# Fragmented fiscal policy

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## Abstract

This paper explores on a panel of 19 OECD countries the role of fragmentation in determining fiscal outcomes over the 1970–95 period. We first define the notion of fragmentation of fiscal policy-making as the degree to which the costs of a dollar of aggregate expenditure are internalized by individual decision-makers. Empirically, this notion has two key logical components: the number of decision-makers and the rules of the game, or the budget process. In turn, the number of decision makers can refer to the number of parties in a coalition, or the number of ministers in the cabinet. We test all these determinants against each other, and against perhaps the oldest explanation of all, ideology. We show that cabinet size and, to a lesser degree, coalition size and ideology, are significant and robust determinants of fiscal outcomes. In particular, transfers are the budget items most affected by these factors.
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## 1. Introduction

Many — perhaps most — economists would agree that the assumption of an infinite horizon, benevolent government is not a good starting point for a positive

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model of fiscal policy. But the agreement stops here: once giving up this assumption, there are almost endless theoretical possibilities to describe the process of fiscal decision-making.

Ultimately, the issue is an empirical one. Three broad types of positive determinants of fiscal outcomes have figured prominently in the academic and policy debate: political factors, like the strength and durability of the government; procedural factors, capturing the budget process; and perhaps the oldest explanation of all, ideology. Although a large theoretical and empirical literature has developed on the first two classes of explanations,[1] to date there is no comprehensive empirical investigation of the relative importance of all three explanations. Our main goal in this paper is to investigate and compare the role of these three factors in shaping the fiscal outcomes of a group of 19 industrialized countries over the 1970–95 period.

To organize the investigation, we focus on possibly the most recurrent intuition in both the theoretical literature and the policy discussion: the notion that a 'fragmented' policymaking process leads to loose fiscal outcomes. We define fragmentation as the degree to which individual fiscal policymakers internalize the cost of one dollar of aggregate expenditure. We identify two conceptually very different determinants of fragmentation: the number of decision-makers — which we call size fragmentation — and the structure of the process in which they interact — which we call procedural fragmentation.

We then must measure the three factors that we will test against each other — size fragmentation, procedural fragmentation, and ideology. We identify two direct and objective measures of the notion of size fragmentation: the number of parties in the coalition — which we refer to as coalition size — and the number of spending ministers — which we refer to as cabinet size. This distinction is new: starting with the seminal contributions by Roubini and Sachs (1989a,b), virtually all the existing empirical literature[2] (see below for a brief survey) has focused on one variant of the notion of coalition size, the 'type of government' variable, which typically ranks governments in descending order of 'political strength' as: single party majority governments, coalition governments, and minority/caretaker governments. However, one key message of this literature is that any inference based on this variable is extremely fragile to minor differences in the specification, the sample, and especially the coding of the variable itself. One advantage of our two measures of size fragmentation is that their coding is entirely objective. In addition, theoretically there are compelling reasons for the distinction we propose:

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[1]See, e.g., Alesina and Perotti (1995), deHaan et al. (1999) and Volkerink and deHaan (2001) for surveys. A more general survey of the political economy of fiscal policy is in Persson and Tabellini (1999a).

[2]The only exception we are aware of is deHaan et al. (1997) (which was brought to our attention after we completed the first draft of this paper) who include the number of parties as explanatory variable for the government deficit in a panel regression of 20 OECD countries.

after all, fiscal policy is ultimately decided by ministers within the cabinet. Indeed, we show that empirically cabinet size is the variable with the stronger and more robust impact on fiscal outcomes.

The notion of procedural fragmentation is necessarily more subjective. Still, we identify two conceptually well defined aspects that lend themselves to reasonably precise measurement: the nature of budget negotiations — whether bilateral or multilateral — and the existence of expenditure limits, either at the time of the submission of bids by the ministries or at the time of the negotiations.

Besides the set of issues we study, methodologically our empirical investigation differs from the existing ones in two key respects. First, the existing literature has focused almost exclusively on the deficit; by contrast, we pay specific attention to expenditure and revenues separately, and to individual components of the former.[3] Indeed, often there is no theoretically compelling reason why political and procedural variables should affect the deficit, but certainly there are always reasons to expect them to affect expenditure. For instance, there would be nothing unreasonable with a finding that leftist governments like 'bigger' governments, i.e., larger expenditures and revenues, but not necessarily larger deficits.

Second, we allow for political and institutional variables to have an asymmetric importance in 'normal' and 'difficult' times, based on the plausible intuition that good institutions are particularly important when the economic or budget environment deteriorates.

Briefly, our main results can be summarized as follows. First, fragmentation does matter, and so does our distinction between cabinet and coalition size. There is clear and robust evidence that larger cabinets are positively associated with the growth of deficits, of expenditure, and of all components of the latter, and in particular of transfers and wage government consumption. There is also considerable evidence that cabinet size is particularly important in times of economic difficulty and in times of fiscal distress. Coalition size and ideology are important determinants of transfers. By contrast, we find little evidence that procedural variables matter for the fiscal outcome.

Having listed what we think are our contributions in this paper, we should now be explicit on the many related issues that we do not address. We mention here two of particular importance. First, we do not study the impact of different electoral systems on the fragmentation of fiscal policy-making. Second, we do not study the notion of fragmentation over time, i.e., the effects of high turnovers of government on fiscal policy. Both issues have been studied elsewhere: the first by Grilli et al. (1991) and, more recently, by Hallerberg and Von Hagen (1999); Milesi-Ferretti et al. (1999), and Persson and Tabellini (1999b); the second has been the subject of much modeling and of the empirical investigation by Grilli et al. (1991) and deHaan et al. (1999), among others.

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[3]deHaan and Sturm (1994) briefly explore the effects of political variables on aggregate government spending. In addition, they also estimate the role of an ideology variable.

This paper has also many antecedents. As mentioned above, a fairly large literature, started by Roubini and Sachs (1989a,b), has studied the relationship between the 'type of government' and the deficit. This literature includes Grilli et al. (1991), Edin and Ohlsson (1991), deHaan and Sturm (1994, 1997), deHaan et al. (1999) and Volkerink and deHaan (2001). We discuss the relationship between this literature and our results in Section 5.

A second strand of literature has studied the relationship between procedural variables and fiscal outcomes. Von Hagen (1992) and Von Hagen and Harden (1994) have provided a seminal and thorough analysis of budget processes in European countries. We view our contribution as complementary to these papers. Because of the complexity and subtlety of the typical budget process, our approach is no substitute for the kind of in-depth, case-by-case analysis that these two papers perform.

Like us, deHaan and Sturm (1994), deHaan et al. (1999) and Hallerberg and Von Hagen (1999) test for the role of the budget process in a multivariate panel context. The framework of their analysis and the methodology they use are different from ours: we discuss the relationship between this strand of literature and our results in Section 8.

The plan of the paper is as follows. In the next section we set up a theoretical framework for our investigation. Section 3 presents the data, and Section 4 the basic specification. Section 5 explores the role of the 'type of government' variable that has been used almost exclusively in the existing literature. Section 6 studies the role of size fragmentation and of ideology; Section 7 shows that the role of size fragmentation becomes particularly important in difficult times. Section 8 presents results concerning procedural variables. Section 9 concludes.

## 2. Fragmentation: meaning and consequences

In this section, we place our empirical investigation in the context of the existing theoretical work. We investigate the idea that ''fragmentation of the process leading to the formulation and implementation of fiscal policy leads to loose fiscal policies''. Broadly speaking, we denote by fragmentation of fiscal policy-making the degree to which the costs of a dollar of aggregate expenditure are internalized by individual fiscal decision-makers.

To illustrate this notion, we start from the static case, where aggregate expenditure is equal to aggregate taxation so that 'loose fiscal policy' is equivalent to 'high government expenditure'. One can identify two basic determinants of the degree of internalization of the costs of aggregate expenditure: (i) the number of decision-makers; and (ii) the structure of the process in which they interact. In the next subsections, we place these notions in the context of the existing theoretical literature.

## 2.1. Size fragmentation

The classic contributions on the 'common pool problem' by Weingast et al. (1981) and Shepsle and Weingast (1981) still provide the best intuition to understand the relationship between the number of decision makers and the size of government expenditure. For the moment, we fix the second component of fragmentation — the structure of decision-making — by assuming a specific rule to aggregate preferences: log-rolling, whereby each of a simple majority of $n/2 + 1$ individuals agree to approve the expenditure proposed by the other $n/2$ members of the majority.[4]

Individual groups — and hence, indirectly, their representatives in the fiscal policy decision-making process — benefit from specific types of expenditures; by contrast, because of basic constitutional principles, typically taxation falls on large segments of the population and cannot be easily targeted. Hence, each group and their representatives fully internalize the benefits of the expenditures they propose; however, they internalize only a fraction $1/n$ of the costs the associated revenues impose on the whole economy. Clearly this fraction falls as the number $n$ of groups and their representatives increases. Thus, a larger number of participants in the process leads to a larger total expenditure.

This intuition is straightforward enough. When it comes to making the notion operational, however, one can think of several possible interpretations, depending on the basic decision making unit one has in mind.[5] We focus on two, both relating to the fragmentation of the executive power. The first is the interpretation that has been adopted, implicitly or explicitly, in much of the existing empirical literature. According to this interpretation, each party in government is the elementary decision making unit; the rationale is that — for the purposes of fiscal decision-making — a party is a more or less cohesive entity representing the interests of specific groups in government expenditure. We refer to this case as coalition size, and capture this notion in the variable 'Numbers of Parties in the Coalition' (NPC). In a second interpretation, each spending minister in the government is the basic unit, on the ground that each participates in the formulation of and makes demands on the overall budget. We refer to this second case as cabinet size, which generates the variable 'Number of Spending Ministers' (NSM). We describe these and the other variables in Section 3 and in Appendix A.

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[4]This rule to aggregate preferences is somewhat unsatisfactory from a game–theoretic point of view, but we assume it here both because it helps understand the basic intuition and because it is common in the literature.

[5]For instance, this notion could apply to the number of sub-central levels of government or the number of interest groups.

## 2.2. Procedural fragmentation

The process by which fiscal policy is ultimately decided within the government is typically more structured than in the models of majority voting sketched above. From the perspective of fragmentation two aspects of the budget process are key.

To illustrate the first aspect, consider the following modification to the process leading to the final budget. Rather than the ministers deciding overall expenditure by majority voting and logrolling, suppose the overall expenditure level is set first by a single decision maker — the 'Finance Minister' for brevity — or a small committee.[6] The basic model of size fragmentation in Section 2.1 suggests that the Finance Minister or the committee can now fully internalize the costs of expenditure, because they set total expenditure and therefore, through the government budget constraint, total revenues. Thus, in this case one would expect less fragmentation and therefore, other things equal, smaller expenditure. The dummy variable TARGET1 captures the existence of spending limits before the drafting of the budget.

As Hallerberg and Von Hagen (1997b) have emphasized, this conclusion is correct if the agents in charge of setting the initial total budget are different from the agents deciding its allocation. But if the same agents decide at both stages, by backward induction they will take into account the likely allocations in the second stage when setting the total budget first. In this case, there is no reason why the common pool problem should be resolved by setting the total budget first.[7] Thus, fiscal discipline is likely to be enhanced when an individual or a small committee set the total budget first. We capture these features in the dummy variable TARGET2.

A second notion of procedural fragmentation concerns how ministers interact with each other when making bids on the budget. To our knowledge, this notion has not been formalized, but it is sufficiently widespread and intuitive to warrant an empirical investigation. Suppose the Finance Minister or a small committee engage in bilateral negotiations with each minister. Clearly, fragmentation is smaller in this case: even though the individual ministers do not internalize the costs of their policies, their demands are sifted and negotiated by an agent who is in the position to internalize them. At the other extreme, fragmentation is at a maximum when aggregate expenditure is determined by multilateral negotiations among all spending ministers involved. These considerations lead to the dummy

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[6]This is clearly a simplification. Suppose instead the Finance Minister has agenda setting power, and can block amendments, as in Hallerberg and Von Hagen (1997). The results would be similar.

[7]The intuition that a 'top-down' approach should lead to lower expenditure has had a widespread influence on policy. A more aggressive use of spending limits was the cornerstone of many recent attempts at fiscal consolidation. Of the six countries considered in a study by the General Accounting Office (1994) on fiscal consolidations, all except Mexico explicitly relied on some form of top-down approach. These limits were particularly stringent in the UK, less so in Canada, Germany, Australia, and Japan. In 1996 Sweden also adopted expenditure ceilings.

variable NEGOT. Despite its lack of theoretical formalization, this aspect has proved very popular in policy discussion, and we believe it deserves an empirical investigation.[8]

## 2.3. Dynamics

Virtually all existing empirical investigations of institutional and political determinants of fiscal policy focus on the deficit as the fiscal policy variable to be explained. To explore the relationship between fragmentation and the deficit, one needs a dynamic model. A first step in this direction is Velasco (1999). The key mechanism of this model is also a 'common pool' problem, except that now each decision-maker regards the whole of government assets — including the present discounted value of all future taxes — as a common property. If a decision-maker moderates its expenditure demands and hence 'saves' more tax revenues for the future, the perceived rate of return on these budget savings is less than the social rate of return, because in a non-cooperative dynamic Markov equilibrium the other decision-makers will appropriate much of this savings. Hence, there is an incentive to anticipate expenditure relative to the flat path of expenditure that a central planner would choose; in addition, this incentive is stronger, the larger the number of decision-makers. For any given path of taxes, higher expenditure at the beginning also means larger deficits.[9]

## 2.4. Normal and difficult times

A common intuition suggests that the effects of fragmentation might not be symmetric. Sound fiscal policymaking is relatively easy when the external macroeconomic environment is in good shape: the role of politics and institutions in influencing the policy response is likely to become particularly evident when the external environment deteriorates, either because the economy is in a recession, or because public finances are under stress. While empirically plausible, this idea has

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[8]Notice that the aspects of procedural fragmentation we have focused on are fundamentally different from those studied in a large literature on bargaining and the budget, pioneered by Baron (1991) and Baron and Ferejohn (1989). In that literature, the issue is how to divide a given amount of expenditure; consequently, the focus is on the effects of different allocations of agenda setting and veto powers on the time to reach an agreement, on the size of the majority, and on the distribution of the given expenditure among the legislators. By construction, these papers do not address the issue we study in this paper, the effects of budget procedures on the size of expenditure and the deficit.

[9]Note that in this model the present discounted value of taxation is given, and therefore so is the present discounted value of expenditure. The issue is how to allocate a given present discounted value of expenditure over time. Thus, the model only deals with the deficit bias, but not with the expenditure bias — exactly the opposite of the Weingast–Shepsle–Johnson approach. In addition, the relationship between the number of decision-makers and the fiscal outcome is somewhat more fragile than in the Weingast–Shepsle–Johnson approach, as it turns out to depend critically on the functional form assumed for the utility function.

not been modeled extensively.[10] Still, we believe that it is plausible and intuitive enough that it warrants a thorough empirical investigation. Thus, we will add as regressors the interactions between coalition or cabinet size and variables representing the economic environment (like the change in unemployment) and the state of public finances (like the debt/GDP ratio).[11]

## 3. Making definitions work

Our annual panel covers the period 1970–95 and 19 countries.[12] In this section we describe the main features of our dataset. We leave a complete description to the Data Appendix. To facilitate the interpretation of the tables, all variables are defined so as to have a positive coefficient in a deficit or spending regression under the null.

### 3.1. Political, procedural, and ideological variables

For reasons discussed in the Introduction, in constructing our political variables we strive as much as possible to use objectively quantifiable measures. Our two measures of size fragmentation, the number of parties in the coalition, NPC, and the number of spending ministers, NSM, obviously satisfy this criterion. For all the countries in the sample except Greece, Portugal, Spain, and the United States, we obtain these two variables from Woldendorp et al. (1993) (WKB thereafter) and its subsequent annual updates. For the four countries not included in this publication, we use the Europa Yearbook.

The next variables are less objectively measurable. In these cases, our criterion is to use external sources as much as possible. For the 'Type of Government',

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[10]Several papers, such as Drazen and Grilli (1993), and Velasco (1999), have made the point that it could be easier to reach an agreement to stabilize an economy when the macroeconomic conditions are particularly difficult. However, none of these contributions relates directly to the role of fragmentation in times of crisis. The only contribution that we are aware of which addresses this issue is Spolaore (1993) who, in a version of the Alesina and Drazen (1991) war of attrition model, shows that there is a positive monotonic relationship between the number of parties in a coalition and the size of the deficit in response to a negative shock.

[11]Theoretically, the relationship between size fragmentation and the economic situation could go the other way. For instance, in good times it might be difficult to restrain policymakers from spending the increased revenues, and this problem might be exacerbated as the number of decision makers increases. See Lane and Tornell (1998) for a formalization of this argument.

[12]The countries are: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, The Netherlands, Norway, Portugal, Spain, Sweden, UK, and USA. Switzerland is excluded because of the lack of cyclically adjusted data. In the regressions with non-cyclically adjusted data, or with the Blanchard cyclical adjustment (see below), Switzerland is included. Greece, Portugal and Spain are covered only from the inception of democratic regimes, i.e., from 1974, 1975, and 1976, respectively.

TOG, we use the classification in WKB, which assigns governments a value from 1 to 6 in the following order: Single Party Government, Minimal Winning Coalition, Surplus Coalition, Single Party Minority Government, Multi Party Minority Government, Caretaker Government.

The Ideological Complexion of the Government, ICG, assigns scores from 1, for 'Right Wing Dominance', to 5, for 'Left Wing Dominance', based on the share of seats of the parties supporting the government. Following our criteria, we took the scores from WKB and never touched them.

For both TOG and ICG, we had to provide our own scores for the countries that are not included in WKB, namely the US, Greece, Portugal, and Spain: as we show later, our results are robust to the exclusion of these countries.

Tables A1 and A2, on the Journal's web site, display the average share of time of each of these four variables, by country. If these variables exhibited little variation within each country, it would be difficult to identify separately their

Table A1
Share of time of number of parties and of types of govt., by country

| | Number of parties (NPC) | | | | | Type of government (TOG) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | SPM | COAL | MIN | CARE |
| Australia | 43.75 | 56.25 | 0.00 | 0.00 | 0.00 | 43.75 | 56.25 | 0.00 | 0.00 |
| Austria | 47.92 | 52.08 | 0.00 | 0.00 | 0.00 | 32.64 | 60.42 | 6.94 | 0.00 |
| Belgium | 0.00 | 33.33 | 2.78 | 38.19 | 25.69 | 0.00 | 94.44 | 0.69 | 4.86 |
| Canada | 100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 77.08 | 0.00 | 22.92 | 0.00 |
| Denmark | 15.28 | 30.56 | 27.08 | 27.08 | 0.00 | 0.00 | 21.53 | 78.47 | 0.00 |
| Finland | 3.47 | 0.00 | 4.86 | 72.92 | 18.75 | 0.00 | 84.72 | 9.72 | 5.56 |
| France | 4.86 | 62.50 | 21.53 | 11.11 | 0.00 | 4.86 | 81.25 | 13.89 | 0.00 |
| Germany | 4.86 | 95.14 | 0.00 | 0.00 | 0.00 | 0.00 | 97.92 | 0.00 | 2.08 |
| Greece | 97.37 | 0.00 | 2.63 | 0.00 | 0.00 | 88.89 | 9.03 | 0.00 | 2.08 |
| Ireland | 56.25 | 40.97 | 2.78 | 0.00 | 0.00 | 38.19 | 41.67 | 20.14 | 0.00 |
| Italy | 20.83 | 5.56 | 18.06 | 25.00 | 30.56 | 0.00 | 70.83 | 25.69 | 3.47 |
| Japan | 86.11 | 6.94 | 4.86 | 0.00 | 2.08 | 76.39 | 13.89 | 9.72 | 0.00 |
| Netherlands | 0.00 | 44.44 | 11.11 | 31.25 | 13.19 | 0.00 | 97.22 | 0.00 | 2.78 |
| Norway | 71.53 | 0.00 | 13.19 | 15.28 | 0.00 | 4.86 | 22.22 | 72.92 | 0.00 |
| Portugal | 49.40 | 40.96 | 9.64 | 0.00 | 0.00 | 65.28 | 27.08 | 3.47 | 4.17 |
| Spain | 100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 91.67 | 1.39 | 6.94 | 0.00 |
| Sweden | 77.78 | 3.47 | 10.42 | 8.33 | 0.00 | 6.25 | 10.42 | 83.33 | 0.00 |
| Switzerland | 0.00 | 0.00 | 0.00 | 100.00 | 0.00 | 0.00 | 100.00 | 0.00 | 0.00 |
| United Kingdom | 100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 98.61 | 0.00 | 1.39 | 0.00 |
| USA | 100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 38.89 | 0.00 | 61.11 | 0.00 |
| OECD | 47.11 | 24.09 | 6.58 | 17.43 | 4.78 | 33.37 | 44.51 | 20.87 | 1.25 |

Numbers represent percentage points, based on quarterly data. Source: Woldendorp et al. (1993) and subsequent updates; for Greece, Portugal, Spain, and US: Europa Yearbook, various issues. The years 1967–73 in Greece, 1960–74 in Portugal, and 1960–75 in Spain are not included in the sample. SPM: single party governments; COAL: coalition governments; MIN: minority governments; CARE: caretaker governments. Switzerland is not included in the benchmark regressions.

Table A2
Share of time of cabinet sizes and ideologies, by country

| | Number of ministers (NSM) | | | | Ideology (ICG) | | |
|---|---|---|---|---|---|---|---|
| | 1–5 | 6–10 | 11–15 | >15 | RIGHT | CNTR | LEFT |
| Australia | 0.00 | 61.11 | 38.89 | 0.00 | 50.69 | 5.56 | 43.75 |
| Austria | 0.00 | 97.22 | 2.78 | 0.00 | 11.11 | 56.25 | 32.64 |
| Belgium | 0.00 | 12.50 | 87.50 | 0.00 | 26.39 | 73.61 | 0.00 |
| Canada | 0.00 | 0.00 | 54.17 | 45.83 | 100.00 | 0.00 | 0.00 |
| Denmark | 0.00 | 22.22 | 77.78 | 0.00 | 41.67 | 25.00 | 33.33 |
| Finland | 0.00 | 68.06 | 31.94 | 0.00 | 6.25 | 93.75 | 0.00 |
| France | 0.00 | 21.53 | 76.39 | 2.08 | 59.72 | 13.89 | 26.39 |
| Germany | 0.00 | 41.67 | 58.33 | 0.00 | 55.56 | 44.44 | 0.00 |
| Greece | 0.00 | 0.00 | 100.00 | 0.00 | 18.75 | 53.47 | 27.78 |
| Ireland | 0.00 | 94.44 | 5.56 | 0.00 | 66.67 | 33.33 | 0.00 |
| Italy | 0.00 | 0.00 | 19.44 | 80.56 | 24.31 | 75.69 | 0.00 |
| Japan | 0.00 | 2.78 | 97.22 | 0.00 | 95.83 | 4.17 | 0.00 |
| Netherlands | 0.00 | 100.00 | 0.00 | 0.00 | 66.67 | 33.33 | 0.00 |
| Norway | 0.00 | 72.22 | 27.78 | 0.00 | 29.86 | 7.64 | 62.50 |
| Portugal | 0.00 | 68.67 | 31.33 | 0.00 | 41.67 | 52.78 | 5.56 |
| Spain | 0.00 | 71.62 | 28.38 | 0.00 | 44.44 | 55.56 | 0.00 |
| Sweden | 0.00 | 58.33 | 41.67 | 0.00 | 16.67 | 8.33 | 75.00 |
| Switzerland | 100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 | 0.00 |
| United Kingdom | 0.00 | 36.11 | 63.89 | 0.00 | 70.14 | 0.00 | 29.86 |
| USA | 0.00 | 55.56 | 44.44 | 0.00 | 0.00 | 100.00 | 0.00 |
| OECD | 5.35 | 43.90 | 43.87 | 6.88 | 41.32 | 0.00 | 16.84 |

Based on quarterly data. Maximum cabinet size is 18. Switzerland is not included in the benchmark regressions.

effect from those of country characteristics captured by the country dummies. Table A1 shows that for several countries, like Denmark, France, Italy and The Netherlands, there is a good dispersion in the number of parties in the coalition governments over time. Similar considerations hold for the other variables.

Our indices of procedural fragmentation are designed to capture the two features that we emphasized in Section 2, the existence and effectiveness of limits to spending and the nature of the negotiations between ministers. Thus, we construct the variable TARGET1 by assigning each government a score of 0 if there are limits or targets on aggregate spending or on each ministry's spending before the ministries submit their requests, and 1 otherwise.[13]

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[13]Note that, for a country to be assigned a value of 0, we require that spending limits or targets be in existence before ministries submit their requests; for instance, projections at unchanged legislation submitted by ministries would not be considered a formal budget request. Also, the targets or limits must be numerical, either in absolute amount or as shares of GDP: 'broad guidelines', or 'circulars' from the government with instructions on criteria to be used in submitting the requests, would not satisfy this criterion. A variant of this variable assigns a value of 0 if a spending limits are in effect before the budget negotiations, rather than before the submission of bids.

As discussed in Section 2.2, the identity of who sets the limits or targets is also important; hence, we also construct the variable TARGET2, taking the value 0 if the limits or targets are set by the Finance Minister or the Prime Minister or both, 1 if they are set by a committee or the whole cabinet, and 2 otherwise.

The second type of procedural variable, NEGOT, is meant to capture the nature of the negotiations with the ministers. It assigns a government a score of 1 if the negotiations are conducted by the Finance Minister or the Prime Minister or both (bilateral negotiations), and 0 if they are conducted by a committee or the entire cabinet (multilateral negotiations).[14]

Table 1 presents TARGET2 (column 1), TARGET1 (column 2) and the Hallerberg and Von Hagen variable (column 3), which does not specify when the limits are in effects. Because the latter variable does not specify who sets the spending targets, it should be compared with TARGET1. The differences are minor, and concern only the classification of Finland and the UK.[15] Finally, column 4 presents our NEGOT variable.

Before we leave this section, we should discuss the important issue of the possible changes in our procedural variables over time. The sources for our classification are two publications by the OECD, The Control and Management of Government Expenditure, OECD (1987), and Budgeting for Results, OECD (1995); their structure is identical, so that we can use consistent definitions over time to construct our series. We assume that the information contained in the first publication is valid back to the mid-1970s; this assumption is probably harmless, because the publications report the main changes that have occurred over time. In addition, for 14 European countries we cross-checked our variables using several other publications: a special issue of European Economy, published in 1983, providing a detailed analysis of budget process over the period from the mid-1970s to 1982; and Von Hagen (1992) and Von Hagen and Harden (1994), who provide an even more detailed country-by-country description of the budget process over the next decade.

The series thus constructed do not display any change during the sample. This might seem surprising, as some countries did experience some changes in the budget process during the sample. However, several points should be kept in mind:

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[14]As it turns out, according to the letter of the budget process there are no countries in the sample where the entire Cabinet actually participates in the negotiations with the ministers. In only six countries — Australia, Canada, Switzerland, Greece, Portugal, and USA — does a committee negotiate with the ministers. Of these, the classification is subject to some ambiguity for Greece and Portugal. Hence, results involving this variable should be interpreted with particular caution.

[15]In the case of Finland, we interpreted the spending targets as mostly suggestive. In the case of the UK, we believe the difference is due to the fact that Hallerberg and Von Hagen assign a score of 0 if a country has either a dominant Finance Minister or spending targets; the UK has both, and in this paper we are only interested in the latter.

Table 1
Nature of negotiations and expenditure targets, by country

|  | (1) TARGET2 | (2) TARGET1 | (3) TARGET | (4) NEGOT |
|---|---|---|---|---|
| Australia | 2 | 1 | NA | 1 |
| Austria | 0 | 0 | 0 (85–92) | 0 |
| Belgium | 2 | 1 | 1 | 0 |
| Canada | 1 | 0 | NA | 1 |
| Denmark | 0 | 0 | 0 | 0 |
| Finland | 2 | 1 | 0 | 0 |
| France | 2 | 1 | 1 | 0 |
| Germany | 0 | 0 | 1/0 | 0 |
| Greece | 2 | 1 | 1 | 1 |
| Ireland | 1 | 0 | 0 (87–94) | 0 |
| Italy | 2 | 1 | 1 | 0 |
| Japan | 2 | 1 | NA | 0 |
| The Netherlands | 1 | 0 | 0 | 0 |
| Norway | 1 | 0 | NA | 0 |
| Portugal | 2 | 1 | 1 | 1 |
| Spain | 2 | 1 | 1 | 0 |
| Sweden | 2 | 1 | 1 | 0 |
| Switzerland | NA | NA | NA | 1 |
| UK | 1 | 0 | 1 | 0 |
| USA | 1 | 0 | NA | 1 |

Column 1: TARGET2, three-way partition: 0 if spending targets set by Prime Minister of Finance Minister, 1 if spending target set by committee or either cabinet, 2 if no spending target. Column 2: TARGET2, two-way partition: 0 if spending targets, 1 if no spending target. Column 3: TARGET, Von-Hagen and Harden variable: 0 if spending target, 1 if no spending target. Column 4: NEGOT, 0 if bilateral negotiations, 1 if multilateral (committee). Sources: Columns 1, 2 and 4: authors' elaborations from OECD (1987) and (1995), cross-checked using *European Economy* (1983), Von Hagen (1992), and Von Hagen and Harden (1994). Column 3: Hallerberg and Von Hagen (1997). Switzerland is not included in the benchmark regressions.

(i) we only consider two specific aspects of the budget process;[16] (ii) we only consider legislated changes; (iii) our sample stops in 1995; and (iv) and we use a consistent source. For instance, deHaan et al. (1999) argue that the budget process did change in Belgium, Ireland, Italy and Sweden. However, in Belgium and Italy the changes to the process did not concern the two aspects that we consider here; the current practice (although not formally legislated) in Ireland is to use targets, but not numeric targets on spending as we require; and Sweden did adopt expenditure ceilings, but only in 1996. In addition, some of the changes over time in the indices constructed by deHaan, Moesser and Volkerink stem from the use of the Von Hagen (1992) survey for the first part of the sample, and their own surveys

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[16]For instance, in Belgium, Spain, and the UK, expenditures and revenues were incorporated in the same budget decisions: this reform per se would not affect our two procedural variables.

Table A3
Summary statistics

|  | Mean | St. dev. | Min. | Max. |
|---|---|---|---|---|
| Number of parties | 1.98 | 0.73 | 1.00 | 5.00 |
| Number of ministers | 11.48 | 1.11 | 8.00 | 18.00 |
| Ideology | 2.60 | 1.24 | 1.00 | 5.00 |
| Type of government | 2.42 | 0.91 | 1.00 | 6.00 |
| Change in deficit | 0.08 | 1.38 | −3.79 | 4.26 |
| Change in revenues | 0.42 | 1.13 | −3.20 | 5.98 |
| Change in expenditure | 0.34 | 1.14 | −4.80 | 5.27 |
| Change in transfers | 0.36 | 0.63 | −1.68 | 3.03 |
| Change in wage govt. cons. | 0.06 | 0.39 | −1.32 | 1.37 |
| Change in non-wage govt. cons. | −0.01 | 0.41 | −1.50 | 1.35 |
| Change in govt. investm. | −0.06 | 0.28 | −1.95 | 0.95 |

Country effects removed before computing the standard deviation.

for the second part. As the respondents changed, this might account for changes over time in their series.

## 3.2. The fiscal data

Our budget data refer to the general government and come from the OECD Economic Outlook Database. The data are cyclically adjusted by the OECD. Because interest payments are not under the control of the government, we exclude them from our fiscal aggregates.[17] Table A3 (on the journal's web site) displays the mean, standard deviation, and range of the political and budget variables. For all of them, the range is considerable, usually several times the standard deviation.[18]

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[17]To preserve the comparability of the definitions both over time and across countries, our definition of the primary deficit is slightly different from the conventional one. We define the primary deficit as the difference between expenditure and taxes, net of all net property income. On the expenditure side, property income comprises mainly interests, but on the revenues side it also comprises items like rents and the 'operating surplus' of the government which are normally included in the definition of the primary deficit. These items seem to be less consistently defined across countries. We also exclude capital transfers paid by the government from the expenditure side, and current and capital transfers received by the government on the revenue side. All these items have a rather spotty coverage in the databases that we use. In any case, these items are typically very small, and therefore are unlikely to affects our results substantially (recall that our fiscal variables refer to the general government, and therefore all inter-governmental transfers — which can be substantial — are consolidated in our figures).

[18]For instance, this notion could apply to the number of sub-central levels of government or the number of interest groups.

## 4. The benchmark specification

Our basic specification is:

$$\Delta X_{i,t} = \alpha_1 DEF_{i,t-1} + \overline{S}_{i,t}\overline{\beta} + \gamma_1 \Delta U_{i,t} + \gamma_2 \Delta P_{i,t} + c_i + d_t + \epsilon_{i,t} \tag{1}$$

where $i$ and $t$ are the country and year indices, respectively;[19] $X$ is a budget variable, such as the deficit, total expenditure, total revenues, or an individual component of the budget, cyclically adjusted by the OECD, and divided by potential GDP — the appropriate scaling factor since potential GDP is the reference value of output used in the OECD cyclical adjustment; $DEF$ is the cyclically adjusted deficit, divided by potential GDP.[20] $\overline{S}$ is a vector of political variables, that we specify later; $\Delta U$ is the change in the unemployment rate, $\Delta P$ is the rate of inflation of the consumer price index; $c_i$ is a country dummy and $d_t$ is a set of year dummies.

Although simple, the specification of Eq. (1) requires a few comments. When the dependent variable is the change in the deficit, $\Delta DEF$, the estimates of all the coefficients of the equation are numerically identical to a specification in levels, with the lagged deficit on the right-hand side, as in virtually all the empirical literature on the topic: Roubini and Sachs (1989a,b), Edin and Ohlsson (1991), deHaan and Sturm (1994), and Hallerberg and Von Hagen (1997). These contributions do not disaggregate the deficit: our specification ensures that the algebraic sum of, say, the estimates of $\gamma_1$ in the expenditure and revenue regressions is exactly equal to the estimate of $\gamma_1$ in the deficit regression.[21]

The use of variables representing the economic environment — $\Delta U$ and $\Delta P$ — has two basic justifications: first, to capture the effects of, say, unemployment on expenditure via unemployment-related subsidies and similar types of

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[19]In what follows, we drop the country and time indices whenever this does not create any ambiguity.

[20]The presence of the lagged deficit means that estimates in regressions with $\Delta DEF$ as dependent variables are biased when the LSDV estimator is used as in our case (although they are consistent: recall that here $N$ is fixed and $T$ goes to infinity). For sample sizes of about $T=25$ and $N=20$ as we have, the bias in the LSDV estimates of the other independent variables is typically small, and compares favorably to or even improves upon the Arellano and Bond estimator or the Anderson and Hsiao estimator (see Judson and Owen, 1996). In any case, when we reestimate our deficit regression with these two methods, we obtain similar results (in general, stronger with the latter estimator, weaker with the former).

[21]When the dependent variable is the change in the deficit, the specification is similar to that of Bayoumi and Eichengreen (1995) and Gavin and Perotti (1997), who study the cyclical behavior of the deficit in a panel of OECD and Latin American countries, respectively; the basic difference is that we add the vector of political variables $\overline{S}$.

expenditures;[22] second, to capture the reaction function of policymakers implementing countercyclical policies.[23] In a recession both the deficit and government expenditure as shares of potential GDP are likely to increase, because of both the effects of the recession on certain types of social expenditures and of the policymakers' countercyclical discretionary policy. Thus one would expect $\gamma_1 > 0$. Because expenditure is budgeted mostly in nominal terms, and it is usually only partially indexed, we would also expect $\gamma_2 < 0$. In revenue regressions, to the extent that revenues have been cyclically adjusted, one would expect the coefficients $\gamma_1$ to pick up mainly the reaction function of the policymakers: this would imply $\gamma_1 < 0$. At the moderate levels of inflation of OECD countries, inflation is likely to have little effect on the share of taxes in GDP; if the bracket creep effect operates, one would expect $\gamma_2 > 0$.

All our equations are estimated by OLS, and include a full set of year and country dummies. The purpose of the former is to partial out common shocks that might not be adequately captured by GDP growth or the change in unemployment. The latter are important to partial out the effects of unobservable and immutable characteristics that affect both the fiscal outcomes and the political and institutional variables.

## 5. Type of government

In order to place our contribution in context, in Table 2 we start by displaying estimates of (1) in which the vector $\bar{S}$ is just the 'type of government' (*TOG*), the variable that has been used almost exclusively in the existing literature on political determinants of fiscal outcomes.

We start in column 1 with the *TOG* variable used by Roubini and Sachs (1989a) in the paper that initiated the literature on the topic: each country — year is assigned a value from 0 to 3, capturing single party majority governments, coalition governments with up to three parties, larger coalition governments, and minority governments. The sample is also the same as in their study, covering 14

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[22]Because we use cyclically adjusted fiscal data, this effect is less important than in the existing literature. Still, because the OECD cyclically adjustment takes into account only movements in GDP and not in unemployment or inflation, there might still be scope for some further, albeit approximate, correction. In addition, the OECD does not cyclically adjust expenditures.

[23]If there are significant lags in the response of policymakers to the economic environment, $\Delta U$ and $\Delta P$ should enter also with a lag. When we do this, the estimates of the coefficients of the variables of interest do not change appreciably. One could also argue that governments with different political or institutional characteristics react differently to changes in economic variables. Later, we address this issue by including interactive terms like *NSM*$^*\Delta U$ and *NPC*$^*\Delta U$ in the regressions.

Table 2
Type of government

|  | (1) Δdeficit | (2) Δdeficit | (3) Δdeficit | (4) Δdeficit | (5) Δexpend. | (6) Δreven. |
|---|---|---|---|---|---|---|
|  | Roubini –Sachs | deHaan –Sturm | Perotti –Kontop. | Perotti –Kontop. | Roubini –Sachs | Roubini –Sachs |
| Type of government | 0.40 (2.20) | −0.05 (0.35) | −0.11 (0.91) | 0.03 (0.36) | 0.00 (0.00) | −0.40 (2.16) |
| Lagged deficit | −0.27 (5.01) | −0.25 (4.55) | −0.25 (4.50) | −0.16 (5.53) | −0.11 (2.40) | 0.17 (2.98) |
| Unempl. change | −0.20 (1.47) | −0.16 (1.14) | −0.15 (1.10) | 0.25 (3.48) | −0.10 (0.89) | 0.10 (0.72) |
| Inflation | −0.15 (2.99) | −0.14 (2.70) | −0.14 (2.79) | −0.10 (3.43) | −0.02 (0.56) | 0.13 (2.48) |
| Countries | 14 | 14 | 14 | 19 | 14 | 14 |
| Sample | 60–85 | 60–85 | 60–85 | 60–95 | 60–85 | 60–85 |
| $R^2$ | 0.31 | 0.29 | 0.29 | 0.22 | 0.33 | 0.06 |
| No. obs. | 175 | 175 | 175 | 424 | 175 | 175 |

DEF, primary deficit, cyclically adjusted (see text for precise definition); EXP, primary expenditure, cyclically adjusted; REV, primary revenue, cyclically adjusted; columns 1, 5, 6, type of government, Roubini and Sachs (1989a); column 2, type of Government, deHaan and Sturm (1994); columns 3 and 4, type of Government, from Woldendorp et al. (1993) and subsequent updates; for Greece, Portugal, Spain, and US: *Europa Yearbook*, various issues.

countries and the period 1960–85. This regression is in line with the original results in Roubini and Sachs (1989a):[24] the coefficient of *TOG* is positive, large and statistically significant. Having, say, a small coalition government rather than a one-party majority government adds on average about 0.4 percentage points of potential GDP to the yearly change in the deficit, given the existing deficit.

Column 2 displays the same regression on the same sample of countries and over the same period, but using the coding of *TOG* by deHaan and Sturm (1994), who have argued that several datapoints (60 out of 175 in the sample of column 1 in the Roubini and Sachs definition) were mislabeled. As one can see, the coefficient of *TOG* is now completely insignificant.[25]

Our own rendition of *TOG* has been illustrated in Section 3. Two regressions based on this variable, the first over the same sample and time period as the previous two, the second covering all 19 countries and running through 1995, are

[24] Our specification differs from the specification of Roubini and Sachs (1989a) in that our regressors do not include the change in the growth rate of GDP and the interest rate, since we exclude interest payments from all our deficit and expenditure variables; we also include a full set of year dummies. However, the estimate of the coefficient of *TOG* remains practically unchanged when we adopt exactly the same specification as Roubini and Sachs (1989a).

[25] It remains insignificant if the same regression is estimated over the longest available period, up to 1995. We have used deHaan et al. (1997) to update the variable in deHaan and Sturm (1994, 1997).

displayed in columns 3 and 4: again the coefficient of *TOG* is entirely insignificant in both regressions.

The first conclusion from these results is that any inference based on the variable TOG appears to be extremely fragile: although this variable would a priori seem rather uncontroversial, differences in its coding lead to very different inference.

A closer inspection of the only case where *TOG* is significant, that of column 1, reveals further difficulties of interpretation. By disaggregating the deficit into expenditure and revenues (columns 5 and 6) we can show that virtually all the effect of *TOG* on the deficit is due to revenues, with practically no effect on expenditure. This finding should suggest caution in interpreting the deficit regression of column 1 in the light of the theories of fragmentation surveyed in Section 2, as most authors have done. To reinforce this point, when we drop all minority and caretaker governments from the Roubini and Sachs sample, the coefficient of TOG in the revenue regression like 6 becomes much smaller and entirely insignificant (not shown). This indicates that what characterizes a 'weak' government like a minority or caretaker government is precisely its inability to raise taxes because of the lack of political support. By contrast, the logic of the theories surveyed in Section 2 suggests that the larger the coalition, the higher expenditure and, on average, taxation.[26]

This suggests that the distinction between minority and majority governments does not necessarily capture — and indeed it might be fundamentally different from — the notion of fragmentation in decision-making. The former has to do with the strength of the government, the latter with the number of decision-makers. It is not clear why a minority government with few parties or ministers should be considered more fragmented than a majority government with many parties or ministers.

## 6. Size fragmentation and ideology

### 6.1. Basic results

We now explore the role of fragmentation and ideology. In Table 3 the vector of political variables $\overline{P}$ includes our two measures of size fragmentation, NPC and NSM, and the ideology variable, ICG. The dependent variables in the first three

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[26]Edin and Ohlsson (1991) were the first to note that the evidence that weaker governments are associated with higher deficits rests mostly on the inclusion of minority governments. In our specification, we find a slightly different result: the coefficient of TOG in the deficit regression remains 0.40 if minority and caretaker governments are left out, but in the expenditure regression it increases to 0.20 and in the revenue regression it falls (in absolute value) to −0.20. In all three regressions the estimate is insignificant.

Table 3
Size fragmentation and ideology, whole sample

|  | (1)<br>Δdeficit | (2)<br>Δexpend. | (3)<br>Δreven. | (4)<br>Δtransfers | (5)<br>Δwage<br>govt.cons. | (6)<br>Δnon-wage<br>govt cons. | (7)<br>Δgovt.<br>invstm. |
|---|---|---|---|---|---|---|---|
| Number of | 0.11 | 0.12 | 0.01 | 0.11 | 0.01 | 0.00 | −0.00 |
| parties | (1.15) | (1.62) | (0.13) | (2.68) | (0.37) | (0.13) | (0.13) |
| Number of | 0.12 | 0.19 | 0.08 | 0.08 | 0.05 | 0.05 | 0.05 |
| ministers | (1.90) | (4.10) | (1.49) | (3.09) | (2.73) | (2.63) | (3.27) |
| Ideology | 0.07 | 0.08 | 0.01 | 0.07 | 0.02 | 0.01 | −0.00 |
|  | (1.25) | (1.88) | (0.25) | (3.03) | (1.19) | (0.46) | (0.13) |
| Lagged | −0.15 | −0.04 | 0.12 | 0.01 | 0.02 | −0.02 | −0.01 |
| deficit | (5.48) | (1.70) | (4.71) | (0.50) | (2.74) | (2.14) | (1.66) |
| Unempl. | 0.25 | 0.12 | −0.12 | 0.21 | 0.03 | −0.05 | −0.04 |
| change | (3.38) | (2.17) | (1.91) | (6.84) | (1.48) | (2.12) | (2.47) |
| Inflation | −0.10 | −0.07 | 0.04 | −0.04 | −0.00 | −0.02 | −0.01 |
|  | (3.74) | (3.12) | (1.48) | (3.53) | (0.36) | (1.73) | (1.59) |
| $R^2$ | 0.23 | 0.33 | 0.11 | 0.35 | 0.25 | 0.07 | 0.04 |
| No. obs. | 424 | 424 | 424 | 424 | 424 | 424 | 424 |

columns are the change in the cyclically adjusted primary deficit, expenditure and revenue, respectively. According to the discussion in Section 2 one would expect the coefficients of *NPC* and *NSM* to be positive in the first two columns; if one expects more left-wing governments to be associated with larger expenditure and deficits, then the coefficient of *ICG* also should be positive in the first two columns. As we discussed, existing theories offer less guidance as to the expected sign of the same variables in the revenue regression.[27]

It is immediately apparent that NSM is a very important and robust determinant of fiscal outcomes. From column 1, on average an extra ministry is associated with a higher deficit by 0.12 percentage points of potential GDP per year, given the past deficit, with the coefficient of NSM significant at the 10% level. In the long run, this translates into a higher deficit by 0.80 percentage points of potential GDP per extra minister. The effect on the deficit results from a very large and highly significant positive effect on expenditure — a point estimate of 0.19, with a *t*-statistic of 4.10 in column 2 — tempered by a moderate positive effect on revenues — a point estimate of 0.08, insignificant, in column 3. In steady-state, an extra spending minister translates into a higher primary expenditure/GDP ratio by 1.27 percentage points, clearly a sizable effect. A ceteris paribus increase in the number of ministers equal to the range of the average value of NSM (from a

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[27]Of course, in a deeper sense government expenditure and revenues cannot move in opposite directions for too long, because they have to satisfy the intertemporal budget constraint of the government. We do not know how long is 'too long': implicitly, we are assuming that over the horizon of our estimates any path of revenues and expenditure is feasible.

minimum of 8 in Austria to a maximum of 18 in Italy) corresponds to a higher steady-state expenditure/GDP ratio by 12.7 percentage points.

When we decompose expenditure in its four main items (columns 4 to 7), the coefficient of *NSM* is positive and highly significant in each regression: it is equal to 0.08 in the transfer regression, and to 0.05 in the regressions for the other components.

The second size fragmentation variable, NPC, also has positive coefficients in virtually all regressions, except the government investment regression. However, the estimates are significant only in the transfer regression: on average, an extra coalition party is associated with a higher yearly increase in the share of transfers in GDP by 0.11 percentage points, and with a higher steady-state share of transfers in GDP by 0.73 percentage points.

Although ideology is not an important determinant of the deficit (column 1), it is significant in the expenditure regression at the 10% level (column 2). A further disaggregation of expenditure shows that *ICG* is a highly significant determinant exactly of the component one would expect the most, transfers, and in a highly intuitive way. When the value of ICG moves by one unit to the left in the measure of political orientation, the yearly increase in transfers increases by about 0.07 percentage points of GDP, given the previous year deficit. In steady state, this amounts to a higher transfer expenditure by 0.47 percentage points of potential GDP.

Thus, all three political variables are significant determinants of transfers. This is consistent with the crucial role of transfers in the recent developments of public finance in OECD countries. It is well known that transfers are the expenditure item that has grown the most over the post-war period.[28]

## 6.2. Robustness

The regressions in Table 3 include all 19 countries in our extended sample. As in all panel regressions, it is important to check the sensitivity of the results to individual countries. We have rerun all the regressions in Table 3 excluding one country at a time. In every regression, the coefficients that are significant at the 5% level remain significant at the same level no matter which country is excluded. The

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[28]Regarding the other variables, the lagged deficit has a large negative and very significant coefficient in the deficit regression, the combination of a negative coefficient in the expenditure regression and of a positive and even larger coefficient in the revenue regression. The coefficient of the change in unemployment is positive and significant in the deficit regression, resulting from a positive coefficient in the expenditure regression, and a negative coefficient in the revenue regression. Thus, all the point estimates are consistent with the discussion of Section 4. Inflation also has always the expected negative coefficient in the deficit and expenditure regressions; in the revenue regression, it is insignificant, most likely because of the moderate levels of inflation that are typical of OECD countries. Note also the very strong and intuitive effect of the change in unemployment on transfer expenditure.

only (small) exception is the coefficient of NSM in the wage government consumption equation, which has a *P* value of 0.097 when Australia is excluded.

Recall that for Greece, Portugal, Spain and the United States we had to use a different source than for all the others. In addition, the fiscal data of Greece and Portugal are widely regarded to be somewhat less reliable than those of the other countries, particularly in the early part of the sample.[29] When we run the same regressions of Table 3, but on a sample that excludes Greece, Portugal, Spain, and the United States, we obtain very similar results (see Table A4 on the Journal's web site); indeed, the coefficient of *NSM* in the deficit regression is larger and now highly significant.

We have also experimented with different cyclical adjustments for the dependent variables (essentially using the methodology in Blanchard, 1993), and with cyclically unadjusted data. The results concerning the political variables changed only marginally.

When we include a third potentially important non-political determinants of fiscal outcomes, the ratio of population over 65 in the whole population, the point estimates of the coefficients of the political variable change only minimally, and their statistical significance is never affected.

When the year dummies are excluded, there is no substantial change in the results. The only difference is that the coefficients of NSM tend to become slightly smaller. The likely reason is that the countries of the sample have been subject to

Table A4
Size fragmentation and idelology, restricted sample

|  | (1) ΔDeficit | (2) ΔExpend. | (3) ΔReven. | (4) ΔTransfers | (5) ΔWage govt. cons. | (6) ΔNon-wage govt. cons. | (7) ΔGovt. invstm. |
|---|---|---|---|---|---|---|---|
| Number of parties | 0.10 | 0.12 | 0.01 | 0.10 | 0.02 | 0.01 | −0.00 |
|  | (1.06) | (1.53) | (0.12) | (2.46) | (0.61) | (0.30) | (0.16) |
| Number of ministers | 0.16 | 0.22 | 0.06 | 0.10 | 0.07 | 0.06 | 0.05 |
|  | (2.42) | (4.32) | (0.96) | (3.42) | (3.89) | (2.95) | (3.60) |
| Ideology | 0.04 | 0.05 | 0.01 | 0.05 | 0.02 | 0.06 | −0.01 |
|  | (0.70) | (1.13) | (0.17) | (2.27) | (1.05) | (0.10) | (0.62) |
| Lagged deficit | −0.14 | −0.03 | 0.11 | 0.01 | 0.03 | −0.02 | −0.01 |
|  | (4.64) | (1.49) | (3.69) | (0.48) | (3.24) | (1.75) | (1.91) |
| Unemp. change | 0.28 | 0.16 | −0.12 | 0.24 | 0.01 | −0.05 | −0.04 |
|  | (3.38) | (2.51) | (1.54) | (6.91) | (0.30) | (1.98) | (2.24) |
| Inflation | −0.09 | −0.03 | 0.06 | −0.03 | 0.02 | −0.01 | 0.00 |
|  | (2.35) | (0.95) | (1.71) | (1.75) | (1.60) | (0.52) | (0.12) |
| $R^2$ | 0.25 | 0.38 | 0.08 | 0.40 | 0.34 | 0.09 | 0.06 |
| Nobs | 337 | 337 | 337 | 337 | 337 | 337 | 337 |

The sample excludes Greece, Portugal, Spain, Switzerland, and the United States.

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[29]For instance, Portugal revalued its gold reserves in the mid-1970s, causing a large change in the deficit.

several common shocks, and the reaction of fiscal policy to a large common shock might overshadow the role of political and institutional factors.[30]

Finally, an important issue is what is the appropriate level of government for the budget data. So far we have used general government data; one could argue that the political variables refer to the central government, and therefore one should use central government budget data. However, several types of spending, like certain transfers to households or certain purchases of goods and services, are often mandated by the central government although they are formally recorded as local government spending. In addition, what is formally recorded as local revenues is often really only shared central government revenues. Finally, grants and revenues transferred from the central government can determine the level of local spending if local governments cannot run high fiscal imbalances.

Be as it may, as a further check we reran our regressions using central government data.[31] The results, in Table 4, are broadly consistent with those that use general government data. The estimated coefficients of NSM tend to be slightly smaller, but statistically significant at the 5% level (or slightly higher, in the case of government consumption and investment) whenever they were significant in the general government regressions. The estimated coefficient of NPC is significant only at the 10% level in the transfer regression (against a *P* value of 1% with general government data), but now it is significant at the 10% even in the government consumption regression (against a *P* value of 70 and 90% with general government data). With central government data, the estimated coefficient of CPG is significant (at the 10% level) only in the transfer regression.

## 6.3. Interpretation

Our results show that cabinet size is consistently an important and robust determinant of fiscal outcomes. What exactly is being captured by the notion of cabinet size in our regressions? One could argue that our results suffer from a kind

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[30]Although $\Delta U$ is included in the regressions, it might not be sufficient to partial out the effect of large common shock, for two reasons. First, the coefficient of this variable is constrained to be constant over time; second, this variable must do double duty, as it must also capture the automatic effects of the cycle that are not captured by the cyclical adjustment. This last duty is particularly relevant for expenditures, which are cyclically adjusted rather crudely, or not adjusted at all, in the OECD procedure.

[31]The central government data are from the OECD *National Income Accounts*. This source does not provide a breakdown of government consumption into its wage and non-wage components, nor of income taxes into taxes on households and business. Because of data problems, the regressions in Table 4 do not include Greece, Spain, Portugal and Switzerland. We cyclically adjusted the tax data using the same trend GDP estimated by the OECD and the tax elasticities computed by the OECD. The definition of central government includes the social security accounts. Central government revenues and spending are net of transfers from and to local governments, respectively.

Table 4
Size fragmentation and ideology, central government

|  | (1) Δdeficit | (2) Δexpend. | (3) Δreven. | (4) Δtransfers | (5) Δgovt. Δcons. | (6) Δgovt. Δinvstm. |
|---|---|---|---|---|---|---|
| Number of parties | −0.04 (0.47) | 0.06 (0.94) | 0.10 (1.09) | 0.06 (1.72) | 0.04 (1.77) | −0.01 (0.96) |
| Number of ministers | 0.12 (2.04) | 0.12 (2.87) | 0.00 (0.08) | 0.06 (2.55) | 0.03 (1.91) | 0.02 (1.78) |
| Ideology | 0.00 (0.08) | 0.01 (0.34) | 0.02 (0.31) | 0.03 (1.64) | 0.00 (0.05) | 0.01 (0.87) |
| Lagged deficit | −0.16 (4.63) | −0.03 (1.38) | 0.12 (3.63) | −0.01 (0.44) | −0.02 (1.86) | −0.01 (1.11) |
| Unempl. change | 0.26 (3.62) | 0.19 (3.86) | −0.07 (0.96) | 0.23 (8.39) | 0.02 (1.32) | −0.02 (1.71) |
| Inflation | −0.08 (2.62) | −0.04 (1.85) | 0.04 (1.34) | −0.02 (1.52) | −0.01 (0.89) | −0.01 (0.96) |
| $R^2$ | 0.22 | 0.31 | 0.08 | 0.42 | 0.13 | 0.08 |
| No. obs. | 362 | 362 | 362 | 362 | 362 | 362 |

of endogeneity problem: governments that are determined to run a loose fiscal policy might appoint a large cabinet because it facilitates the pursuit of this policy.

This line of argument does not in itself rule out a causal role for cabinet size: if there were no link between cabinet size and fiscal outcomes, a policymaker with a penchant for fiscal laxity would have no reason to appoint a large cabinet. However, the argument implies that the estimated coefficient would not provide a measure of the effect of imposing a given cabinet size exogenously.

Fully addressing this endogeneity problem would require an instrument for cabinet size. We could not come up with one. However, note that we obtain large and significant estimates of the coefficient of *NSM* even when controlling for ideology, arguably the most direct exogenous determinant of the attitude of a government toward fiscal policy (see deHaan et al. (1999) for a similar approach to the problem).

## 7. Fragmentation, ideology and difficult times

We now explore the notion that our political variables matter more in difficult times. One can think of two notions of difficult times. The first refers to the economic environment: we capture this by interacting the three political variables with the change in unemployment $\Delta U$. The second refers to the state of public finances: we capture this by interacting the three political variables with a dummy

variable $B_t$, taking the value 1 if the lagged debt/potential GDP ratio is above the 80th percentile, and 0 otherwise.[32] Thus, in Table 5 we estimate regressions like:[33]

$$\Delta X_{i,t} = \alpha_1 DEF_{i,t-1} + \beta_1 NPC_{i,t} + \beta_2 NSM_{i,t} + \beta_3 ICG_{i,t}$$
$$+ \beta_4 NPC^*_{i,t}\Delta U_{i,t} + \beta_5 NSM^*_{i,t}\Delta U_{i,t} + \beta_6 ICG^*_{i,t}\Delta U_{i,t} \tag{2}$$
$$+ \gamma_1 \Delta U_{i,t} + \gamma_2 \Delta P_{i,t} + c_i + \theta d_t + \epsilon_t$$

We expect the coefficients $\beta_4$ and $\beta_5$ to be positive in the deficit and expenditure regressions; if the difference between left-wing and right-wing governments is stronger in times of recessions, we expect $\beta_6$ also to be positive.

Table 5
Difficult times: change in unemployment

| | (1) $\Delta$deficit | (2) $\Delta$expend. | (3) $\Delta$reven. | (4) $\Delta$transfers | (5) $\Delta$wage govt.cons. | (6) $\Delta$non-wage govt cons. | (7) $\Delta$govt. invstm. |
|---|---|---|---|---|---|---|---|
| Number of | 0.08 | 0.10 | 0.02 | 0.09 | 0.01 | −0.00 | −0.01 |
| parties | (0.83) | (1.35) | (0.25) | (2.25) | (0.34) | (0.03) | (0.43) |
| Number of | 0.07 | 0.17 | 0.10 | 0.08 | 0.04 | 0.04 | 0.04 |
| ministers | (1.18) | (3.57) | (1.82) | (2.98) | (2.24) | (1.79) | (2.50) |
| Ideology | 0.05 | 0.09 | 0.04 | 0.08 | 0.02 | 0.00 | −0.01 |
| | (0.92) | (2.10) | (0.81) | (3.26) | (1.32) | (0.11) | (0.42) |
| Number of parties* | 0.08 | 0.07 | −0.01 | 0.05 | 0.01 | 0.01 | 0.02 |
| | (1) | (1) | | | | | |
| Unempl. change | (1.73) | (1.98) | (0.21) | (2.77) | (0.48) | (0.88) | (1.51) |
| Number of ministers* | 0.08 | 0.06 | −0.02 | 0.01 | 0.02 | 0.03 | 0.02 |
| Unempl. change | (2.62) | (2.34) | (0.89) | (0.89) | (1.90) | (2.82) | (2.43) |
| Ideology* | 0.04 | −0.04 | −0.08 | −0.02 | −0.01 | 0.02 | 0.01 |
| Unempl. change | (0.99) | (1.08) | (2.07) | (2.50) | (0.75) | (1.10) | (1.20) |
| Lagged | −0.15 | −0.04 | 0.11 | 0.00 | −0.02 | −0.02 | −0.01 |
| deficit | (5.22) | (1.68) | (4.41) | (0.13) | (2.50) | (1.75) | (1.31) |
| Unempl. | −0.95 | −0.57 | 0.38 | 0.01 | −0.21 | −0.44 | −0.30 |
| change | (2.30) | (1.77) | (1.04) | (0.07) | (1.76) | (3.25) | (3.15) |
| Inflation | −0.10 | −0.07 | 0.04 | −0.04 | −0.00 | −0.02 | −0.01 |
| | (3.69) | (3.10) | (1.43) | (3.47) | (0.37) | (1.69) | (1.74) |
| $R^2$ | 0.24 | 0.34 | 0.11 | 0.36 | 0.25 | 0.09 | 0.05 |
| No. obs. | 424 | 424 | 424 | 424 | 424 | 424 | 424 |

[32]This is the variable used in Perotti (1999) to represent 'bad times' from a public finance point of view. We refer to that paper for a more thorough discussion and motivation.

[33]Note that we also allow for an interaction of *ICG* with the difficult time variables. A plausible hypothesis would be that leftist governments expand expenditure more in response to an increase in unemployment, and less in response to an increase in the debt/potential GDP ratio.

Indeed, in Table 5 the estimates of $\beta_4$ and $\beta_5$ are positive and significant in the deficit regression (column 1) and in the aggregate expenditure regression (column 2).[34] On average, when the unemployment rate increases by 1 percentage point, the deficit increases by 0.08% of potential GDP more for every extra party or spending minister; virtually all this effect comes from expenditure (column 2). When we disaggregate expenditure into its components (columns 4 to 7), we find significant estimates of the coefficient of $NSM*\Delta U$ in the regressions for wage government consumption (at the 10% level), non-wage government consumption, and government investment. The coefficient of $NPC*\Delta U$ is significant in the transfer regression. By contrast, there is no support for the notion that more leftist governments tend to spend more in reaction to an increase in unemployment.

We also estimated the same regressions as in Table 5, except that we interact NPC, NSM and ICG with the dummy variable $B_t$ rather than with the change in unemployment. The results are available in Table A5 on the journal's web site. Briefly, we find that the interaction of *NSM* with $B_t$ is positive and significant at

Table A5
Difficult times: level of debt

| | (1) ΔDeficit | (2) ΔExpend. | (3) ΔReven. | (4) ΔTransfers | (5) ΔWage govt. cons. | (6) ΔNon-wage govt. cons. | (7) ΔGovt. invstm. |
|---|---|---|---|---|---|---|---|
| Number of parties | 0.15 | 0.15 | 0.01 | 0.12 | 0.01 | 0.01 | −0.00 |
| | (1.32) | (1.77) | (0.07) | (2.61) | (0.20) | (0.23) | (0.08) |
| Number of ministers | 0.07 | 0.17 | 0.10 | 0.07 | 0.05 | 0.05 | 0.05 |
| | (1.10) | (3.44) | (1.81) | (2.36) | (2.81) | (2.36) | (3.16) |
| Ideology | 0.04 | 0.06 | 0.03 | 0.06 | 0.02 | 0.00 | −0.00 |
| | (0.61) | (1.32) | (0.48) | (2.29) | (0.85) | (0.01) | (0.09) |
| Number of parties | 0.02 | −0.06 | −0.08 | −0.04 | 0.01 | −0.02 | −0.03 |
| High debt dummy | (0.11) | (0.54) | (0.61) | (0.56) | (0.14) | (0.39) | (0.95) |
| Number of ministers | 0.03 | 0.17 | 0.14 | 0.08 | 0.03 | 0.05 | 0.02 |
| High debt dummy | (0.34) | (2.55) | (1.89) | (2.09) | (1.34) | (1.77) | (0.80) |
| Ideology | 0.11 | 0.13 | 0.02 | 0.07 | 0.02 | 0.05 | 0.04 |
| High debt dummy | (0.74) | (1.11) | (0.14) | (1.09) | (0.53) | (1.06) | (0.97) |
| Lagged deficit | −0.17 | −0.05 | 0.12 | 0.00 | −0.02 | −0.02 | −0.01 |
| | (5.89) | (2.10) | (4.87) | (0.18) | (2.60) | (2.45) | (1.73) |
| High debt dummy | −1.48 | −2.56 | −1.07 | −1.13 | −0.52 | −0.75 | −0.20 |
| | (1.28) | (2.82) | (1.06) | (2.27) | (1.56) | (1.97) | (0.73) |
| Unempl. change | 0.23 | 0.12 | −0.11 | 0.21 | −0.04 | −0.05 | −0.04 |
| | (3.06) | (2.02) | (1.70) | (6.61) | (1.68) | (2.26) | (2.37) |
| Inflation | −0.10 | −0.06 | 0.03 | −0.04 | −0.00 | −0.01 | −0.01 |
| | (3.46) | (2.90) | (1.37) | (3.24) | (0.34) | (1.50) | (1.84) |
| $R^2$ | 0.23 | 0.34 | 0.13 | 0.36 | 0.22 | 0.08 | 0.04 |
| Nobs | 410 | 410 | 424 | 410 | 410 | 410 | 410 |

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[34]The estimate of $\beta_4$ is significant only at the 10% level in the deficit regression.

the 5% level in the expenditure and transfer regressions, and significant at the 10% level in the goods regression. The interaction of *NPC* and ICG is never significant.

The results of this section provide further support to the importance of cabinet size as a determinant of fiscal policy. There is evidence that the number of spending ministers becomes an even more important determinant of fiscal outcomes in situations of economic or fiscal distress. The importance of coalition size as a determinant of transfers also increases significantly in situations of economic distress.

## 8. Procedural fragmentation

### 8.1. Basic results

We now investigate the role of the procedural fragmentation variables TARGET2 and NEGOT.[35] Because these variables are time-invariant, they are not separately identifiable from the country dummies. We can still gather some information on their role, by applying two methodologies. We borrow the first from Bohn and Inman (1996): we run a panel regression on all the time-varying variables plus the country dummies and then estimate a cross-sectional regression of the estimated country dummies on TARGET2 or NEGOT. In both cases, we expect a positive coefficient in the deficit, expenditure, and possibly in the revenue regressions. Table 6 reports the results. Although the point estimates of the coefficients of TARGET2 are indeed positive, they are insignificant at any reasonable level of confidence. The same holds for NEGOT.

The second methodology consists in investigating whether the budget process affects the response of fiscal policy in difficult times. As before, this entails panel regressions with the interactive terms TARGET2*$\Delta U$ or TARGET2*$B$, and similarly for NEGOT. When we do this (results available upon request), none of the coefficients of the interactive terms is ever significant.

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[35]One could argue that what matters is the existence of spending limits before the budget negotiations, rather than before the submission of requests by the ministries. Adopting this criterion changes the classification of Australia, Finland, France, and Japan, since in these countries spending limits are adopted after the submission of bids, but before the budget negotiations. Doing so never changes the results that we present in this section.

Notice also that the variable TARGET2 imposes the same effects when going from, say, spending limits set by the Finance Minister to spending limits set by the whole cabinet as when going from the latter to no spending limits. When we break the variable TARGET2 into three dummy variables, again we find no evidence of a statistically significant effect of budget procedures (results not reported).

We do not discuss results with TARGET1 because they are very similar to those with TARGET2.

Table 6
Budget process

|  | (1) $\Delta$deficit | (2) $\Delta$expend. | (3) $\Delta$reven. |
|---|---|---|---|
| TARGET2 | 0.05 | 0.11 | 0.06 |
|  | (0.21) | (0.42) | (0.53) |
| $R^2$ | −0.06 | −0.05 | −0.04 |
| NEGOT | 0.30 | 0.06 | −0.24 |
|  | (1.11) | (0.20) | (2.28) |
| $R^2$ | 0.01 | −0.06 | 0.19 |

## 8.2. Discussion

How do our results on TARGET2 compare with those of other authors? Von Hagen (1992) reports a significant simple correlation between his 'structural index' and the deficit is a cross-section of 14 European countries, using country averages over the period 1981–90 as individual observations. The structural index is a composite index, taking into account the role of the Finance or Prime Ministers, the existence of spending limits on the overall budget, the existence of limits to the amendment power of parliament, the degree of transparency of the budget, and the degree of flexibility of the execution process. This definition of the budget process variable, and the extreme paucity of degrees of freedom, make it difficult to compare Von Hagen's results with ours.

A closer comparison is possible with deHaan and Sturm (1994), deHaan et al. (1999) and Hallerberg and Von Hagen (1999). All of these studies regress some measure of the deficit (usually the change in the debt/GDP ratio) on economic and political determinants and on a variable capturing the structure of the budget process. Because the latter is time-invariant, they omit country dummies. All of these studies report a significant estimate of the coefficient of the procedural variable, although in the first two the economic and statistical significance of the coefficient is much lower than in the third.

Our regressions differ from those in these studies in several dimensions: our sample is larger, 19 OECD countries against from 12 to 15 European countries in these studies; our sample tends to be longer, dating back to as far back as 1971 against the beginning of the 1980s; we use a completely different method to estimate the effect of the procedural variable; our list of remaining right-hand side variables is different; and our measure of the deficit is different.

To facilitate the comparison with our results, we also applied the same methodology used in the studies mentioned above: we ran regressions of our fiscal variables on the procedural variable and on the other economic controls, namely inflation and the change in unemployment, thus omitting the country dummies. We estimated these regressions on the same, smaller sample as the above studies, and starting in 1981. We still obtained positive but entirely insignificant coefficients on

the procedural variable. Thus, the discrepancy of results must be attributed to the last two reasons listed above: the different list of control variables, or, more likely, the different fiscal variables.[36]

The general message we derive from our results and those of the literature is that it is hard to obtain strong evidence, one way or another, on the effects of budget procedures at the country level. The reason is simple: the sample is small, and budget procedures are nearly time invariant. Still, the negative conclusions of this section are subject to more than the usual caveats. By necessity these procedural variables take into account only the letter of the budget process, but not necessarily its actual implementation. As an example, even if the Finance Minister sets limits to a ministry's spending before the negotiations start, it is not always obvious how stringent these limits are or are perceived to be. A case in point is Canada, where in the 1980s spending limits were set so generously that they were practically never binding (see GAO, 1994).[37]

## 9. Conclusions

It is hazardous to draw strong policy implications from the analysis of this paper. Nevertheless, conditional on our results holding up against further scrutiny, we adventure three implications.

A frequently heard criticism of academic investigations of the effects of the 'type of government' on fiscal outcomes is that there is not much that can be done anyway: either a government is 'strong', or it is not. Changing electoral laws — especially reducing the degree of proportionality — can help increase the political strength and the durability of governments; but electoral laws are frequently deep-rooted in the culture of a nation, and in any case it takes a long and politically dangerous constitutional reform to amend them.

There might be an easier and equally effective way to create conditions more conducive to fiscal discipline. As we have shown, the size of the cabinet is at least as important a determinant of fiscal outcomes as coalition size. At the same time, it is usually not fixed in the constitution, and consequently it can be more easily reduced.

Second, one should not expect the reform of the budget process to be the panacea for all fiscal ills. Contrary to subnational states, which are often limited in

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[36] Another possible reason — the different measures of budget procedures — is not the cause of the discrepancy in our results: we have seen that the difference between our classification and that of Hasllerberg and Von Hagen is minimal. In any case, when we reran our regression using the Hallerberg and Von Hagen variables, we again obtain insignificant results.

[37] A special difficulty is also presented by the US, because of the dual nature of its budget process, with an executive phase that has very little importance and a legislative phase that encompasses many functions fulfilled by the executive phase in the other countries.

their ability to borrow anyway, there is nothing to prevent the government of a sovereign country to disregard, in practice, stringent budget rules. Third, our results indicate that, when all is said and done, ideology still plays an important role in determining fiscal outcomes.

A more general implication of our analysis is that it is important to look beyond the deficit in assessing the role of institutional and political factors. In particular, doing this reveals that cabinet size, coalition size and ideology are particularly important determinants of transfers, the expenditure item that is currently at the center of the policy debate in developed countries.

## Acknowledgements

## Appendix A. Data Appendix

*Cyclically unadjusted budget data:*
   EXP: primary expenditure, defined as: capital expenditure, subsidies, government consumption, and transfers.
   REV: primary revenue, defined as: direct taxes on households, direct taxes on business, indirect taxes, social security and payroll taxes.
   DEF ≡ EXP-REV.
   Note that both EXP and REV do not include all property income.
   Source: OECD Economic Outlook database.

*Cyclically adjusted budget data:*
   Same definition as cyclically unadjusted data.
   Source: OECD Fiscal Position and Business Cycles database.

*Other economic variables:*
   $Y$: private GDP (total GDP less government consumption) (from OECD Economic Outlook).
   INFL: rate of change of GDP deflator (from OECD Economic Outlook).
   $U$: unemployment rate (from OECD Economic Outlook).

*Number of Parties in the Coalition (NPC):*

Source: Woldendorp et al. (1993) and Europa Yearbook for Greece, Portugal, Spain, and USA.

*Type of government (TOG):*

We start from the following quarterly classification of governments:

(1) (Single Party Government): one party takes all government seats.

(2) (Minimal Winning Coalition): all participating parties are necessary to form the government.

(3) (Surplus Coalition): coalition governments which exceed the minimal-winning criterion.

(4) (Single Party Minority Government): the party in government does not possess a majority in Parliament.

(5) (Multi Party Minority Government): the parties in government do not possess a majority in Parliament.

(6) (Caretaker Government): the government formed is not intended to undertake any kind of serious policy making, but it is only temporarily taking care of urgent business.

We then average this quarterly variable over each year to generate the continuous variable TOG.

We also construct the four dummy variables TOG1, TOG2, TOG3 and TOG4 as follows:

TOG1 (Single Party Majority Government): $TOG < 1.5$

TOG2 (Majority Coalition Government): $1.5 < TOG < 3.5$

TOG3 (Minority Government): $3.5 < TOG < 5.5$

TOG4 (Caretaker Government): $TOG > 5.5$

Source: Woldendorp et al. (1993) and Europa Yearbook for Greece, Portugal, Spain, and USA.

*Number of Spending Ministers (NSM):*

We construct this variable as the sum of the following ministers: (i) Industry or Trade and/or ministers with related and/or subdivided competences like Foreign Trade, Commerce, and State Industries (if not attributed to Public Works — see next); (ii) Public Works and/or Infrastructure and/or ministers with related and/or subdivided competences like (Public) Transportation, Energy, Post, Telecommunications, Merchant Marine, Civil Aviation, National Resources, Construction (if not specifically attributed to Housing — see below), Urban Development, etc.; (iii) Defense; (iv) Justice; (v) Labour; (vi) Education; (vii) Health; (viii) Housing; (ix) Agriculture. We also add all ministers with economics portfolio: (x) Finance and/or ministers with related and/or subdivided competences like First Lord of the Treasury, Budget, Taxation, etc.; (xi) Economic Affairs and/or ministers with related and/or subdivided competences like (Regional) Economic Planning or Development, Small Business.

Source: Woldendorp et al. (1993) and Europa Yearbook for Greece, Portugal, Spain, and USA. Because this source also reports under each portfolio all the ministers that held the same portfolio sequentially due to government reshuffles, to avoid counting portfolios twice we cross-checked each entry with the annual volumes of the Europa Yearbook.

*Ideological Complexion of Government (ICG):*

We start from the quarterly classification of governments in:

(1) (Right-Wing Dominance): share of seats in government and their supporting parties in parliament larger than 66.6%;

(2) (Right-Center Complexion): share of seats of right and center parties in government and their supporting parties in parliament between 33.3 and 66.6% each;

(3) (Balanced Situation): share center larger than 50% in government and in Parliament; or if left and right form a government together not dominated by either side;

(4) (Left-Center Complexion): share of seats of left and center parties in government and their supporting parties in parliament between 33.3 and 66.6% each;

(5) (Left-Wing Dominance): share of seats in government and their supporting parties in parliament larger than 66.6%.

We average this quarterly variable over a year to obtain the continuous variable ICG.

As in the case of the variable TOG, we also use this classification to construct the dummy variables ICG1, ICG2, ICG3:

ICG1 (Right-Wing Party): $ICG < 1.5$;

ICG2 (Centrist Government): $1.5 \leq ICG \leq 4.5$;

ICG3 (Left-Wing Government): $ICG > 4.5$.

Source: Woldendorp et al. (1993) and Europa Yearbook for Greece, Portugal, Spain, and USA.

*Spending Limits (TARGET1):*

0, limits or targets on aggregate spending or on each ministry's spending are in existence before the ministries submit their requests; 1, the government issues only broad guidelines before the ministries' requests, or spending limits or targets are issued only after the ministries' requests.

*Spending Limits (TARGET2):*

0, limits or targets on aggregate spending or on each ministry's spending are in existence before the ministries submit their requests, and limits are set by Prime Minister or Finance Minister;

1, limits are set by a committee or by the whole cabinet;

2, the government issues only broad guidelines before the ministries' requests, or spending limits or targets are issued only after the ministries' requests.

*Nature of the Budget Negotiations (NEGOT):*

0, the Finance Minister or the Prime Minister or both negotiate with the ministers (bilateral negotiations);

1, a committee negotiates with the minister (multilateral negotiations);

2, the entire Cabinet negotiates with the ministers (multilateral negotiations).

Source: for TARGET1, TARGET2, NEGOT, the sources are The Control and Management of Government Expenditure, OECD (1987), and Budgeting for Results, OECD (1995). We construct our series from a formal description of the budget process, in particular from the four sections: 'Main Budgetary Organs', 'Role of President, Prime Minister, and Cabinet', 'Annual Budget Cycle', and 'Calendar of Main Points of Decision Making'.

## References

Alesina, A., Drazen, A., 1991. Why are stabilizations delayed? American Economic Review 81 (December).

Alesina, A., Perotti, R., 1995. The political economy of budget deficits. IMF Staff Papers, March.

Baron, D.P., 1991. Majoritarian incentives, pork barrel programs, and procedural control. American Journal of Political Science 35 (1), 57–90.

Baron, D.P., Ferejohn, J.A., 1989. Bargaining in legislature. American Political Science review 83 (4), 1181–1206.

Bayoumi, T., Eichengreen, B., 1995. Restraining yourself: the implications of fiscal rules for economic stabilization. IMF Staff Papers 42, 32–48.

Blanchard, O., 1993. Suggestions for a New Set of Fiscal Indicators, OECD, unpublished.

Bohn, H., Inman, R.P., 1996. Balanced budget rules and public deficits: evidence from the US states. Carnegie-Rochester Conference Series on Public Policy.

Drazen, A., Grilli, V., 1993. The benefits of crises for economic reforms. American Economic Review 83 (3), 598–607.

Edin, P., Ohlsson, H., 1991. Political determinants of budget deficits: coalition effects versus minority effects. European Economic Review 35, 1597–1603.

Gavin, M., Perotti, R., 1997. Fiscal policy in Latin America. In: Bernanke, B., Rotemberg, J. (Eds.), NBER Macroeconomics Annual 1997. MIT Press, Cambridge, MA.

General Accounting Office, 1994. Deficit reduction: experiences of other nations, Washington, DC.

Grilli, V., Masciandaro, D., Tabellini, G., 1991. Political and monetary institutions and public financial policies in the industrial countries. Economic Policy 13, 341–392.

deHaan, J., Sturm, J.E., 1994. Political and institutional determinants of fiscal policy in the European Community. Public Choice 80, 157–172.

deHaan, J., Sturm, J.E., 1997. Political and economic determinants of OECD budget deficits and government expenditures: A reinvestigation. European Journal of Political Economy.

deHaan, J., Sturm, J.E., Beekhuis, G., 1997. The weak government thesis: a survey and new evidence. Mimeo, University of Groningen.

deHaan, J., Moessen, W., Volkerink, B., 1999. Budgetary procedures — aspects and changes: new evidence for some European countries. In: Poterba, J., Von Hagen, J. (Eds.), Fiscal Institutions and Fiscal Performance. NBER and University of Chicago Press, Chicago, IL, pp. 265–300.

Hallerberg, M., Von Hagen, J., 1997. Sequencing and the size of the budget: A reconsideration, CEPR working paper No. 1589.

Hallerberg, M., Von Hagen, J., 1999. Electoral institutions, cabinet negotiations, and budget deficits within the European Union. In: Poterba, J., Von Hagen, J. (Eds.), Fiscal Institutions and Fiscal Performance. NBER and University of Chicago Press, Chicago, IL, pp. 209–232.

Judson, R., Owen, A., 1996. Estimating dynamic panel data models: a practical guide for macroeconomists. Federal Reserve Board of Governors working paper, Washington DC.

Lane, P., Tornell, A., 1998. Power and growth. American Economic Review.

Milesi-Ferretti, G.M., Perotti, R., Rostagno, M., 1999. Electoral systems and the composition of government spending. Mimeo, IMF.

Organization for Economic Cooperation and Development, 1987. The control and management of government expenditure, Paris.

Organization for Economic Cooperation and Development, 1995. Budgeting for Results, Paris.

Perotti, R., 1999. Fiscal policy in good times and bad, forthcoming. Quarterly Journal of Economics (November).

Persson, T., Tabellini, G., 1999a. Political economics and public finance, forthcoming. In: Auerbach, A., Feldstein, M. (Eds.). Handbook of Public Economics, Vol. III. North Holland, Amsterdam.

Persson, T., Tabellini, G., 1999b. The size and scope of government: comparative politics with rational politicians. European Economic Review (April).

Roubini, N., Sachs, J.D., 1989a. Political and economic determinants of budget deficits in the industrial democracies. European Economic Review 33, 903–938.

Roubini, N., Sachs, J.D., 1989b. Government spending and budget deficits in the industrialized countries. Economic Policy 8, 99–132.

Shepsle, K., Weingast, B., 1981. Political preferences for the pork barrel: a generalization. American Journal of Political Science 25 (1), 96–111.

Spolaore, E., 1993. Policy making systems and economic efficiency: coalition governments versus majority governments. Mimeo, ECARE.

Velasco, A., 1999. A model of endogenous fiscal deficits and delayed fiscal reforms. In: Poterba, J., Von Hagen, J. (Eds.), Fiscal Institutions and Fiscal Performance. NBER and University of Chicago Press, Chicago, IL, pp. 37–58.

Volkerink, B., de Haan, J., 2001. Fragmented government effects on fiscal policy: new evidence. Public Choice (forthcoming).

Von Hagen, J., 1992. Budgeting procedures and fiscal performance in the European Communities. Economic Papers, 96.

Von Hagen, J., Harden, I.J., 1994. National budget processes and fiscal performance. European Economy Reports and Studies 3, 311–408.

Weingast, B., Shepsle, K., Johnson, C., 1981. The political economy of benefits and costs: a neoclassical approach to redistributive politics. Journal of Political Economy 89 (August).

Woldendorp, J., Keman, H., Budge, I., 1993. A compilation of political data on industrialized parliamentary democracies. European Journal of Political Science 24, 1–120.