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The design of fiscal rules and
forms of governance in European
Union countries

Mark Hallerberg*
Rolf Strauch**
Jürgen von Hagen***

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*Mark Hallerberg, Department of Political Science, Emory University, 1555 Dickey Drive Atlanta, GA 30322, USA

**Rolf Strauch, European Central Bank, Kaiserstr. 29, 60311 Frankfurt a.M., Germany

***Jürgen von Hagen, Institut für Internationale Wirtschaftspolitik, University of Bonn, CEPR, and Indiana University,
Walter-Flex-Str. 3, 53113 Bonn, Germany, Tel: +49 228 73 9199, vonhagen@uni-bonn.de

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Speaker: Prof. Konrad Stahl, Ph.D. · Department of Economics · University of Mannheim · D-68131 Mannheim,
Phone: +49(0621)1812786 · Fax: +49(0621)1812785

The design of fiscal rules and forms of governance in European Union countries

Mark Hallerberg ^{a),d)}, Rolf Strauch ^{b),d)**}, Jürgen von Hagen ^{c),d),e)}

- a) Department of Political Science, Emory University, 1555 Dickey Drive Atlanta, GA 30322, USA
- b) European Central Bank, Kaiserstr. 29, 60311 Frankfurt a.M., Germany
- c) Institut für International Wirtschaftspolitik, Universität Bonn, Lennéstr. 37, 53113 Bonn, Germany
- d) ZEI, Bonn, Germany
- e) Indiana University, Bloomington, Indiana, USA

Abstract

This paper uses a new data set on budgetary institutions in Europe to examine the impact of fiscal rules and budget procedures in EU countries on public finances. It briefly describes the main pattern of budgetary institutions and their determinants across the EU 15 member states. Empirical evidence for the time period 1985-2004 suggests that the centralisation of budgeting procedures restrains public debt. In countries with one-party governments or coalition governments where parties are closely aligned, this is achieved by the delegation of decision-making power to the minister of finance. Fiscal contracts that require countries to set multi-year targets and that reinforce those targets increase fiscal discipline in countries with ideologically dispersed coalitions.

JEL Classification: H11, H61, H62

Keywords: public indebtedness, budgetary procedures, fiscal rules, European public finances

***) Corresponding author: Rolf Strauch, Directorate General Economics, European Central Bank, Kaiserstrasse 29, D-60311 Frankfurt a.M., Germany, Tel. +49 69 1344 7376, E-mail: rolf.strauch@ecb.int

1. Introduction

The past two decades have seen a strong and growing interest in fiscal policy rules aimed at containing public sector deficits and reducing public sector debts. Fiscal policy rules specify numerical targets for annual government deficits, debts, or spending. They have a venerable history at the sub-national level, and some countries have used less specific ones – such as the ‘golden rule’ that limits annual government borrowing to investment spending - at the national level for a long time. What is new is the application of specific annual targets at the national level. The Maastricht Treaty and the Stability and Growth Pact establish a European fiscal framework based on fiscal rules expressed as deficit and debt limits which national governments are expected to follow.

This interest in fiscal rules is a reaction to the experience of rapidly rising debt levels and unsustainable deficits in the 1970s and 1980s. But while rules seem attractive and straightforward to contain the spending and borrowing bias of profligate governments, it is by no means clear what institutional design they need and how they should be embedded into the government budgeting process to be effective. In the EU, all member states face the same fiscal policy framework, but there is considerable variation in the budgeting institutions at the national level. This variation is due to characteristics of the political and, in particular, the electoral systems. In this paper, we analyse the impact of fiscal rules on the sustainability of public finances with a focus on the interaction between rules and budgeting processes.

Hallerberg and von Hagen (1999) show that European governments have developed two types of budget processes promoting fiscal discipline. Under the “delegation” approach, the budget process lends special agenda-setting powers in the preparation of the budget to the minister of finance. Under the “contract” approach, in contrast, the budget process hinges on pre-established, numerical budgetary targets negotiated among key policy-makers. This approach strongly resembles the characteristics of a fiscal rule and, at a first glance, it is more compatible with the design of the European fiscal framework than the delegation approach. As a result, the European framework may be less effective in countries whose budget process is shaped by the delegation approach. Furthermore, Hallerberg and von Hagen (1999) argue that the differences between these two approaches reflect countries’ basic political characteristics such as party and electoral systems, implying that the two are not easily interchangeable for a given country. Countries which typically have one-part governments or coalitions of closely aligned parties are more likely to adopt the delegation approach, while countries which typically have more dispersed coalition governments are more likely to adopt the contract approach. This suggests

that differences in the effectiveness of the European fiscal framework could be a permanent feature of the European Monetary Union and changes in this framework might be needed to achieve an equal degree of fiscal discipline in the EU.

In this paper we extend the analysis in Hallerberg and von Hagen (1999). We start with a characterization of the budgetary institutions at the start of Stage III of EMU and their evolution over the past decade using a new institutional data set. We show that there is a correspondence between the choice of budgeting processes and national political systems in line with our theoretical predictions. Several states which we expect to adopt the delegation approach given their political systems did develop stronger budgeting institutions during the 1990s. At the same time, countries we expect to adopt the contract approach strengthened their budgeting rules. Next, we explore the effect of these institutions with respect to the growth of public debt. As expected, delegation in budgeting procedures and more stringent fiscal rules both contribute to fiscal discipline. Moreover, more stringent fiscal rules work in countries with dispersed government coalitions, whereas delegation is effective only in states with single party governments or closely aligned coalitions. The punchline is that both the delegation and contract approaches provide effective instruments to increase fiscal discipline so long as they match the pre-existing government structure.

The following section presents the theoretical background. Section 3 describes the existing government structures. Section 4 explains which budgeting institution determines the stringency of fiscal rules or targets and the degree of delegation in the budget process and how these institutions developed in EU member states. Section 5 presents the empirical evidence on the impact of budgetary institutions on public indebtedness.

2. Fiscal governance: Types and choices

2.1. Types of fiscal governance

A growing body of empirical and theoretical literature suggests that the institutions governing the budget process are important determinants of a country's fiscal performance (von Hagen 1992, von Hagen and Harden, 1994; see also the international contributions in Poterba and von Hagen, 1999, and Strauch and von Hagen, 2000). Budgeting institutions encompass the formal and informal rules governing the drafting of the budget law, its passage through the legislature, and its implementation. These rules distribute strategic influence among the participants in the

budget process and regulate the flow of information. In doing so, they have important effects on the outcomes of budgeting processes.

The starting point of this analysis is to recognize the externality resulting from the fact that government spending is commonly targeted at specific groups in society while it is financed from a general tax fund to which all tax-payers contribute. The incongruence between those who pay for, and those who benefit from, individual public policies means that individual spending bids tend to recognize the full benefit of additional spending but only a part of their additional social cost. Policymakers engage in excessive spending, since the constituencies they represent do not bear the full costs of these programs. In a dynamic context, the externality problem also results in excessive deficits and debts.¹ The tendency to spend more and to run large deficits increases with the number of representatives of individual spending interests that make autonomous spending decisions. The more representatives with policy-making power, the greater the fragmentation of the budget process.²

The core of this argument is that public budgeting involves a co-ordination failure among the relevant decision makers. The key to solving this co-ordination failure is to create institutional incentives that induce decision-makers to take a more comprehensive view of the budget. They then recognize the true marginal costs and benefits of the projects financed from the general tax fund, and they consequently internalize the budgeting externality. Hallerberg and von Hagen (1999, see also Hallerberg, 2004) show that there are two basic institutional approaches to achieve that: the *delegation approach* and the *contract approach*. The delegation approach rests on the delegation of significant strategic powers to a decision-maker who is less bound to special interests than ministers heading spending departments and more prone to consider the budget comprehensively. In European governments, this is typically the minister of finance. More specifically, the delegation approach gives the finance minister strong agenda-setting powers over the other members of the executive during the initial budget planning stage. At the subsequent approval stage in parliament, the approach lends strong agenda-setting powers to the executive over the legislature to protect the finance minister's budget proposal against significant parliamentary amendments. In the final implementation stage, the delegation

¹ For a text book presentation of the problem see Persson and Tabellini (2000: chapters 7 and 13). Dynamic versions are presented in von Hagen and Harden (1994), Velasco (1999) and Hallerberg and von Hagen (1999).

² Since the most important representatives of individual spending interests in European governments are the individual spending ministers, an implication of this proposition is that government spending and deficits grow with the number of spending departments and ministers in a country's government. Kontopoulos and Perotti (1999) and Volkerink and de Haan (2001) confirm this proposition empirically for OECD countries, although results vary across sample periods.

approach vests the finance minister with strong monitoring capacities in the implementation of the budget and the power to correct any deviations from the budget plan.

The contract approach, in contrast, rests on an agreement among the relevant parties at the start of the budgeting process. Such agreements provide a medium-term orientation for fiscal policy and include numerical targets for specific budget items. This contractual institutionalisation of fiscal targets resembles elements of fiscal rules. Here, it is bargaining among policy makers that encourages a comprehensive view of the budget and leads to centralization of the process (von Hagen and Harden, 1994). In contrast to his role under delegation, the minister of finance in this case monitors and enforces the fiscal contract but has little power at the planning stage of the budget. At the approval stage in parliament, the legislature has strong information rights, which enable it to monitor the executive's compliance with the budgetary targets and the performance of individual ministries. At the implementation stage, the contract approach resembles the delegation approach. It vests the finance minister with strong monitoring capacities regarding the execution of the budget and the power to correct deviations from it.

2.2. Political determinants of the type of fiscal governance

The existence of two institutional approaches, delegation and contracts, raises the question which one is more appropriate to address the externality problem of the budget process in a given country. Hallerberg and von Hagen (1999) argue that each approach is suitable for a particular type of government. Delegation is the proper approach for single-party governments or governments where coalition partners are closely aligned to one another and run together in elections. In such places, the ideological distance among the political parties is low. The contract approach is better suited for multi-party coalition governments where the ideological distance among parties is high.

A first reason for why ideological distance matters is that it is difficult for a multi-party coalition government to work under a strong finance minister. Such a minister necessarily comes from one of the coalition parties, and vesting him with special authorities raises concerns among the other parties about a fair treatment of their spending preferences in the budget process. These concerns are likely to increase with increasing ideological dispersion of the government and increasing competition in the process of coalition formation. Furthermore, enforcement of the finance minister's budget proposal under the delegation approach ultimately depends on the ability of the head of the executive to remove recalcitrant spending ministers from office. This power may exist in single-party governments, where the hierarchy

in cabinet conforms to the hierarchy of party power structures. It may also exist in coalitions of closely aligned partners that cannot continue in power without each other, such as the coalitions common in Germany and France and, for an extended period of time, in Austria. But this power does not usually exist in multi-party coalition governments where alternative coalitions are possible and the right to nominate candidates for (and remove them from) specific posts belongs to individual coalition parties.

A second reason is that it is harder for single-party governments to commit to fiscal targets, since there is no effective threat against reneging on them and the executive can simply walk away from targets deemed no longer convenient. In contrast, as long as there are alternative possible coalition partners in the opposition, the threat to break up the coalition is an effective one for enforcing budget targets in ideologically dispersed multi-party governments. The risk of such a step increases for those cases where a break-up in the government leads to a general election. Furthermore, multi-party coalition governments have a stronger incentive to negotiate multi-annual fiscal targets or rules at the start of a government to avoid having to renegotiate the fiscal policy stance annually, which may be politically costly if the ideological constellation within the government is rather complex. Continued budgetary struggles distract from the operational functions of the government and may hamper the effective implementation of policies.

While the preceding discussion refers to majority governments only, it can be easily generalized to minority governments. The question to ask is, what is the ideological distance among parties needed to pass the annual budget? In practice, the distance is generally large, and this suggests the use of fiscal contracts to provide the needed centralization of the budget process.

3. Electoral systems and party constellations in government in European countries

Party constellations in parliament and government that affect the choice of fiscal governance are, in turn, closely linked to the electoral system. One important feature of electoral systems is the number of parties that win seats in parliament. If there are few parties, there is a higher chance that one party can win an absolute majority, and an absolute majority is a virtual certainty in two-party systems. Several studies indicate that the number of parties in a given system is strongly and positively correlated with the number of representatives elected from each electoral district, known as district magnitude (Duverger 1954, Taagepera and Shugart 1989, 1993). Electoral systems with low district magnitudes distribute seats less proportionally

than those with large district magnitudes, and lower proportionality usually favours larger parties. Plurality systems, which elect only one representative per district, encourage two-party systems, and they are consequently most likely to have one-party majority governments. Proportional representation (PR) electoral systems have more variation in their district magnitudes, though the magnitudes are always larger than those found in plurality systems. PR systems tend to result in more parties in parliament and multiparty majority or either one-party or multi-party minority governments. Other factors that affect the number of parties represented in parliament include minimum-vote thresholds requiring to gain a certain percentage of the national vote for a party to win any legislative seats, the method used to apportion seats, and whether or not a second allocation of seats is used to reduce disparities at the district level.

Table 1 compares the electoral systems and types of governments in EU member states. The first column describes the key characteristics of the electoral system, and the second column the district magnitude. The following columns present indicators for the dispersion of preferences and the competitiveness of the government formation stage for period 1980 to 2000. The first is the average number of parties in government. The figures show that there is a strong, but not perfect, correlation between the district magnitude and the number of parties suggested by the theory. Plurality systems and proportional systems with low district magnitudes tend to lead to one-party governments. As district magnitude increases, the relationship between district magnitude and the number of parties in government is more tenuous for European countries. Other factors, such as traditional party structures or the main political cleavages in the party system, become more important. Belgium and Italy (before 1996) have the maximum average number of parties in government in our sample with 4.5 and 4.2, respectively.

Our second indicator, the change in coalition of ruling parties as a share of the total number of new governments, is an indicator of the competitiveness of the electoral and government formation process. There are different reasons for the termination of governments, elections being the most important one. However, the government formation process may not be very competitive if there are clearly established party blocks and parties continue in power for decades. Conversely, coalition governments may frequently reshuffle and the government formation process may be relatively uncertain ex-ante. The data indicate that there is not a perfect relationship between the number of parties in government and the competitiveness of the government formation process. For example, Belgium has a large number of parties in

government and a relatively competitive process. By comparison, governing coalitions in Italy are large, but also fairly stable during the 1980s to the mid-1990s. In Ireland, there are a small number of parties in government, but these change rather frequently after the end of a term or the breakdown of a coalition. The fifth column then shows the ideological range of a governing coalition. This and the previous indicators are taken from Tsebelis' dataset on veto players.³ The ideological indicator captures the classic left-right dimension.

The final column then indicates which type of fiscal governance we would expect to be most adequate to achieve fiscal discipline based on these characteristics and the prevalence of minority governments in member states. Recall that our argument is that countries with low ideological distance among parties needed to pass the budget should be appropriate for delegation-type fiscal procedures while countries with high ideological distance should be places for rules in the form of contracts. The average score is helpful in categorizing some cases—the United Kingdom has an average of 0, indicating only one-party majority governments—but averages for others can be deceiving. A country with high ideological distance in the first half of the period but zero in the second half would have an ambiguous ideological score, but should be coded as being appropriate for contracts in the first half and delegation in the second half.

To follow the patterns of ideological distance over time, Graph 1 presents the scores by country over the twenty-year period, and we use this information to make predictions about the appropriate form of fiscal governance. One observes three sets of cases based on the relative stability of the scores. Following closely the aggregate results, the first category are those with stable ideological distance. One set of countries have zero or almost zero the entire time (Germany and the United Kingdom) or with distance usually at zero with a short interruption (Greece and Spain).⁴ France is a somewhat tougher call; it has a low average score but also periods where the scores are notably above zero. Given the emergence of two clear ideological blocks that face one another in elections, however, France belongs in the same category. Similarly, other countries have stable distances that generally score around .2 or above that remain above this threshold or that bounce only once below it (Belgium, Denmark, Finland, Luxembourg, Netherlands).⁵ These are all “high” ideological distance states. The second group

³ See Table A1 in the appendix for details.

⁴ Note that Greece actually has a short-lived conservative-communist coalition that appears in the Graph, but, because we exclude Greece 1989-93 because of data availability problems, Greece has a score of 0 during the time period covered in the analysis.

⁵ The mean and median of the ideological distance variable in our data set is 0.19.

are countries seem to predict one type of governance in a given, defined period but another type of governance in the remaining period. Italy has a clear break from 1996 on, with a distance at zero, while it has a fairly large ideological spread in the first period. The country is therefore coded a low ideological distance country from 1997 onwards. Similarly, Portugal begins the period with a score near zero, but the score increases in the mid-1990s. It has again dropped to zero after the 2005 elections (not shown on this particular graph). Given that one of the reasons for the higher score was a minority government that missed majority status by just one vote, it seems reasonable the country continue to be coded low for the entire period. Austria has a high distance through 2000, then a low distance. It is coded accordingly. The final set of countries has scores that bounce around. Ireland move down and up and down, with some stability at the end. It has a high score through 1997 and a low score thereafter. Correspondingly, it is coded a low distance state from 1998 onwards. For Sweden, the only period with the distance at zero is at the very beginning. It is therefore considered a high distance state. Once these scores are computed, they suggest clear predictions about the most effective form of fiscal governance over the entire period—delegation-type fiscal rules are most appropriate for low score states while contract-type fiscal rules are most appropriate for high score states.

4. Delegation in the budgeting process and the stringency of fiscal rules – concepts, data and method

4.1. Methodology and data

In this section, we operationalise and describe the two elements contributing to the centralisation of budgetary institutions. The first is the degree of delegation in budgetary procedures prevailing in the EU member states, while the second is the stringency of fiscal rules, which captures the medium-term oriented budgetary targets characterising the contracts approach. Table 2 lists several institutional features that capture the degree of delegation in the budget process. Delegation in the budget formulation stage is stronger the more encompassing the budgetary constraint set at the beginning of the process, the more agenda-setting power is given to the minister of finance in the budgetary planning, the broader the scope of the budget norms the minister can set for budget negotiations, and the more centralised the structure of negotiations. The budget negotiations in parliament are the more constrained the less scope is given to amendments, the higher the costs of a failure to pass the budget imposing discipline on legislators, and the less room for log-rolling is given by the voting procedure. The degree of

flexibility or control during the budget execution is determined by the authority of the minister of finance to block expenditures, the existence of cash limits, the need for an disbursement approval from the minister of finance or a controller, the scope of budgetary transfers, the institutional barriers to changes of the budget law during the implementation phase and the strictness of carry-over regulations.

Fiscal rules can range from mere declarations of intent to legal multi-annual budget plans containing detailed expenditure targets. They are the more stringent, the more encompassing the budget category or aggregate for which a target is set, the longer the time horizon to which the target applies, the more elaborate the forecasting procedure on which they build and the higher the degree of political commitment attached to them.

One or more of us collected data on these fiscal institutions in EU member states in three rounds of expert surveys conducted in 1991, 2001 and 2004.⁶ The detailed results of the earlier surveys are published in von Hagen (1992) and Hallerberg et al. (2001). The surveys in 2001 and 2004 were deliberately designed to provide an update of the earlier information and to explore the characteristics of additional institutional items in EU member states. We sent the surveys to several experts in each country belonging to the ministry of finance, the parliament and the central bank. We complemented these data with documentary analysis and in-depth interviews in member country seats of government.⁷ Based on these sources, we have comparative evidence on the 19 institutional items specified in Table 2 from 1985 onwards.

To make the data usable for quantitative analysis, we operationalise and code fiscal rules according to their stringency and also budgetary processes according to the degree of delegation. Each institutional item ranges from 0 to 4.⁸ The coding scheme and the scores of individual institutions are provided in earlier publications and a web annex to this paper.

Since our theory predicts that individual institutions of the budgeting process interact and that their choice is not random across countries, we aggregate the individual scores to an index of delegation inherent in the budgeting process and an index for the stringency of fiscal rules. For this purpose, we use the simple average of scores belonging to the multi-annual targets (see Table 2), rescaled to a range between 0 and 1, as our rules index. For the degree of delegation in the budget process, we normalise the aggregate sum of institutional items characterising the

⁶ In between a survey was conducted by de Haan et al. (1999)

⁷ For the 2001 survey, interviews were done in all seats of government of EU member states except Vienna, for which indications were already complete.

⁸ In many cases, there were five possible answers, so the answers were coded on a 0 to 4 scale, with higher numbers representing more centralisation of the budget process.

different stages (budget negotiations (*BN*), budget approval (*BA*) and budget implementation (*BI*)) and then add up the indices of the three stages using equal weights w of 1/12 to an aggregate score:

$$Index = w_{bn} \frac{1}{k} \sum_{i=1}^k BN_i + w_{ba} \frac{1}{m} \sum_{j=1}^m BA_j + w_{bi} \frac{1}{n} \sum_{l=1}^n BI_l$$

Thus the aggregate index again ranges from 0 to 1. Adding up institutional items assumes that the individual institutional elements are substitutes. In contrast, a multiplicative combination of the items would capture a complementary relationship. The ranking of aggregate institutional indices is rather robust to variations in the weighting of institutional scores or the aggregation mode⁹, which allows us to conduct our analysis with a single delegation index for the budgetary procedures. The stringency index for fiscal rules is the simple average of the individual scores of the respective institutions.

4.2. Institutional changes in the 1990s

Between 1991 and 2004, there have been a number of changes in budgetary procedures that led to an overall strengthening of budgetary institutions. At an aggregate level, this finding is reflected in Graph 2, which presents the average institutional scores for the stringency of fiscal rules and the degree of delegation of the different stages and the entire budget process by groups of countries with high or low ideological distance government before and after major reform efforts.¹⁰

The changes over the past 14 years have been fairly sizeable for two classes of fiscal rules or multi-annual targets. EU member states now uniformly report the usage of such targets. This practice varied in the early 1990s. Moreover, large improvements occurred regarding the nature of the budget plan. While several plans were previously based on ad-hoc assumptions, they are now more often reported to be based on a consistent macro-economic framework. Beyond this, the degree of commitment has improved in some countries, but above all Denmark and Sweden. The level of commitment in states using external contracts seems therefore to be equivalent to those where an internal contract system, e.g. being based on a coalition agreement, would be suitable. In line with our predictions, the existing rules in states with

⁹ This has been confirmed in previous research on various country groups (see Alesina et al. 1995, Gleich 2003, and Strauch 1998). In particular, the results remain robust when the index is multiplicative instead of additive and different elasticities of substitution are attached to items within sub-indices or between sub-indices.

¹⁰ After the major reform steps captured in Graph 2 only minor modifications to budgetary institutions took place. For details see the Annex on the institutional codings.

ideologically less dispersed governments are slightly less stringent than those in states with ideologically highly dispersed governments after major reform steps were taken.

Underlying the marked strengthening of aggregate scores for the executive planning stage are two developments. The general constraint and the type of norm given for budgetary requests have tightened across the board. Other institutions have developed more selectively. In particular, the agenda setting power of the minister of finance and the structure of cabinet negotiations provide the minister of finance with more authority today. These reforms have above all transformed the fragmented structures in Greece, Italy and Spain towards a delegation model, as one would expect given their low ideological distance. To a lesser extent they have also helped to overcome the institutional weakness in some states with high ideological distance, such as Belgium and Ireland before 1998.

Graph 2 indicates that the position of the government vis-à-vis parliament has strengthened, but that overall institutional changes have been less pronounced than for fiscal rules and the first stage of the budget process. Nevertheless, changes have been particularly strong in states with low ideological distance, where it may be much easier now for the minister of finance to channel budgetary proposals through parliament than before. The most notable change concerned offsetting amendments - a majority of states introduced this requirement. Additional restraints on amendments have tightened the budgetary process in Germany, Greece and Italy, i.e. states with low ideological distance. Institutional changes are equally apparent, but somewhat more balanced across types of government when examining the global vote on the total budget—eight states introduced this requirement after 1991. Overall, countries with rather fragmented parliamentary institutions, such as Greece, Germany, Italy, and Sweden have introduced major changes to increase the degree of delegation in the process.

Institutional change to the implementation stage of the budget process have been more mixed compared to other stages. The right to block expenditures has been mainly strengthened among states with regular minority governments. Cash limits and disbursement approval have gained more prevalence in states with low ideological dispersion in government. Regulations on transfers have been reported for six countries. Carry-over regulations are tighter in Germany and Spain now than a decade ago. Almost surprisingly, regulations on budgetary changes apparently are less stringent in several EU member states now, with five of fifteen allowing changes mid-year that did not allow them before. Regarding cross sectional performance, most institutional changes are again reported for Italy, but there is no clear pattern apparent beyond that.

Overall, the stringency of budget rules has increased and the fragmentation of budgetary procedures diminished. The main development that can be detected for EU member states in this respect is that several countries, which previously had rather fragmented budgetary processes, now have raised the degree of delegation inherent in the budget process. This is the direction of institutional reform that our analytical framework would suggest regarding the appropriate form of governance in these countries.

Against this general development, there are still remaining differences across groups of countries in 2004. Countries where a delegation approach may be functional have on average less stringent fiscal rules and targets, a higher degree of delegation in budget negotiations during the planning stage and a more restrictive amendment and voting process in parliament than countries where a contract approach would be more functional. However, these differences emerge often from differences in specific institutional items rather than across the board in all items.

5. The impact of types of fiscal governance and fiscal rules on public debt

We now turn to the question whether the institutions described above also differ in their impact on fiscal discipline. The next section presents the econometric specification of the model and derives the key hypotheses. Section V.2 presents the empirical results.

5.1. Econometric model

To analyse the impact of budgetary institutions on deficits and debt, we estimate the following model which has been used in several other studies (see e.g. Roubini and Sachs 1989, de Haan and Sturm 1994, Hallerberg and von Hagen 1999):

$$\Delta debt_{i,t} = \alpha + \beta \Delta debt_{i,t-1} + \beta_1 X_{i,t} + \beta_2 P_{i,t} + \beta_3 S_{i,t} + \beta_4 I_{i,t} + \varepsilon_{i,t} \quad (1)$$

The dependent variable is the change in general government gross public debt as share of GDP for country i at time t , $t=(1, \dots, T)$. There are four reasons for using general instead of central government debt. First, as indicated above, it makes the results of our analysis comparable to important studies in the literature. Second, general government public debt is the relevant concept for the European fiscal framework. General government debt, rather than central government debt, has been used in the European context since it was more comparable across

countries before budgetary statistics were largely harmonized under ESA95.¹¹ Third, it is the economically more relevant concept when thinking about long-term fiscal sustainability. Finally, using general government debt allows us to capture potential substitution effects across government levels, which may be the outcome of budgetary decisions at the central government level, but would be lost if one focuses only on central government debt. For example, Kiewiet and Szakaly (1996) show that fiscal rules induce US state governments to shift fiscal imbalances to the local level. Note that, with the exception of states in Germany, sub-national governments in Europe generally incur low levels of debt. Thus, the difference between central and general government debt is largely unaffected by budgetary decisions of lower-level governments in most European countries. In Germany, budgetary institutions at the state level are very similar to those at the federal level.

In the empirical model, we include several macro-economic variables in matrix $X = \{\text{real GDP growth, change in unemployment rate, lagged debt level and debt service costs}\}$. Real GDP growth and changes in the unemployment rate should affect changes in government debt through automatic stabilisers and discretionary measures aiming at economic stabilisation. The lagged debt level provides a proxy for the inter-temporal budget constraint or long-term sustainability to which the budgetary balance has to react. Debt servicing costs capture the impact of interest payments as well as political pressures that might emerge from high levels of interest payments on governments. The lagged change in the debt level addresses the serial correlation of the time series. The matrix P comprises two political controls, $P = \{\text{election year, veto}\}$. The *veto* variable is taken from Tsebelis' concept of veto-players and captures the ideological dispersion of parties required to pass the budget. It measures the maximum ideological distance among those parties based on ideological scores along an economic, left-right dimension (see Table 1 for further explanation). Previous studies (e.g., Roubini and Sachs 1989, Spolaore 1993) have argued that coalition governments find it more difficult to agree on consolidation efforts than one party-governments and included the number of parties in government as an explanatory variable.¹² In contrast, Tsebelis (2002) points out that the difficulty to reach an agreement depends on how closely aligned the coalition partners are in their views on important political issues. Closely aligned partners should find it easier to reach an agreement than parties with deep ideological differences on many issues. Veto player distance is therefore a more nuanced way of considering the number of parties.

¹¹ In particular, Germany reported its Länder figures under "Central Government" under the ESA 1979 framework (Savage 2005, 72).

The matrix $S = \{\text{population, openness, output volatility}\}$ comprises some variables describing structural characteristics of the countries under consideration that may be related to budgetary performance. Population is taken as a measure for the size of the economy. Generally, the size of a country can affect the economies of scale in the production of public services. Larger populations may therefore be associated with lower spending, and possibly lower deficit levels. Openness is related to the exposure of economic sectors to external competitiveness. This exposure, and the associated need for sectoral adjustments, according to Katzenstein (1985), lead to more consensus-oriented, corporatist structures in Europe, ensuring policy support to the adjustment process and, if necessary, compensatory measures, which might have negative effects on the budgetary balance. Output volatility is obviously related to the openness of the economy. However, it should capture more generally the demand for fiscal insurance (see also Rodrik 1998). Since insurance may be provided by the automatic stabilisation of disposable income, there is no obvious deficit bias over the cycle. This could nevertheless lead to a deficit bias if the policy reaction to economic fluctuations is asymmetric, or tax and benefit systems lead to a ratcheting upward of unemployment rates.

The matrix $I = \{\text{fiscal convergence, borrowing restraints for lower level of government, delegation index, rules index}\}$ represents the institutional variables. The convergence indicator is based on the distance to the reference value for the deficit-to-GDP ratio of 3% from the Maastricht Treaty and captures the need for adjustment for those countries with larger deficits between 1992 and 1997. The second institutional variable is a dummy variable, which is one for countries where borrowing restraints are imposed on regional or local governments.¹³ The third and the fourth institutional variables are the delegation and the fiscal rules index explained above.

We summarize our discussion so far in the following two hypotheses for the empirical analysis:

H1: More delegation in the budget process contributes to lower growth of public debt in states with low ideological distance but not in states with high ideological distance.

¹² A notable exception is Volkerink and de Haan (2001) who use different measures for the ideological complexion of government.

¹³ The information is taken from Eichengreen and von Hagen (1995) and Hallerberg et al. (2001). To assess the impact of fiscal federalism on debt dynamics at the national level, we also considered standard measures of fiscal decentralization, such as central government own revenues as a share of general government revenues, as explanatory variables. However, data for different layers of government are not consolidated, raising conceptual problems. They are also not available for all countries over the entire sample period. Given the limited size of our sample, we dropped these variables to avoid further missing observations. We thank Gerhard Schwab for the data screening.

H2: More stringent fiscal rules reduce growth of public debt in states with high ideological but not in states with low ideological distance.

The thrust of the analysis is variation finding, i.e., a comparison of the effects of institutions between two groups of countries. This contrasts with other empirical studies (de Haan et al. 1999, von Hagen and Harden 1994, Kontopolous and Perotti 1999, Arreaza et al. 1999) that consider a universal impact of budgeting institutions across all EU-15 member states. One can pursue two different econometric approaches for this exercise. One is to combine the delegation index and the fiscal rules index with categorical dummy variables for the type of country and estimate the model for all countries simultaneously. The other is to split the sample into two parts, one for delegation states and one for contract states. The first approach has been used by Hallerberg et al. (2001). Here, we opt for the alternative one, since we have a larger number of observations and this approach does not restrict the coefficients on the other variables to be the same for both groups of countries.

Our sample starts in 1985 and ends in 2004 and has a total of 296 observations due to missing data on debt-servicing costs in Greece during 1989-1992. Using the information provided in questionnaires and further documentary analysis (see Hallerberg 2004) changes in institutional rules during the sample period were coded for the years in which major reforms took place.¹⁴

For the estimation of this model, two further issues have to be taken into account: heterogeneity and endogeneity. The nature of our data, in particular the institutional variables which show little time variation, does not allow us to use common panel data estimators with fixed or random effects to capture the cross-sectional heterogeneity. As explained in more detail in the annex to this paper, a dynamic panel estimate of equation (1) requires a transformation of variables, which would dramatically reduce the number of non-zero observations for budgetary institutions and lead to unreliable estimates. Therefore, we use an OLS estimate and include more than the usual set of structural variables in this context. A relatively large set of structural variables, which often have more between than within group variation, contributes to the consistency of the estimates since these variables capture potential heterogeneity across groups. Furthermore, doing so helps to minimize the risk of an omitted variables bias. To compute the standard errors of the estimates, we account for groupwise

¹⁴ In particular, the main change in the index occurs as of 1993 for Belgium, Ireland; 1994 for Spain, 1995 for the Netherlands; 1996 for Finland, 1997 for Italy, Sweden; and 1998 for Austria, Denmark, France, Great Britain, Germany, Greece, Luxembourg, and Portugal.

heteroscedasticity and contemporaneous correlation across countries of the error terms with panel-corrected standard errors.¹⁵

Regarding the endogeneity problem, one might question the validity of the above specification to estimate equation (1) due to the potential endogeneity of contemporaneous macro-variables. Output growth, the unemployment rate, and the interest rate may be affected by contemporaneous fiscal shocks. A further objection may be raised regarding the validity of our institutional measures. Changes in budgeting institutions may be endogenous components of fiscal adjustment strategies to comply with the Maastricht criteria.¹⁶ If they are, the OLS estimates would be biased. To tackle this issue, we conduct a Hausmann specification test for endogeneity of the macro-economic and institutional variables (see Wooldridge 2002). For the macroeconomic variables, we also checked for an impact of lagged variables in levels and first differences in the first stage regression.¹⁷ Since our sample includes annual data, we use a maximum of two lags. Then we added further variables to the model, i.e, the output gap, long-term interest rates, and the contemporaneous US real GDP growth rate, the change in the US unemployment rate and the US real long-term interest rate.¹⁸ These variables were kept in the model when they increase the overall explanatory power of the first stage regression model.

To control for the endogeneity of budgetary institutions, we instrumented the change in the delegation and rules index using the institutional setting and the debt level in 1991. The debt level in 1991 captures the need for fiscal restraint over the coming years in order to maintain or achieve fiscal sustainability. It should therefore be correlated with the institutional reform efforts made later on, but since it precedes the convergence process starting in 1992, it is uncorrelated with the structural error term. The results of the tests are presented in Table 3, which suggests that endogeneity is not to be a problem in our case.

¹⁵ The command is `xtpcse` in Stata 9.2.

¹⁶ An important question to consider is why countries change their budget institutions. The answer is beyond the scope of this paper, but there is work that considers this question. In a book-length treatment that traces changes in budget institutions in the EU-15, Hallerberg (2004) contends that two preconditions are needed for the appropriate institutions to be put in place. First, the party system must be competitive so that voters can punish incumbents who do not maintain fiscal discipline. Second, the party system must be stable so that budget rules have time to become institutionalized. Hallerberg (*ibidem*) concludes that Maastricht may have helped focus decision-makers on maintaining fiscal discipline in some countries like Belgium and Italy, but it was the institutionalisation of certain forms of fiscal governance (Belgium contracts, Italy delegation) that mattered the most.

¹⁷ This is to reflect the different approaches to instrumenting variables in dynamic panel models using GMM estimators (see Baltagi 2005).

¹⁸ See e.g Gali and Perotti (2003) who also use US GDP data for this purpose. The role of the US long-term bond yields for financial conditions in Europe is well-documented (see Favero et al. 1997, Cordogno, Missale and Favero 2004).

5.2. *Empirical results*

The estimation results of our model for the entire sample of countries are presented in Table 4. First, the baseline model including economic controls and political factors explains roughly 60% of the variance. This is quite satisfactory. Several of the macroeconomic variables have the expected effects on changes in public debt. Real GDP growth has a negative impact, while changes in unemployment produce a strong rise in public debt. The lagged debt level has a small negative coefficient suggesting that countries raise their budget balances in response to past fiscal deficits. This reaction implies that these countries in theory respect their inter-temporal budget constraints, although the coefficient seems rather small.

Regarding the political variables, we find empirical evidence for an electoral cycle, indicating that public debt tends to increase more in election years. Smaller ideological differences among the parties forming a coalition reduce the growth of public debt. Adding the structural factors to this model does not lead to any additional explanatory power. All three structural variables – population, openness and volatility – remain insignificant.¹⁹ When the set of institutional variables is added, the overall explanatory power of the model increases, albeit slightly. The delegation index carries a negative coefficient, which is statistically significant only at the 10% level. The rules index misses even that standard, albeit by a very small margin ($p=0.109$)

Table 5 contains the estimates of separate regressions for states with low and high ideological distance respectively. The overall explanatory power of the model for the group with high ideological distance is considerably larger than for states with ideologically well-aligned governments and all countries taken together. Political business cycles are significant only for low ideological distance states, where debt growth on average is about 2 percentage points higher during election years, according to our coefficient estimate. The fact that the electoral cycle plays a stronger role in such states makes intuitive sense and is compatible with findings by Hallerberg and von Hagen (1998) and Clark and Hallerberg (2000). Coalition governments in competitive party systems probably find it harder to agree on a fiscal expansion during election years, since it may not benefit all parties equally. For one-party governments, such distributional aspects do not arise. Fiscal restraints on lower levels of government only matter for the group of high ideological distance states. This result seems to be mainly driven by the Northern countries, which generally have minority governments. Specifically, Denmark and

¹⁹ As discussed above, we keep these variables in the model to capture cross-sectional variance that should not be ascribed to the institutional indices.

Sweden have borrowing restraints on local governments and had fairly low budget deficits or even surpluses at least from the mid-1990s onwards.²⁰

For the group of high ideological distance states, the delegation index has a positive coefficient, which, however, is not statistically significant at standard levels. In contrast, the fiscal rules index has a statistically significant, negative effect on the growth of public debt. This suggests that tightening fiscal rules in high ideological distance states leads to a decline in the growth rate of public debt. Our result also suggests that the strengthening of multi-annual budget plans in such states during the 1990s has a long-run pay-off in terms of lower public deficits and debt.

For the group of low ideological distance states, the delegation index has a significant and negative coefficient. This shows that strengthening elements of delegation in the budgeting process has a negative long-run effect on public debt and deficits in this group of countries. Thus, the reforms of the budget processes strengthening delegation in these countries during the 1990s should have a long-run benefit in terms of higher fiscal discipline.²¹ The fiscal rules index, in contrast, has a negative coefficient that is statistically significant only at the $p=.1$ level for this group of countries. Thus, tightening fiscal rules is, at best, an inefficient way to tighten fiscal discipline in low ideological distance states. In neither of the regressions is the fiscal convergence variable statistically significant, which suggests that there was not a direct “Maastricht effect.” In sum, our empirical results are consistent with the two hypotheses postulated above.

6. Summary

In this study we have updated and extended previous research on budgeting processes in European countries. Using a unique data set we have described the current structure of budgetary processes and the development of a selected set of institutions over the last ten years. The main finding is that budgetary processes generally are more centralised now than they were in the early 1990s, when several countries still showed rather fragmented decision-making structures giving rise to a budgetary co-ordination problem. As a result, spending and deficit biases should be less prevalent in budgetary decision-making now than they were a

²⁰ This result also overturns the counterintuitive finding for the reduced sample on which Hallerberg et al. (2004) was based.

²¹ In contrast to Hallerberg et al. (2004), we find no statistically significant impact of fiscal rules in delegation states due to the larger sample period.

decade ago in several highly indebted European countries. Furthermore, institutional reforms in several countries were in line with our functional considerations relating the structure of government to the type of fiscal governance, and there remain clear differences in the pattern of budgetary institutions between low and high ideological distance states. The differences are small when we look at aggregate indices of budgetary institutions, but they can be large when we consider individual delegation and fiscal rules items.

The budgetary impact of these forms of governance has been the main topic of our paper. We find that delegating budgetary decision-making to the minister of finance effectively improves fiscal discipline where the ideological dispersion of government is nil or sufficiently small, i.e., countries which typically have one-party governments or coalition governments formed by closely aligned parties over most of the sample period. The opposite is true for the stringency of fiscal rules, which are effective in states with a considerable degree of ideological dispersion in government. These results confirm that the choice of institutions to strengthen fiscal discipline and their impact depends critically on the type of government and, hence, the political environment and constitutional characteristics such as the electoral system.

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Annex – Tables and Graphs

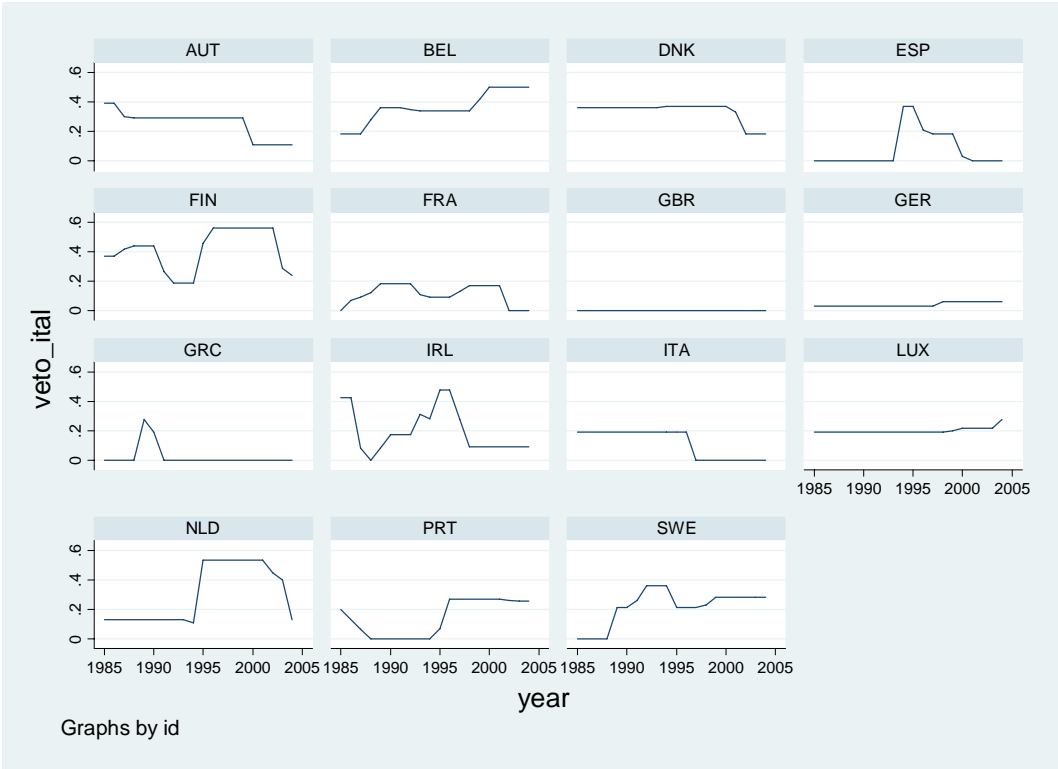
Table 1: Electoral System, Government Constellation and Type of Fiscal Governance, 1980-2000

	Electoral System	District Magnitude	Average No of Parties	Change in Coalition or Ruling Party	Mean Ideological Range	Ideological Range Low or High
Austria	2-tier PR; remainder transfer	20/91	1.9	37.5	0.26	H 84-99, L 00-
Belgium	PR	23	4.5	63.6	0.36	H
Denmark	2-tier PR; adjustment seats	7/175	2.5	60.0	0.34	H
Finland	PR	13	3.9	66.7	0.41	H
France	Plurality	1	1.6	53.8	0.11	L
Germany	2-tier PR, adjustment seats	1/603	1.9	30.0	0.04	L
United Kingdom	Plurality	1	1.0	20.0	0.00	L
Greece	reinforced PR	6	1.0	42.8	0.02	L
Ireland	STV	4	1.8	77.8	0.20	H 85-97, L 98-
Italy	2-tier PR; remainder transfer	19/625	4.2	23.5	0.13	H 85-96, L 97-
Luxembourg	PR	14	2.0	40.0	0.20	H
Netherlands	PR	150	2.4	71.4	0.30	H
Portugal	PR	12	1.7	18.2	0.14	L
Spain	PR	6	1.0	28.6	0.07	L
Sweden	2-tier PR	11/350	1.5	40.0	0.22	H

Note: Data for electoral systems and district magnitude are taken from Hallerberg and von Hagen (1999). The data were updated where necessary. Other data are own calculations based on data provided by Georges Tsebelis (see Table A1 for details). A two-tiered electoral system is one where an upper level of seats is used to fill in the results at a lower level to make the overall distribution of seats more proportional; in Denmark, for example, there are seven seats per electoral district on average but there are 175 seats used to fill in the results so that the proportion of seats a party wins matches more closely the proportion of votes it receives. In all 2 tier systems, the district magnitude lists first the number of seats per district at the lower level then the number of seats in the upper level. The average number of parties in government and changes in the coalition or ruling party include data until 1995 for Italy and exclude three short-term caretaker governments in Greece (1989-90). The mean ideological range is computed for the years 1985 to 2004 to match the years in the empirical results below. They are calculated according to Tsebelis (2002) and

normalized to be on a scale between 0 and 1. A score of 0 means that there are no ideological differences among the party(ies) in government. Abbreviations in the last column indicate whether the ideological scores are considered Low or High based on the average ideological range and on the overall pattern displayed in Graph 1.

Graph 1: Ideological Distances among Parties Needed to Pass Budget Legislation

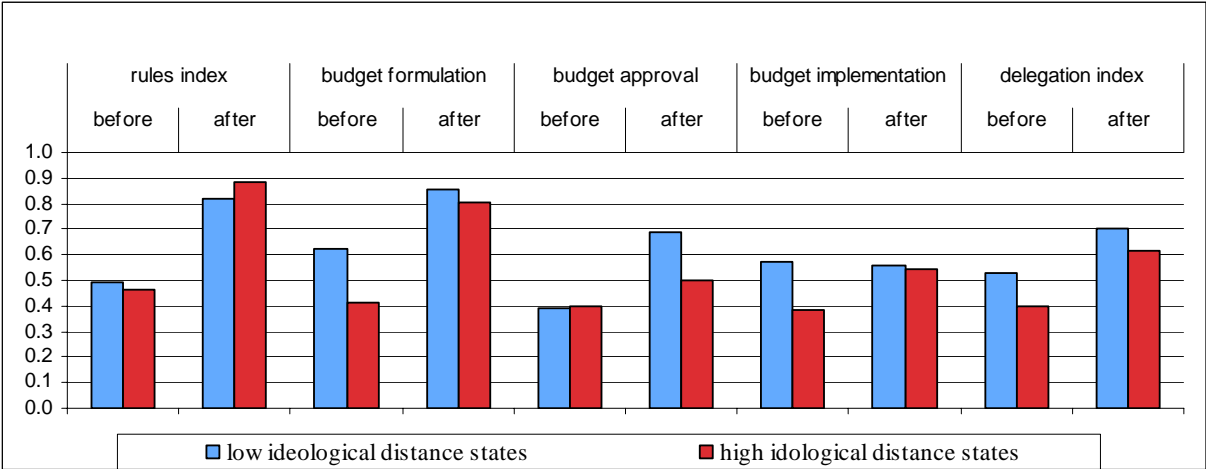


Source: Own computation based on <http://www.polisci.ucla.edu/tsebelis/> and updated through 2004. The y axis has values for the standardised veto player distance, which range theoretically from 0 to 1.

Table 2: Institutional Items

Budgetary Process		
Executive Planning	Legislative Approval	Implementation
<ul style="list-style-type: none"> - general constraint - agenda setting of minister of finance - budget norms (broad or for specific spending items) - structure of negotiations in cabinet 	<ul style="list-style-type: none"> - amendment limitations - amendment off-setting - budget amendment can lead to fall of government - all expenditures passed in one vote - global vote on budget (vote on total size of budget) 	<ul style="list-style-type: none"> - minister of finance can block expenditures - cash limits - constraints on transfer allowance - changes in budget law - disbursement approval - carry-over regulations
Fiscal Targets		
<ul style="list-style-type: none"> - type of multiannual target (revenues, spending, deficits) - horizon - nature of plan (quality and regularity of planning exercise) - degree of commitment (legal, political or indicative) 		

Graph 2: Pattern of Institutional Change in EU Member States Before and After Major Institutional Reforms



Note: For institutional items included see Table 2. The sum of all items has been normalized to one. The major changes in the index occurs as of 1993 for Belgium, Ireland; 1994 for Spain, 1995 for the Netherlands; 1996 for Finland, 1997 for Italy, Sweden; and 1998 for Austria, Denmark, France, Great Britain, Germany, Greece, Luxembourg, and Portugal.

Table 3: Hausman Tests for Endogeneity of Macro-economic and Institutional Variables

Variables		
Endogeneity of macro-variables	3.70	20.41
Endogeneity of macro- and institutional variables	4.50	8.43
Nobs	167	129
Country:	large ideological distance states	small ideological distance states

Note: The dependent variable is the change in gross general government debt as share of GDP. Asterisks indicate statistical significance at the 10 (*), 5 (**), and 1 (***) percent level. The H0-hypothesis of the Hausman test is that the difference in coefficients are not significant. The three macro-economic variables GDP growth, change in unemployment and debt servicing costs were instrumented using all exogenous variables of the model described in model 1 plus lags of the output gap and real GDP growth, lagged changes in unemployment, lagged long term interest rates and US GDP and long-term interest rates. The delegation and fiscal targets index were instrumented using the debt level and institutional setting in 1991.

Table 4: The Impact of Budgetary Institutions on Public Debt

Variables			
Constant	2.19*** (0.57)	1.86** (0.89)	3.29*** (1.15)
Change in Debt_t-1	0.33*** (0.07)	0.31*** (0.07)	0.28*** (0.07)
Debt_t-1 (Level)	-0.02*** (0.008)	-0.02*** (0.008)	-0.02*** (0.008)
Real GDP growth	-0.34*** (0.11)	-0.32*** (0.12)	-0.37*** (0.13)
Change in unemployment rate	1.34*** (0.26)	1.09*** (0.26)	1.09*** (0.26)
Debt servicing costs	0.42*** (0.17)	0.44*** (0.17)	0.31* (0.16)
Openness		-0.005 (0.003)	-0.003 (0.004)
Population		-0.0 (0.0)	0.01 (0.01)
Output Volatility		0.36 (0.23)	0.30 (0.23)
Electoral year	1.13** (0.50)	1.11** (0.49)	1.10** (0.47)
Veto	-2.09*** (0.85)	-1.92* (1.12)	-1.45 (1.13)
Borrowing restraints for lower level of government			-0.22 (0.44)
Fiscal convergence			-0.12 (0.18)
Delegation index			-2.01* (1.19)
Targets index			-0.76 (0.48)
R-squared	0.58	0.59	0.60
Wald Statistic	274.82***	296.22***	342.08***
Nobs	296	296	296

Note: The dependent variable is the change in gross general government debt as share of GDP. Standard errors are shown in parenthesis. Asterisks indicate statistical significance at the 10 (*), 5 (**), and 1 (***) percent level. The targets index is statistically significant at p=0.109.

Table 5: The Impact of Budgetary Institutions on Public Debt

Variables	Country groups	
	Large Ideological Distance States	Small Ideological Distance States
Constant	0.48 (1.78)	5.47*** (1.43)
Change in Debt _{t-1}	0.29*** (0.08)	0.16*** (0.07)
Debt _{t-1} (Level)	-0.02** (0.01)	-0.03*** (0.009)
Real GDP growth	-0.26 (0.13)	-0.41*** (0.16)
Change in unemployment rate	1.27*** (0.32)	0.79** (0.32)
Debt servicing costs	0.76*** (0.21)	0.16 (0.19)
Openness	0.009* (0.005)	-0.016 (0.010)
Population	0.08*** (0.02)	-0.01 (0.01)
Output Volatility	0.14 (0.25)	0.04 (0.28)
Electoral year	0.28 (0.61)	2.09*** (0.60)
Veto	-0.90 (2.00)	1.45 (2.23)
Borrowing restraints for lower level of government	-1.99** (.72)	1.08 (0.70)
Fiscal convergence	0.20 (0.22)	-0.27 (0.17)
Delegation index	1.60 (2.86)	-2.85** (1.46)
Targets index	-1.28** (0.64)	-1.68* (0.93)
R-squared	0.71	0.55
Wald Statistic	274.74***	443.49***
Nobs	160	136

Note: The dependent variable is the change in gross general government debt as share of GDP. Standard errors are shown in parenthesis. Asterisks indicate statistical significance at the 10 (*), 5 (**), and 1 (***) percent level. All tests are two-tailed.

Annex

Table A1: Variables – Definitions and Data Sources

Variable	Definition/Code	Source
change in debt	Δ gross government debt to GDP ratio (in percent)	European Commission AMECO data set
balance	general government budget balance	European Commission AMECO data set
real GDP growth (in percent)		European Commission AMECO data set
change in unemployment rate	Δ unemployment rate (in percent)	European Commission AMECO data set
debt service	debt service costs: $\frac{(r_t - y_t)}{100} D_{t-1}$ where r = real long-term interest rates; y = real GDP growth; D = debt/GDP ratio.	own computation based on European Commission AMECO data set
election year	Coded as the percent of a year that was a pre-electoral year; July 1, for example, is .5 this year and .5 the previous year.	Clark and Hallerberg (2000) and Hallerberg (2004), supplemented with the country studies at http://www.economist.com
veto	maximum ideological distance among parties based on ideological scores along an economic, left-right dimension needed for passage of a budget bill. Where the government has a majority, this corresponds to the coalition parties. Where the government is in minority, we add the parties that usually supported the budget or, where this was unknown, the closest parties that would result in a majority. Tsebelis did not provide information for Greece, while his Italian data end in 1994. We therefore substitute the manifesto data provided in Budge, et al (2001) in the regressions for these countries only. Given that distances are zero except for a few months in 1989-90 for Greece, which does not appear in our regression for those years because of missing data, this is unproblematic. Figures standardised to run from 0 to 1.	Own computation based on http://www.polisci.ucla.edu/tsebelis/
population (in mill.)		European Commission AMECO data set
openness	exports and imports as share of GDP (in %)	Own computation based on European Commission AMECO data set
output volatility	standard deviation of real GDP growth over the past 8 years (t-9 to t-1)	Own computation based on European Commission AMECO data set
federal borrowing restriction	1 if restriction exists, 0 otherwise	Eichengreen and von Hagen

		(1995) until 1995, Hallerberg et al. (2001) thereafter
fiscal convergence	(deficit to GDP ratio – 3%) if deficit stood above 3% deficit to GDP reference value during the period from 1992 to 1997; 0 otherwise	Own computation based on European Commission AMECO data set; the contemporaneous deficit value is instrumentalised using the past deficit, annual dummies and macro-variables capturing the international environment in year t
delegation index	Sum of average scores of institutional items in the budget formulation, approval and implementation stage	Computations based on data presented in Table A2-A4
targets index	Average score of institutional items	Computations based on data presented in Table A5

Note: Δ is the first difference operator.

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Annex:

The design of fiscal rules and forms of governance in European Union countries

Annex I. Specification Issues

For panel data, typically a fixed or random effects model is estimated to capture the heterogeneity of data. In our case, the model (1) would take the following form:

$$\Delta debt_{i,t} = \alpha + \beta \Delta debt_{i,t-1} + \zeta \Gamma_{i,t} + \gamma I_{i,t} + \nu_i + \varepsilon_t \quad (\text{A } 1)$$

For simplicity of exposition, we collect all exogenous non-institutional variables in the matrix Γ . ν_i is the country effect allowing the intercept to vary across countries. An OLS estimator of this model would be biased and inconsistent. Since the dependent variable is a function of the fixed effect ν_i , the lagged dependent variable included on the right hand side is correlated with the error term. This problem is solved by either using the within-estimator or first differencing the data.²² The within estimator is biased and its consistency depends on T , the time dimension, being large.²³ For our analysis, the length of the sample for the most important specification is relatively small, with $T=13$, which would suggest the use of the second option. The first-differenced model takes the following form:

$$\Delta^2 debt_{i,t} = \beta \Delta^2 debt_{i,t-1} + \zeta \Delta \Gamma_{i,t} + \gamma \Delta I_{i,t} + \varepsilon_t \quad (\text{A } 2)$$

As is immediately evident for the institutional variables, which are our main concern, the transformation sets all country observations without any institutional change to zero and therefore reduces the sample of non-zero observations to 30 for the delegation and rules indices. Estimates for 15 EU member states based on this specification would be extremely unreliable.

²² First differencing is common to all dynamic panel estimates. Estimators then differ in how to instrumentalise variables and whether a weighting matrix is used to increase the efficiency of the estimate. For an overview of the instrumental variable (Anderson-Hsiao) and GMM approaches see Baltagi, B., 2005. *Econometric Analysis of Panel Data - 3rd Edition*. John Wiley & Sons, San Francisco; and S. Bond, 2002. *Dynamic panel data models: A Guide to Micro Data Methods and Practice*. CEMMAP Working Paper CWP09/02, London.

²³ The reason is that the transformed lagged dependent variable $\Delta debt_{i,t-1} - \overline{\Delta debt}_i$ is correlated with $\nu_{i,t} - \nu_i$. See Baltagi (ibid:125-126) for a more detailed exposition.

Annex II. Institutional Data – Coding Scheme and Scores

Table A1: Coding Scheme for Budgetary Institutions

Budget Negotiations
<i>general constraint</i> : none (0); balance as share of GDP (1); balance and debt as share of GDP (2); spending as share of GDP or Golden Rule (3); spending and debt as share of GDP (4)
<i>agenda setting</i> : for budget negotiations: minister of finance or cabinet collects bids from spending ministers (0); minister of finance or cabinet collects bids subject to the pre-agreed guidelines (1); cabinet decides on budget norms first (2); minister of finance proposes budget norms to be voted on by cabinet (3); minister of finance or prime minister determines budget parameters to be observed by spending ministers (4)
<i>scope of budget norms in the setting of agenda</i> : expenditure or deficit (0); ‘specific’ (1.33), ‘broad’ and ‘specific’ (2.66), ‘broad’ (4)
structure of negotiations: all cabinet members involved together (0); multilateral (2); bilateral between spending ministers and minister of finance (4)
Budget Approval
<i>parliamentary amendments</i> : unlimited (0); limited (4)
<i>parliamentary amendments required to be off-setting</i> : no (0); yes (4)
<i>can cause fall of government</i> : no (0); yes (4)
<i>all expenditures passed in one vote</i> : yes (0); mixed (2); votes are chapter by chapter (4)
<i>global vote on total budget size</i> : final only (0); initial (4)
Budget Implementation
<i>minister of finance can block expenditures</i> : no (0); yes (4)
<i>spending ministries are subject to cash limits</i> : no (0); yes (4)
<i>disbursement approval required from minister of finance or controller</i> : no (0); yes (4)
<i>transfers of expenditures between chapters</i> : unrestricted (0); limited (0.64); requires consent of minister of finance (1.28); requires consent minister of parliament (1.92); only within departments possible (2.56); only within departments with consent of minister of finance (3.2); not allowed (4)
<i>changes in the budget law during execution</i> : at discretion of government (0); by new law which is regularly submitted during fiscal year (1); at discretion of minister of finance (2); require consent of minister of finance and parliament (3); only by new budgetary law to be passed under the same regulations as the ordinary budget (4)
<i>carry-over of unused funds into the next year</i> : unrestricted (0); limited (1.33); limited and requires authorization by the minister of finance or parliament (2.66); not possible (4)
Budget Rules
<i>multiannual target</i> : none (0); spending or taxation (2); total budget size (4)
<i>planning horizon (years)</i> : two (1); three (2); four (3); five or more (4)
<i>nature of multi-annual target</i> : ad hoc forecast (1); fixed forecast (2); updated forecasts, but not based on consistent macro-model (3); updated on basis of consistent macro-model (4)
<i>degree of commitment</i> : internal orientation (1); indicative (2); weak political (3); strong political (4)

Table A2: Institutions – Executive Planning Stage (1999, 2001/4)

country	Gen_Con91	Gen_Con04	Ag_Set91	Ag_Set04	B_Norm91	B_Norm04	Str_Neg91	Str_Neg04
AUT	0	4	2	4	0	4	2	2
BEL	0	4	1	2	0	4	0	2
DNK	4	4	3	4	1.33	4	4	2
ESP	0	3	2	4	4	4	0	4
FIN	1	4	2	2	0	4	2	2
FRA	4	4	4	4	4	4	4	4
GBR	4	4	3	2	4	4	4	4
GER	3	3	1	2	4	4	4	2
GRC	0	2	1	4	0	4	0	4
IRL	2	4	1	4	0	4	0	2
ITA	2	4 (2)	1	4	2.66	4	2	4
LUX	3	3	4	4	4	4	0	0
NLD	1	3	3	2	2.66	4	4	2
PRT	1	4	2	2	2.66	4	4	2
SWE	0	3	0	3	1.33	4	4	4

Note: Figures represent scores according to the coding scheme presented in Table A2. Values in brackets indicate that institutions were modified after 2001. Abbreviations indicate the following items in the years 1991 and 2001 respectively: Gen_Con (general constraint), Ag_Set (agenda setting of minister of finance), B_Norm (budget norms), Str_Neg (structure of negotiations)

Table A3: Institutions – Legislative Approval Stage (1991, 2001/4)

country	Am_Lim 91	Am_Lim 04	Am_Off 91	Am_Off 04	Am_Fall 91	Am_Fall 04	Ex_Vote 91	Ex_Vote 04	Gl_Vote 91	Gl_Vote 04
AUT	0	0	0	0	0	0	4	4	0	0
BEL	0	0 (4)	0	0	4	4	0	0	0	4
DNK	0	0	4	0	4	0	4	4	0	4
ESP	4	0	0	4	0	0	0	0	0	4
FIN	0	0	0	0	4	4	2	2	0	0
FRA	4	4	4	4	4	4	2	0	4	4
GBR	4	4	0	4	4	4	4	4	4	4
GER	0	0	0	4	4	4	0	2	0	4
GRC	0	4	0	4	0	4	0	0	0	4
IRL	4	4	0	4	4	4	0	4	0	0
ITA	4	0	0	4	0	4	2	2	0	4
LUX	4	4	0	0	4	4	0	0	0	0
NLD	4	0	0	0	4	4	4	4	4	4
PRT	0	0	0	0	4	4	0	0	1	4
SWE	0	0	0	4	4	4	4	4	4	4

Note: Figures represent scores according to the coding scheme presented in Table A2. Values in brackets indicate that institutions were modified after 2001. Abbreviations indicate the following items in the years 1991 and 2001 respectively: Am_Lim (amendment limitaitons), Am_Off (amendment off-setting), Am_Fall (budget amendment can lead to fall of government), Ex_Vote (all expenditures passed in one vote), Gl_Vote (global vote on budget)

Table A4: Institutions – Implementation Stage (1991, 2001/4)

country	Block_91	Block_04	CashL_91	CashL_04	Dis_91	Dis_04	Tran_91	Tran_04	Chan_91	Chan_04	Carry_91	Carry_04
AUT	4	4	4	4	4	4	3.2	4	0	0	2.66	2.66
BEL	0	4	0	0	4	0	2.56	0	4	0	0	0
DNK	0	4	4	4	0	0	1.92	0	4	3	0	0
ESP	0	0	0	4	0	0	0.64	1.28	4	0	1	4
FIN	0	0	0	0	4	4	4	4	0	0	4	4
FRA	4	4	4	4	4	4	2.56	2.4	4	0	1	1.33
GBR	0	4	4	4	0	4	1.92	1.28	4	4	1	0
GER	4	4	4	4	4	0	1.28	0.64	3	0	2	2.66
GRC	4	4	4	4	0	4	1.28	1.28	2	0	3	0
IRL	0	4	0	0	0	4	3.2	1.28	4	4	3	1.3
ITA	0	4	0	4	0	4	0	0	1	0	0	0
LUX	4	4	0	4	0	0	0	4	4	4	4	4
NLD	0	0	0	0	4	0	0	1.92 (2.56)	0	0	1	1.33
PRT	0	4	4	4	4	0 (4)	0	0	4	2	2	1.3
SWE	0	0	0	0	0	0	0	4	4	4	1.33	2.66

Note: Figures represent scores according to the coding scheme presented in Table A2. Values in brackets indicate that institutions were modified after 2001. Abbreviations indicate the following items in the years 1991 and 2001 respectively: Block (minister of finance can block expenditures), CashL (cash limits), Dis (disbursement approval), Tran (constraints on transfer allowance), Chan (changes in budget law), Carry (carry-over regulations)

Table A5: Institutions – Fiscal Rules (1991, 2001/4)

country	Target_91	Target_04	Horizon_91	Horizon_04	N_Plan_91	N_Plan_04	Commit_91	Commit_04	
AUT		2	4	2	2	1	4	2	3
BEL		0	4	0	4	0	4	0	4
DNK		2	4	2	3	2	4	2	2
ESP		0	4	4	3	1	4	1	2
FIN		4	4	3	3	4	4	3	3
FRA		0	4	1	2	1	4	1	3
GBR		2	4	4	2	4	4	3	3
GER		4	4	3	3	4	4	3	3
GRC		0	4	2	2	1	4	2	2
IRL		4	4	4	2	1	4	3	2
ITA		4 (2)	4	3	3	1	4	3	2
LUX		0	4	0	4	0	4	0	4
NLD		4	4	4	3	2	2	4	4
PRT		0	4	3	2	1	4	2	4
SWE		0	4	0	2	1	4	0	4

Note: Figures represent scores according to the coding scheme presented in Table A2. Values in brackets indicate that institutions were modified after 2001. Abbreviations indicate the following items in the years 1991 and 2001 respectively: Target (type of multi-annual target), Horizon (horizon), N_Plan (nature of plan), Commit (degree of commitment)

Table A6: Aggregate Delegation and Rules Indices, 1991 and 2001

	delegation index (1991)	delegation index (2004)	rules index (1991)	rules index (2004)
AUT	0.4	0.6	0.4	0.8
BEL	0.2	0.5	0.0	1.0
DNK	0.6	0.6	0.5	0.8
ESP	0.3	0.6	0.4	0.8
FIN	0.4	0.5	0.9	0.9
FRA	0.9	0.8	0.2	0.8
GBR	0.7	0.9	0.8	0.8
GER	0.6	0.6	0.9	0.9
GRC	0.2	0.7	0.3	0.8
IRL	0.3	0.8	0.8	0.8
ITA	0.3	0.7	0.7	0.8
LUX	0.5	0.6	0.0	1.0
NLD	0.6	0.5	0.9	0.9
PRT	0.5	0.6	0.4	0.9
SWE	0.4	0.7	0.1	0.9