915)	(0.1932)
FSI			11.0103***		11.2127***	11.1406***
			(2.3516)		(2.5267)	(2.4976)
Rules				-0.1192	0.1333	0.0263
				(0.1336)	(0.0980)	(0.1205)
EMU						-0.7736
						(0.4808)
SGP						0.3957
						(0.3625)
ENL						-0.1335
						(0.2206)
constant	16.7705***	15.5086***	14.5335***	15.5359***	15.3363***	15.9506***
	(3.3031)	(2.7542)	(3.2400)	(2.8118)	(3.9458)	(3.7483)
Number of Observations	575	579	544	579	540	540
Number of Countries	28	28	28	28	28	28
Prob>F	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Note: Robust standard errors in parentheses; ***significance at the 1% level; **significance at the 5% level; *significance at the 10% level

In this case, only the FSI variable showed, once again, statistically significant coefficients throughout all regressions in which it was used. Given the fact that the dependent variable is the primary expenditure, the coefficients for the FSI presented a

coherent reversion of the signal. This reversion is explained with the fact that the PE is negatively related with the PB (see equation 7) and therefore the results of the regressions using the PE as dependent variable will present a reversion in the signal of the coefficients.

(7) $Primary\ Balance = Revenues - Primary\ Expenditures$

Regarding the rest of the variables, in most of the cases the reversion of the signal also occurred, however none of the coefficients presented to be statistically significant.

All in all, we were able to find results that support one of the considered hypotheses and reject the others. Indeed, an increase in the financial stress leads to a deterioration of the fiscal policy stance in the EU member country. Therefore, H4 was supported by the results of this study. Regarding the rest of the hypothesis, although the obtained coefficients were consistent with the statement of some of those hypothesis (H2 and H3), there was not enough statistical significance to support a direct relationship between these facts and therefore, reject the rest of the hypothesis.

4.3 Robustness Test

To confirm the outcomes obtained in the baseline model, we performed some robustness tests. Firstly, instead of the use of the primary balance or expenditure as an indicator for the fiscal policy stance we used the cyclically adjusted primary balance (CAPB) following Szymanska (2016) and Ayuso et al. (2008). Forwardly, instead of using

the OLS (fixed effects) estimator, we used the 2SLS (IV-FE) estimator given that the first

one could present a considerable bias[10] when used in a dynamic panel regression.

The results of such regression are detailed in Table IV. Overall the outcomes

derived from the application of the 2SLS present to be similar to the ones obtained with

the OLS using the primary balance as dependent variable. For the EXPDEC variable, it

remained statistically insignificant and the obtained coefficients are consistent with the

ones obtained in Table II.

The FSI coefficients stated in the columns (3), (5) and (6) show that the relation

with the dependent variable remains negative, however they've lost their statistical

significance. The loss of the statistical significance and the increase of the coefficients

might be explained with the fact that the CAPB does not consider the cyclical component

of the government budget, resulting in the exclusion of the effects that some temporary

events (such as a financial crisis) might have in the balance.

Another difference in terms of statistical significance between the two tested

models are the results stated for the variable Election. A slight statistical significance

was obtained throughout the three regressions outcomes in which this variable was

used. The results obtained in those regressions showed that when parliamentary

elections take place the CAPB tend to be negatively affected by around 0.4% in those

years. This relation is explained by Nordhaus (1974) that justifies it with the effort that

the ruling party does in the pre-electoral period to provide a better condition to the

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[10] According with the Judson and Owen (1999)

population, i.e. an expansionary fiscal policy, and with that, increase the chances of re-

election.

Table IV - Results for the 2SLS (IV-FE) estimator with CAPB as dependent variable

Variables	IV-FE (1)	IV-FE (2)	IV-FE (3)	IV-FE (4)	IV-FE (5)	IV-FE (6)
CAPB (-1)	0.5726*** (0.0674)	0.5721*** (0.0602)	0.5948*** (0.0594)	0.5738*** (0.0594)	0.5794*** (0.0705)	0.5690*** (0.0724)
Δ Debt-to-GDP (-1)	-0.0620 (0.0489)	-0.0665 (0.0471)	-0.0268 (0.0399)	-0.0616 (0.0463)	-0.0318 (0.0410)	-0.0288 (0.0412)
Output Gap (-1)	-0.1864*** (0.0557)	-0.1826*** (0.0505)	-0.1434*** (0.0510)	-0.1669*** (0.0508)	-0.1566*** (0.0515)	-0.1500*** (0.0519)
EXPDEC	0.0407 (0.0499)				0.0567 (0.0552)	0.0620 (0.0520)
Election		-0.4119** (0.1911)			-0.3665* (0.2111)	-0.3662* (0.2064)
FSI			-4.0743 (2.5447)		-3.7936 (2.7841)	-3.8574 (2.7506)
Rules				0.1321 (0.0847)	0.0802 (0.0909)	0.1029 (0.0976)
EMU						1.0603*** (0.3846)
SGP						0.0784 (0.3304)
ENL						0.6005 (0.3990)
constant	-1.0975 (1.3969)	0.1640*** (0.0471)	0.5613 (0.3418)	0.0217 (0.0484)	-1.0152 (1.3480)	-1.4504 (1.2119)
Number of Observations	555	558	534	558	531	531
Number of Countries	28	28	28	28	28	28
Prob>chi2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Note: Robust standard errors in parentheses; ***significance at the 1% level; **significance at the 5% level; *significance at the 10% level. Instrumental variables are the t-2 and t-3 lags of the output gap, Tagkalakis (2012)

4.4 Additional Study

Motivated by the results obtained in the baseline model and in the robustness

test we decided to perform further research in the connection of the fiscal policy stance

to the decentralization levels and to the electoral cycle.

To complement the study on the connection between the decentralization of the government and the fiscal policy stance, we followed Baskaran (2010) and Afonso & Hauptmeier (2009) that also studied the connection of the FPS to the revenues decentralization and to the taxation decentralization. Separated regressions using a fixed effects estimator were performed for each one of these variables given the chance of a high correlation between them. The outcomes (presented in Table A. I) for the revenues decentralization are shown in the columns (1)-(2) and the obtained coefficients show that this kind of decentralization results in a negative impact on the primary balance and therefore in the fiscal policy stance of the EU countries, however due to the weak statistical significance of the obtained coefficients one cannot establish a direct connection between those two events [a similar result was obtained by Baskaran (2010)]. On the columns (3)-(4) the results of the regression using the taxation decentralization level as an explanatory variable show that a government that ends up in attributing tax responsibilities to sub-national levels of it, tends to present a lower primary balance. This statistically significant result is unexpected, however as it is explained by Baskaran (2010) the decentralization might take the regions to compete and therefore tend to reduce their tax levels to attract companies and individuals to their territory.

Following the outcomes of the robustness test regarding the electoral calendar, we decided to check the hypothesis launched by Nordhaus (1974) who stated that after the elections, governments tend to correct their behaviour of the pre-electoral period. The findings of such connection are shown in Table A. II using a lagged Elections dummy variable. According with the presented results, it is not possible to support Nordhaus

(1974) relation given the weakly statistically significant results. However, it is possible to claim that it cannot also be rejected given that in the years immediately after the Parliamentary Elections, the CAPB tended to be higher and therefore policy makers have a tendency to correct their pre-electoral behaviour after the elections period.

5. Conclusion

With the monetary policy exhausted due to the effects of the previous financial crisis, the fiscal policy will have an important role to define the future economic growth of the European Union. It was with this premise that we started this study to analyse which one if not all the four considered variables of the fiscal policy stance have an impact on these policies.

Regarding the financial stress, it was proved that there is a connection between what is happening in the financial markets and the fiscal policy stance. According with the obtained results, policy makers tend to adapt the government economic policy when faced with such event to reduce its impact on the overall economy. Besides, from the outcome of our robustness test, it was proved that most of this adaptation comes from the cyclical component of the public budget.

For the government decentralization, we have not found evidences, given the absence of statistically significant outcomes, that when it is done in the expenditure side of the government budget, the fiscal policy stance tends to improve. However, as we found in our further research, if a government tend to delegate to sub-national authorities the taxation, this decision leads to a deterioration of the CAPB. We can explain such connection with the fact that regions tend to compete to attract companies and individuals to their territory with attractive tax levels.

Considering the electoral calendar, we were not able to prove Nordhaus (1974) results and conclude that a relative austerity is applied in the early years of the mandate, and it ends with expansionary policies before the elections, however one cannot also reject such relation given the obtained outcomes.

Concerning the connection between the application of numerical fiscal rules in the EU member countries and its fiscal policy stance, we were not able to obtain a statistically significant result that prove such relation. This is a subject for which we recommend further research and therefore we would suggest it to future studies. The consideration of different datasets or the application of different regression estimators are some potential paths when approaching such connection. Furthermore, a focus on the partisan model to search for the impact of the ruling party ideology on the fiscal policy it is also recommended.

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Appendix A

Table A. I - OLS (Fixed-Effects) results for decentralization effects on the primary balance

Variables	OLS (1)	OLS (2)	OLS (3)	OLS (4)
Primary Balance (-1)	0.5664*** (0.0481)	0.5879*** (0.0563)	0.5550*** (0.0610)	0.5750*** (0.0682)
Δ Debt-to-GDP (-1)	-0.1146** (0.0474)	-0.0464 (0.0480)	-0.1185** (0.0472)	-0.0458 (0.0474)
Output Gap (-1)	-0.1189*** (0.0268)	-0.0655* (0.0378)	-0.1264*** (0.0280)	-0.0669 (0.0412)
REVDEC	-0.1238* (0.0623)	-0.1076 (0.0794)		
TAXDEC			-0.1364*** (0.0489)	-0.1309*** (0.0448)
Election		-0.1288 (0.2045)		-0.1289 (0.2009)
FSI		-10.1361*** (2.6488)		-10.5081*** (2.4071)
Rules		-0.0372 (0.1145)		-0.0073 (0.1154)
EMU		0.7806** (0.3451)		0.6931** (0.3334)
SGP		-0.1836 (0.4032)		-0.2067 (0.4319)
ENL		0.8128*** (0.2301)		0.6280* (0.3284)
constant	3.6844* (1.8140)	4.3662** (2.1160)	2.0370*** (0.7187)	3.2284*** (0.7145)
Number of Observations	575	540	575	540
Number of Countries	28	28	28	28
Prob>F	0.0000	0.0000	0.0000	0.0000

Note: Robust standard errors in parentheses; ***significance at the 1% level; **significance at the 5% level; *significance at the 10% level

Table A. II - Results for the 2SLS (IV-FE) estimator with CAPB as dependent variable and
a lagged electoral variable

Variables	IV-FE (1)	IV-FE (2)
CAPB (-1)	0.5827*** (0.0604)	0.5843*** (0.0730)
Δ Debt-to-GDP (-1)	-0.0609 (0.0474)	-0.0191 (0.0411)
Output Gap (-1)	-0.1743*** (0.0499)	-0.1363*** (0.0499)
EXPDEC		0.0602 (0.0509)
Election (-1)	0.2900* (0.1705)	0.3787** (0.1630)
FSI		-4.0936 (2.7010)
Rules		0.1104 (0.0979)
EMU		1.0653*** (0.3677)
SGP		0.0462 (0.3270)
ENL		0.5727 (0.4036)
constant	-0.0201 (0.0636)	-1.5464 (1.1723)
Number of Observations	558	531
Number of Countries	28	28
Prob>chi2	0.0000	0.0000

Note: Robust standard errors in parentheses; ***significance at the 1% level; **significance at the 5% level; *significance at the 10% level. Instrumental variables are the t-2 and t-3 lags of the output gap, Tagkalakis (2012)
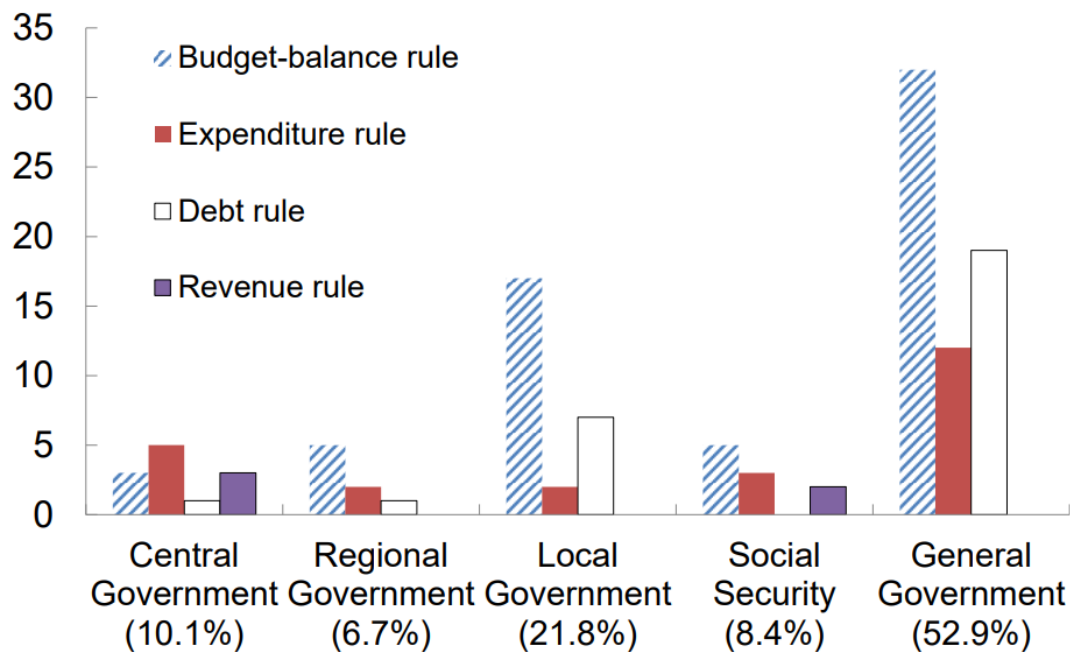
Appendix B

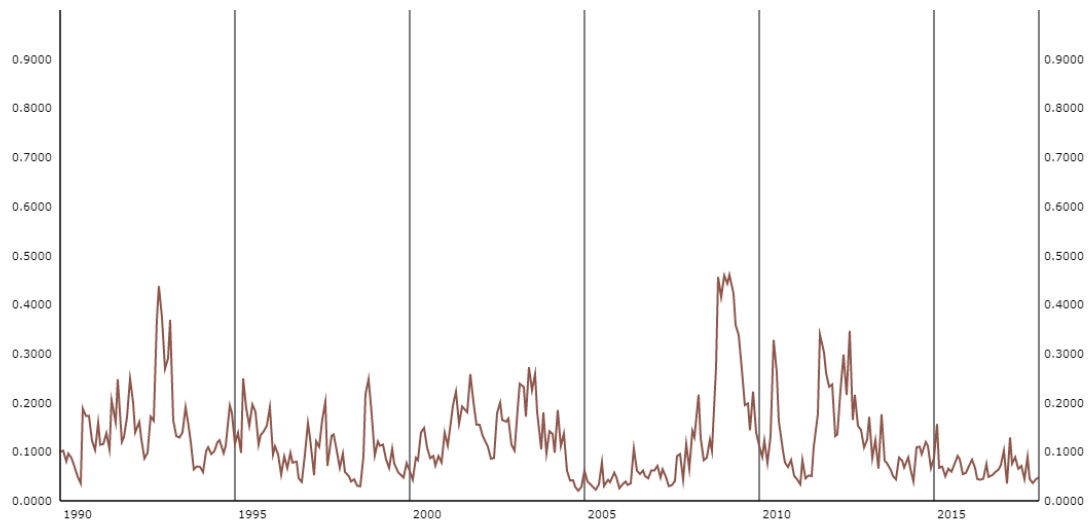### Graph B. I – Evolution of the number of numerical fiscal rules by type
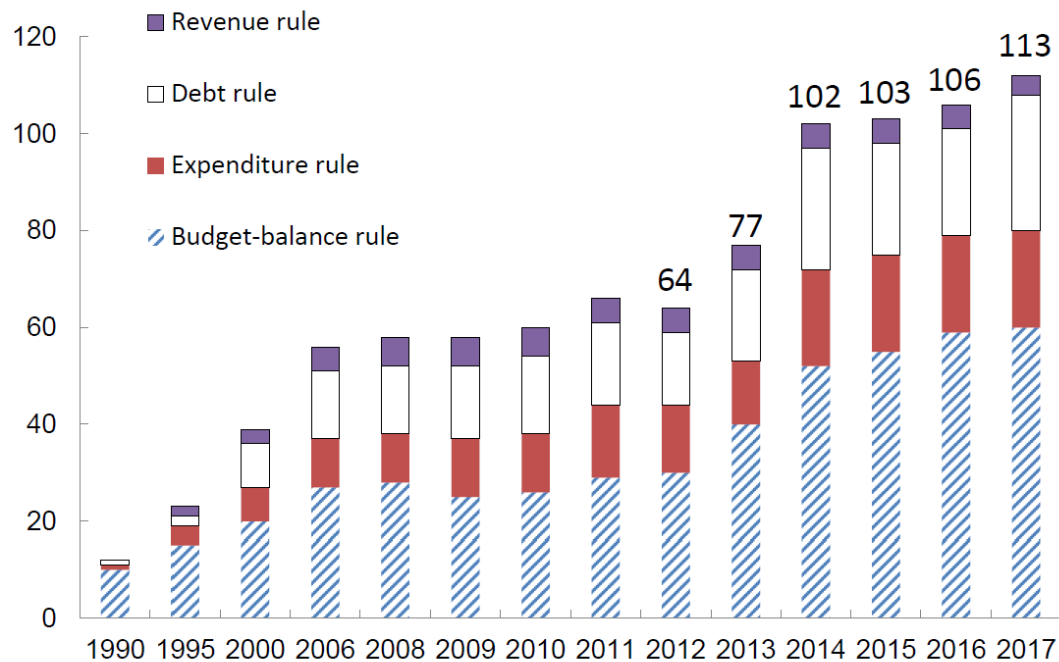
Source: European Commission

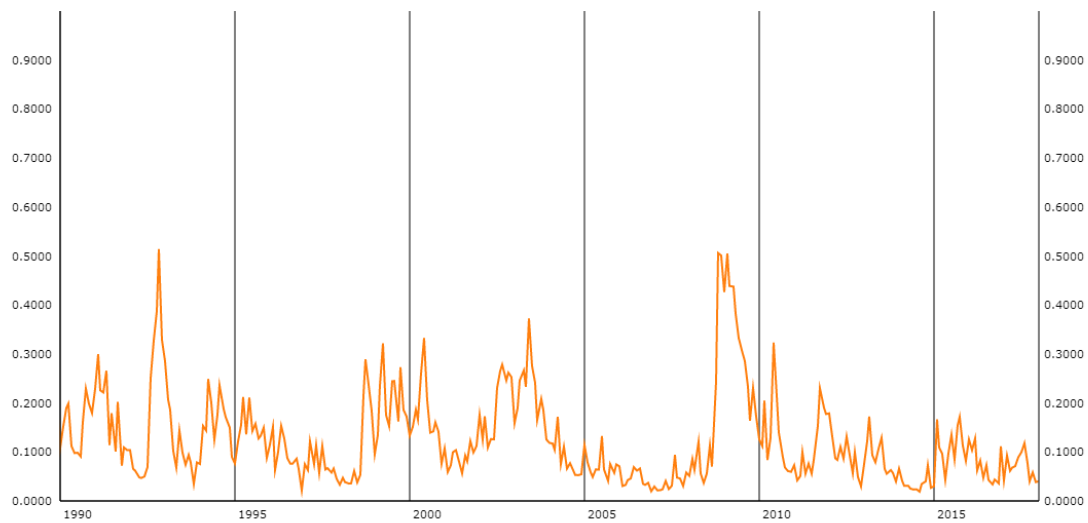### Graph B. II – Weight of each type of rule per government coverage

Source: European Commission

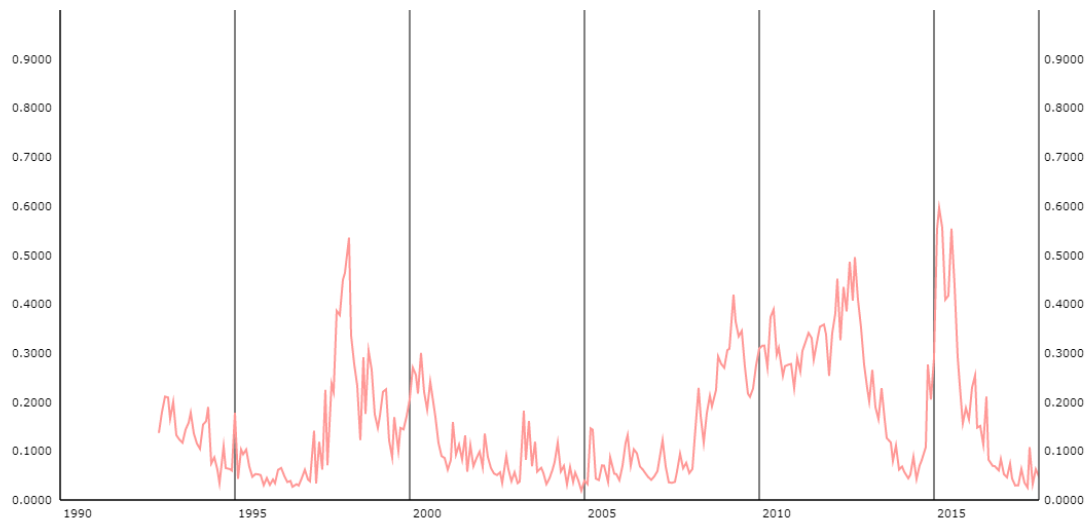## Graph B. III – Evolution of the FSI for France, 1990 - 2017

Source: European Central Bank

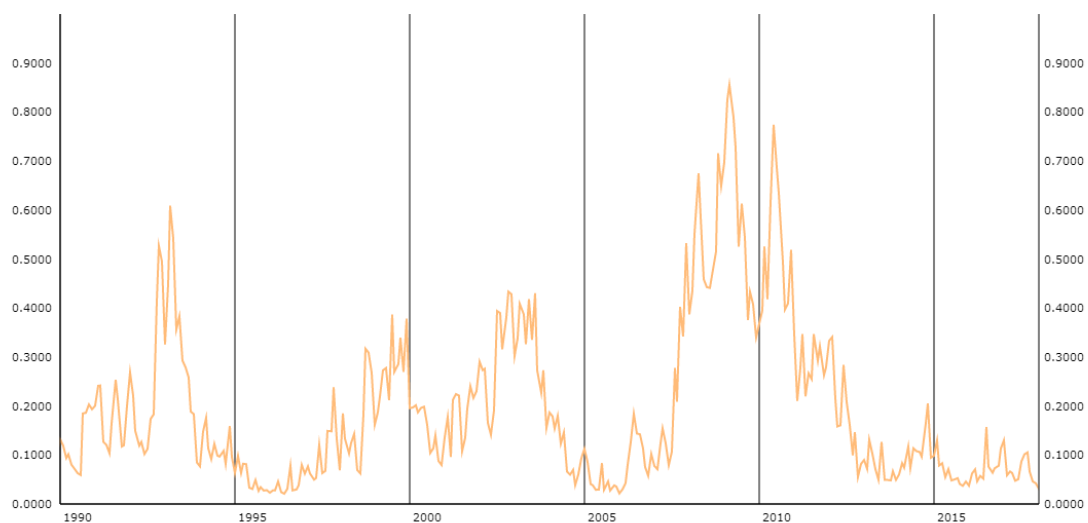## Graph B. IV – Evolution of the FSI for Germany, 1990 - 2017

Source: European Central Bank

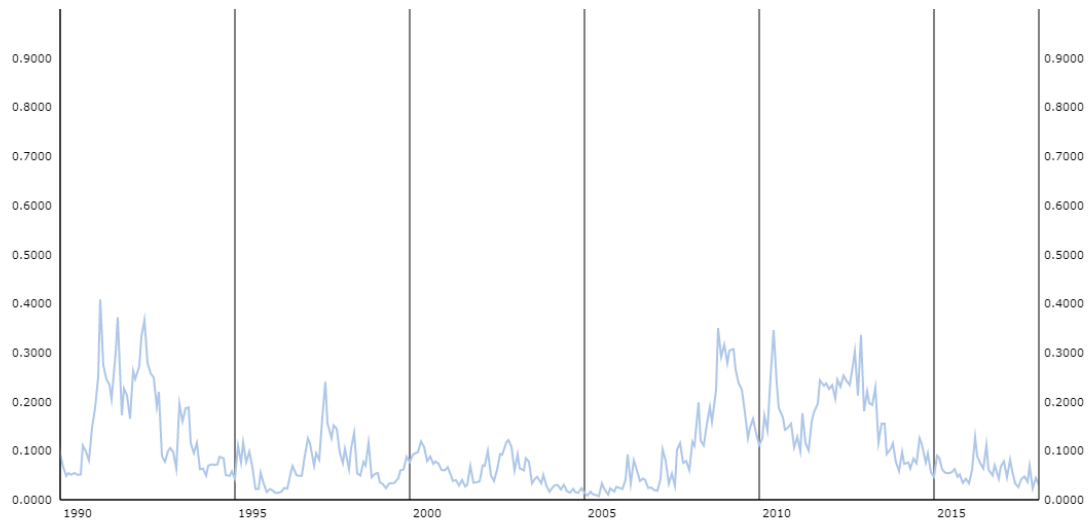## Graph B. V – Evolution of the FSI for Greece, 1990 - 2017

Source: European Central Bank

Graph B. VI – Evolution of the FSI for Ireland, 1990 - 2017
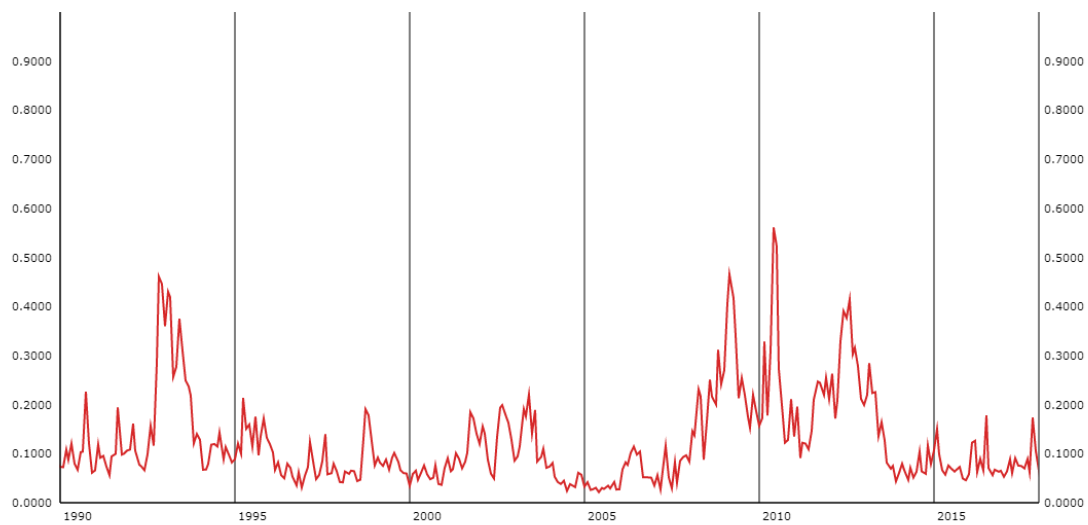
Source: European Central Bank

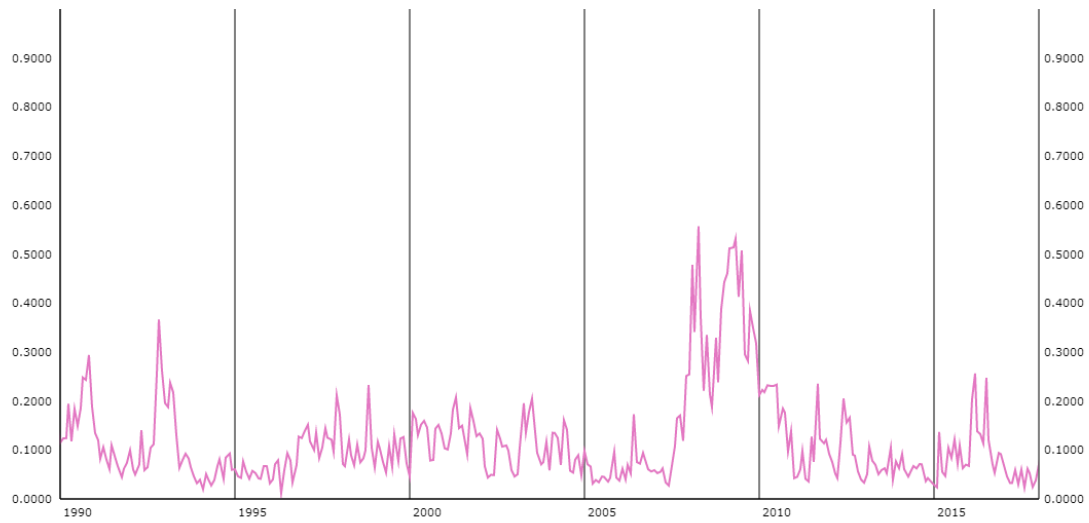Graph B. VII – Evolution of the FSI for Portugal, 1990 - 2017

Source: European Central Bank

Graph B. VIII – Evolution of the FSI for Spain, 1990 - 2017

Source: European Central Bank

Graph B. IX – Evolution of the FSI for United Kingdom, 1990 - 2017

Source: European Central Bank

Table B. I - Codes of the variables collected from AMECO

Variable Name	AMECO Code
Primary Balance	UBLGI
Primary Expenditure	UUTGI
Debt-to-GDP	UDGG
Output Gap	AVGDGP
Cyclically Adjusted Primary Balance	UBLGBP

Table B. II - Results obtained in (1) for every EU member country, %

	REVDEC				EXPDEC				TAXDEC			
	1995	2005	2010	2015	1995	2005	2010	2015	1995	2005	2010	2015
Austria	36.39	34.10	34.70	35.00	33.58	32.61	34.17	34.06	7.87	6.09	6.31	6.02
Belgium	41.63	44.01	45.38	49.03	39.23	41.47	43.63	49.06	10.56	15.01	15.74	19.17
Bulgaria	28.67	20.38	22.67	25.85	27.78	22.25	21.33	27.20	16.33	2.56	3.88	4.06
Croatia		30.79	32.51	30.78		28.68	27.45	28.46		15.35	18.25	17.40
Cyprus	4.63	6.27	6.53	5.21	4.37	5.66	5.41	4.92	2.06	1.69	1.92	2.00
Czech Republic	32.70	29.82	30.57	28.91	22.25	27.95	28.69	27.09	19.88	25.74	25.01	25.20
Denmark	46.08	45.12	47.37	47.10	43.60	48.92	45.85	45.98	31.32	30.56	26.71	25.95
Estonia	21.72	23.23	22.86	21.83	22.03	24.52	22.14	21.23	1.21	1.79	2.27	1.52
Finland	44.96	41.82	49.09	47.52	35.02	42.80	44.16	45.39	32.36	28.50	34.60	33.55
France	29.95	33.37	36.37	36.71	27.15	31.10	31.07	33.05	19.95	21.46	21.59	26.64
Germany	59.56	61.22	60.78	62.06	50.54	58.75	56.62	62.71	48.24	49.52	48.44	50.87
Greece	11.16	10.32	10.89	9.42	7.96	8.27	8.83	7.67	3.04	3.40	3.62	3.42
Hungary	31.13	32.47	28.35	19.57	25.56	28.16	27.32	18.27	10.27	17.53	9.57	8.86
Ireland	26.55	16.42	14.81	8.72	25.56	16.58	7.88	7.44	2.73	2.34	3.52	2.73
Italy	29.63	38.55	37.94	36.33	25.26	36.39	35.13	33.15	11.49	22.79	21.30	21.86
Latvia	30.68	31.29	35.16	30.64	27.93	30.09	30.56	28.25	30.38	23.54	29.25	26.21
Lithuania	24.48	24.91	32.08	25.93	23.42	24.37	28.36	24.71	3.05	2.11	3.01	2.25
Luxembourg	16.88	14.29	15.27	13.80	16.53	14.59	13.95	12.70	8.70	6.17	6.12	4.89
Malta	1.64	1.50	1.71	1.50	1.41	1.36	1.48	1.31	0.00	0.00	0.00	0.00
Netherlands	45.73	35.90	36.19	35.58	38.94	36.43	34.74	34.30	5.27	6.16	5.80	6.22
Poland	23.80	37.81	38.81	38.31	25.58	34.03	35.24	36.04	12.24	20.22	19.28	21.10
Portugal	15.25	17.33	18.80	16.87	13.15	15.44	15.98	13.86	7.53	9.33	9.50	10.12
Romania	17.08	23.00	28.81	29.72	15.04	22.43	24.50	26.98	12.78	4.78	5.94	4.92
Slovakia	10.04	22.78	23.33	22.05	15.96	20.85	20.86	20.22	6.28	3.85	4.35	2.92
Slovenia	23.36	23.48	27.15	24.81	18.64	22.29	24.24	22.27	11.11	11.67	18.15	15.85
Spain	43.04	52.57	55.98	53.50	37.95	53.68	54.30	51.45	21.10	33.49	34.92	35.86
Sweden	42.23	42.31	43.90	44.78	37.61	42.24	43.42	45.29	33.66	34.45	32.87	32.83
United Kingdom	24.19	24.42	26.95	23.00	22.32	23.70	22.85	21.18	4.49	5.66	6.08	5.88

Table B. III – Correlation Matrix

	PB	PE	CAPB	Debt	Gap	EXPDEC	Election	FSI	Rules	EMU	SGP	ENL
PB	1											
PE	-0.1956	1										
CAPB	0.8803	-0.0323	1									
Debt	-0.029	0.2995	0.1605	1								
Gap	0.3534	-0.3284	-0.1258	-0.3602	1							
EXPDEC	0.2225	0.3853	0.2331	-0.0264	0.0147	1						
Election	-0.0475	0.0053	-0.0615	0.0057	0.0154	0.0131	1					
FSI	-0.3368	0.1612	-0.2108	0.0229	-0.2895	-0.0527	0.0419	1				
Rules	0.1671	0.0518	0.2547	0.0418	-0.1353	0.3004	0.0246	-0.2085	1			
EMU	0.1631	0.0308	0.1913	0.0895	-0.0242	0.0522	-0.0211	-0.031	-0.2165	1		
SGP	0.0379	0.1581	0.0895	0.3847	-0.0929	0.0805	0.016	0.0646	0.2039	-0.3173	1	
ENL	-0.1531	-0.3176	-0.1902	-0.2613	0.0373	-0.2825	0.0123	-0.0187	0.0303	-0.2066	-0.2329	1

Table B. IV - Averages of all variables per country

	PB	PE	CAPB	Debt	Gap	EXPDEC	REVDEC	TAXDEC	Elections	FSI	Rules	EMU	SGP	ENL
Austria	0.464	48.704	0.588	72.568	-0.121	33.503	34.876	6.401	0.321	0.123	0.084	0.143	0.679	0.000
Belgium	2.940	46.792	2.901	105.799	0.083	42.986	44.566	14.750	0.250	0.142	0.255	0.143	0.679	0.000
Bulgaria	1.948	34.309	1.834	36.756	0.381	22.315	22.582	8.170	0.321	0.124	0.366	0.000	0.000	0.393
Croatia	-1.514	45.109	-1.371	54.913	-0.322	28.483	31.070	17.032	0.214	0.098	-0.564	0.000	0.000	0.179
Cyprus	-0.180	35.531	-0.095	67.900	-0.022	4.802	5.416	1.921	0.214	0.101	-0.450	0.000	0.357	0.500
Czech Republic	-2.238	41.787	-1.843	28.454	0.064	26.809	29.253	23.234	0.321	0.141	-0.864	0.000	0.000	0.500
Denmark	2.931	51.458	2.953	41.354	-0.432	46.350	46.060	28.946	0.286	0.111	0.518	0.143	0.000	0.000
Estonia	0.510	37.765	0.496	6.819	0.029	22.935	22.274	1.885	0.250	0.138	0.942	0.000	0.250	0.500
Finland	1.951	51.813	2.481	46.015	-0.911	42.489	44.011	31.146	0.250	0.192	0.348	0.143	0.679	0.000
France	-0.995	51.497	-0.808	73.891	-0.300	30.785	33.965	22.714	0.214	0.125	-0.201	0.143	0.679	0.000
Germany	0.563	43.687	0.557	66.493	0.012	59.744	61.130	49.833	0.286	0.126	0.321	0.143	0.679	0.000
Greece	-1.368	43.188	0.055	127.491	-1.851	8.539	10.867	3.349	0.321	0.161	-0.635	0.143	0.607	0.000
Hungary	-0.030	44.504	-0.042	68.472	-0.484	24.614	28.078	12.610	0.250	0.151	-0.656	0.000	0.000	0.500
Ireland	-0.556	34.579	-0.923	60.999	0.549	18.907	19.408	2.647	0.214	0.198	-0.459	0.143	0.679	0.000
Italy	2.291	43.181	2.585	110.668	-0.511	33.413	35.667	20.087	0.250	0.130	0.114	0.143	0.679	0.000
Latvia	-1.050	36.359	-0.940	23.419	-0.340	31.221	32.896	26.145	0.321	0.110	-0.266	0.000	0.143	0.500
Lithuania	-1.775	36.271	-1.691	25.882	-0.277	25.166	26.778	2.520	0.286	0.106	0.124	0.000	0.107	0.500
Luxembourg	2.263	41.229	2.498	13.359	-0.114	14.726	15.308	6.788	0.179	0.151	0.107	0.143	0.679	0.000
Malta	-0.781	38.093	-0.733	60.475	-0.101	1.436	1.634	0.000	0.250	0.125	-0.569	0.000	0.357	0.500
Netherlands	0.579	42.412	1.034	58.019	-0.477	35.481	36.414	5.800	0.286	0.101	0.855	0.143	0.679	0.000
Poland	-1.255	41.512	-1.021	46.664	-0.469	33.468	35.987	18.286	0.286	0.111	0.384	0.000	0.000	0.500
Portugal	-1.415	42.388	-1.217	82.299	0.083	15.259	17.220	9.101	0.286	0.105	-0.148	0.143	0.679	0.000
Romania	-1.238	34.045	-1.218	23.810	-0.061	21.988	24.398	7.015	0.286	0.136	-0.189	0.000	0.000	0.393
Slovakia	-2.590	40.985	-2.633	41.273	-0.073	17.134	18.567	5.217	0.321	0.105	0.036	0.000	0.321	0.500
Slovenia	-1.506	44.781	-1.281	39.027	-0.417	22.398	24.482	13.978	0.286	0.135	-0.768	0.000	0.393	0.500
Spain	-0.978	38.987	-0.256	64.701	-1.071	49.471	51.538	32.125	0.286	0.126	0.565	0.143	0.679	0.000
Sweden	2.133	51.003	2.491	48.983	-0.929	43.018	42.839	33.767	0.250	0.134	0.676	0.143	0.000	0.000
United Kingdom	-1.342	37.624	-1.130	54.590	-0.385	22.827	24.086	5.464	0.250	0.119	0.102	0.143	0.000	0.000

Table B. V – Summary of Im-Pesaran-Shin panel unit root test

Variable	Statistic	P-value	Cross-sections
PB	-5.6655	0.0000	28
PE	-6.3114	0.0000	28
CAPB	-5.1262	0.0000	28
Gap	-6.7653	0.0000	28
EXPDEC	-3.6210	0.0001	28
REVDEC	-2.3368	0.0097	28
TAXDEC	-1.8643	0.0311	28
FSI	-10.6768	0.0000	28
Rules	-2.3599	0.0091	28
Debt	-1.0981	0.1361	28
Debt (first difference)	-9.1863	0.0000	28

* Automatic selection of lags using HQIC (Liew, 2004)