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The role of fiscal rules and institutions  
in shaping budgetary outcomes  
Proceedings from the ECFIN Workshop  
held in Brussels on 24 November 2006

Edited by J. Ayuso-i-Casals, S. Deroose,  
E. Flores and L. Moulin  
(Directorate-General for Economic and Financial Affairs)

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**THE ROLE OF FISCAL RULES AND INSTITUTIONS IN SHAPING BUDGETARY  
OUTCOMES**

Workshop organised by the European Commission  
Directorate General for Economic and Financial Affairs  
Brussels, 24 November 2006

Edited by J. Ayuso-i-Casals, S. Deroose, E. Flores and L. Moulin  
(Directorate General for Economic and Financial Affairs)

## Preface

Economic literature has provided abundant analysis on how taxes, government expenditures and government balance should be set over the business cycle for fiscal policy to be considered optimal and sustainable. However, experience also presents ample evidence that such policies were in practice not always pursued by policymakers. This has notably been reflected in the propensity to finance public expenditure with debt and to conduct pro-cyclical policies, and in difficulties to restructure public expenditure (i.e. quality aspects of public finances). Such developments have drawn the attention from policy analysts and academics, who have been exploring the reasons for the existence of a deficit bias.

The explanations generally point to the consideration that policy makers may not have the right incentives to pursue sound public finances in the long run. Literature has notably stressed that adequate institutional settings at national level can play an important role in containing spending and deficit biases. These settings include in particular:

- (1) procedural rules of the budgetary processes, i.e. the process laid down in law or constitution governing the elaboration of the annual budget law;
- (2) numerical fiscal rules which are guiding or imposing constraints on the discretion of policy-makers; and
- (3) independent institutions in charge of providing inputs (forecasts, analysis) and formulating recommendations in the area of fiscal policy.

In the context of the discussions on the 2005 reform of the SGP, the Council has also emphasized the importance of developing and strengthening fiscal governance in the EU Member States. The Council stated that national budgetary rules should be complementary to the Member States' commitments under the Stability and Growth Pact. The Council also underlined that domestic governance arrangements should complement the EU framework, and that national institutions could play a more prominent role in budgetary surveillance to strengthen national ownership, enhance enforcement through national public opinion and complement the economic and policy analysis at EU level.

Most of the Member States have developed national fiscal frameworks in order to improve fiscal policy making and outcomes. Better knowledge on their design, main features and implementation is crucial to contribute to the improvement of the effectiveness of fiscal governance.

The workshop "The role of national fiscal rules and institutions in shaping budgetary outcomes" organized by the Directorate-General for Economic and Financial Affairs (DG ECFIN) of the European Commission on 24 November 2006 in Brussels aimed at enriching the debate on these fiscal arrangements and improving the understanding of their functioning. This Economic Paper of DG ECFIN contains all the paper presented in this event that was organised in four sessions (see programme in next page).

A first set of papers mainly focus on the impact of numerical fiscal rules on budgetary outturns. The paper by Ayuso, González, Moulin and Turrini, which is based on a comprehensive data base on the existing national fiscal rules in EU countries built up by DG Ecfm, finds a beneficial effect of fiscal rules on fiscal developments (i.e. lower deficits or higher surpluses, more moderate growth of public expenditure, and fewer pro-cyclical fiscal

policy episodes). In the same vein, Broesens and Wierts show that a sound fiscal institutional setting, including strong expenditure rules, is one of the factors that can explain the positive budgetary results achieved by some countries. By contrast, the presentation by Debrun and Kumar raises the issue of reverse causality between fiscal rules and budgetary outturns, and argue that fiscal rules may however constitute useful devices to signal political commitment to fiscal discipline.

Other papers deal primarily with the appropriate design of fiscal rules and institutions. Thus, according to Krogstrup and Wyplosz the optimal deficit or debt ceiling is likely to be time-varying whereas the setting of such ceiling may be delegated to a non-partisan independent fiscal agency. Hallerberg and Stéclbout-Orseau discuss under what conditions independent budgetary bodies may influence fiscal policy making, and argue that 'fiscal watchdogs' should be implemented at national level in order to be more effective. Finally, the paper by Kirsanova, Leith and Wren-Lewis puts forward a proposal for the establishment of a fiscal agency to monitor debt developments.

An additional group of papers addresses the relationship between the fiscal governance approach adopted by the EU Member States and their institutional and political frameworks. The importance of the political and electoral system to implement either the so-called "delegation" or "contract" approach to centralise budgetary procedures, and the apparent difficulties of "delegation" States to adhere to the SGP provisions are the main message of the paper presented by Hallerberg, Strauch, and von Hagen. These views are challenged by Hodson's presentation, who gives some evidence raising doubts on the supposed incompatibility between delegation Member States and a rules-based system for fiscal governance such as the SGP.

Finally, the remaining presentations relate more directly to policy experiences. While the paper by Balassone, Franco and Zotteri evaluates the feasibility of implementing "rainy day" funds in the EU countries on the basis of the USA experiences, the paper by Boije and Fisher, and Lebrun assess the functioning of the existing set of fiscal rules in Sweden and Fiscal Councils in Belgium respectively.

Overall, the majority of papers presented in the workshop, which consider fiscal rules and institutions from different perspectives, seem broadly to agree that these fiscal arrangements may be useful devices to improve the conduct of fiscal policy in terms of better budgetary results and less pro-cyclicality. However, it is also widely acknowledged that the appropriate design of rules and institutions is country-specific, and highly depend on the domestic institutional setting and the nature of the fiscal problems.

# Programme of the workshop

## THE ROLE OF FISCAL RULES AND INSTITUTIONS IN SHAPING BUDGETARY OUTCOMES

Organised by the European Commission  
Directorate General for Economic and Financial affairs  
**Brussels, 24 November 2006**  
Charlemagne Building, room S1  
170 rue de la Loi, B-1049 Bruxelles,

**8.30-9.00**      **REGISTRATION AND WELCOME COFFEE**

**9.00.-9.10**      **WELCOME ADDRESS BY KLAUS REGLING**, Director General, Directorate-General Economic and Financial Affairs

**9.10-10.40**      **SESSION 1 - FISCAL RULES AND INSTITUTIONS AS USEFUL DEVICES TO ADDRESS THE DEFICIT BIAS - CHAIR: SERVAAS DEROOSE**  
*(20 minutes per presentation and 30 minutes discussion)*

- Signe Krogstrup and Charles Wyplosz, *A Common Pool Theory of Deficit Bias Correction*
- Xavier Debrun and Manmohan Kumar, *The Discipline-Enhancing Role of Fiscal Institutions: Theory and Empirical Evidence*
- Teunis Brosens and Peter Wierdsma, *The Surplus Factor*
  - Discussant: C. Martinez-Mongay

**10.40–11.00**      **COFFEE BREAK**

**11.00-12.00**      **SESSION 2 - FORMS OF GOVERNANCE, FISCAL RULES AND INSTITUTIONS - CHAIR: SERVAAS DEROOSE**  
*(20 minutes per presentation and 20 minutes discussion)*

- Mark Hallerberg, Rolf Strauch and Jürgen von Hagen, *The Design of Fiscal Rules and Forms of Governance in European Union Countries*
- Dermot Hodson, *National Fiscal Governance and the Stability and Growth Pact: Are "delegation" states at a disadvantage?*
  - Discussant: C. Wyplosz

**12.00–13.30 LUNCH**

**13.30–15.20 SESSION 3 - SPECIFIC INSTITUTIONAL ARRANGEMENTS TO IMPROVE FISCAL POLICY - CHAIR: ELENA FLORES**

*(20 minutes per presentation and 30 minutes discussion)*

- Fabrizio Balassone, Daniele Franco and Stefania Zotteri, *Rainy Day Funds: Can They Make a Difference in Europe?*
- Joaquim Ayuso-i-Casals, Diana Gonzalez Hernandez, Laurent Moulin, Alessandro Turrini, *Beyond the SGP: Features and effects of EU national-level fiscal rules*
- Mark Hallerberg and Eloïse Stéclebout-Orseau, *Who provides signals to voters about government competence on fiscal matters? The importance of independent watchdogs*
- Tatiana Kirsanova, Campbell Leith and Simon Wren-Lewis, *Optimal Debt Policy, and an Institutional Proposal to help in its Implementation*
  - Discussant: T. Ter-Minassian

**15.20–15.40 COFFEE BREAK**

**15.40-16.40 SESSION 4 - COUNTRY-SPECIFIC EXPERIENCES - CHAIR: ELENA FLORES**

*(20 minutes per presentation and 20 minutes discussion)*

- Robert Boije and Jonas Fischer, *The Swedish budget "model": a genuine beauty or in need of a face lift?*
- Igor Lebrun, *Fiscal councils, independent forecasts and the budgetary process: lessons from the Belgian case*
  - Discussant: L. Jonung

**16.40-17.30 POLICY PANEL DISCUSSION: NATIONAL FISCAL RULES AND INSTITUTIONS FOR IMPROVING FISCAL POLICY AND RESPECT OF THE SGP - WHAT IS DESIRABLE? WHAT IS FEASIBLE?**

Participants: T. Ter-Minassian; E. Flores; D. Franco; P. Praet; W. Raab  
Moderator: S. Deroose.

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# A Common Pool Theory of Deficit Bias Correction

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Graduate Institute of International Studies, Geneva

**Abstract:** The budget deficit bias is modeled as the result of a domestic common pool problem and of an international externality. Along with Pigouvian taxes, a number of policy measures are examined and welfare-ranked: deficit ceilings, golden rules and delegation. In general, the combination of delegation and an optimally-set deficit ceiling deliver the social optimum, even if the deficit ceiling is not credible.

## Introduction

Public debts have doubled on the average in the OECD area over the past three decades. This debt buildup, unprecedented in peace time, strongly suggests that industrial democracies suffer from a deficit bias. This bias has not gone unnoticed. Fiscal rules have been widely adopted in a number of countries and federated states. Chile and Brazil have adopted formal deficit targets. The UK has put in place a more informal Code for Fiscal Stability and Belgium has established a High Council of Finance. Denmark and the Netherlands have set up wisepersons' committees that inform the general public on the state of public finances. Perhaps the most prominent rule is the adoption in the European Union of the Stability and Growth Pact, which aims at limiting budget deficits.<sup>2</sup>

There are obvious analogies between fiscal discipline and price stability. Over the 1960s and 1970s, monetary policy also seemed to be generating a persistent "inflation bias". Following the works of Kydland and Prescott (1977) and Barro and Gordon (1980), the literature eventually converged on the view that monetary policy should aim at a medium to long term rule with some short term discretion, combined with institutional independence of the central bank. Wherever the inflation targeting strategy has been properly adopted, low inflation rates have subsequently been achieved.

In contrast with monetary rules, however, the case for fiscal rules has only started to be articulated. Von Hagen and Harden (1995), in a static model of a deficit bias due to political distortions, show that fiscal restraint is desirable and that

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<sup>2</sup>Following the recent revision, budgets must be "within a defined range between -- 1 % of GDP and balance or surplus, in cyclically adjusted terms, net of one-off and temporary measures."

delegation of the budget decision to a Finance Minister reduces the bias. Hallerberg and Von Hagen (1999) extends the previous paper by allowing for two periods; they show that giving agenda-setting power to the Finance Minister eliminates the bias. Beetsma and Uhlig (1999) show that a Stability and Growth Pact can be welfare improving in the presence of a deficit bias. Two other closely related papers, Beetsma and Debrun (2004, 2005) show that a Stability and Growth Pact may have the undesirable side effect of reducing public investments as well as unproductive spending, and then show how an optimal improvement of the Pact trades off fiscal discipline against productive spending through a golden-rule type of mechanism that displays some tolerance towards productive spending. Blanchard and Giavazzi (2004) reach similar conclusions with a model that assumes that the return from productive public spending is underestimated by standard accounting rules. While these papers show the particular welfare aspects of a Stability and Growth Pact type of arrangement and how delegation of the budgetary decision to a strong Finance minister reduces the bias, we still do not know whether these arrangements are optimal in the first place. The more general question of which types of fiscal restraints are socially desirable has not been posed, and we do not know which rules and/or institutions are likely to deliver these restraints. There also remains the question of when the deficit bias must be dealt with on the supranational level, such as the Stability and Growth Pact, and when the bias is more effectively dealt with on the national level. We address these questions here.

To do this, we need to formulate a general model of the deficit bias. The most influential theories are the common pool theory formalized by Von Hagen and Harden (1995), Hallerberg and Von Hagen (1999) and Velasco (1999, 2000), the time inconsistency of preferences theory formalized by Alesina and Tabellini (1990). and the agency problem as in Besley and Smart (2003).<sup>3</sup> The common pool problem results when there is more than one decision maker involved in setting the budget.<sup>4</sup> Thus, when the decision makers - spending ministers, lobby groups, parties in a coalition government - compete for their preferred public goods, they fail to internalize the cost of their choices on current and future cost in terms of higher taxes needed for debt service and repayment, which results in a deficit bias. The time inconsistency of preferences theory points out that when governments are subject to elections, they do not fully internalize the cost of taking up debt as some of that debt will be serviced by future governments. Political-economic interpretations of the deficit bias among OECD countries have been documented in a large number of papers. The evidence suggests that political fragmentation, i.e. common pool problems, play a role in the deficit bias (Persson et al. 2003; Fabrizio and Mody, 2006; Roubini and Sachs, 1989; von Hagen 1992; von Hagen and Harden, 1994). There is less support for the view that uncertainty of reelection causes deficits (Lambertini, 2003, finds zero support for this theory, while Roubini and Sachs, 1989, find some). We hence adopt the common pool interpretation of the domestic part of the deficit bias. We do not account for time inconsistency of preferences to keep things simple. We note, however, that Krogstrup (2006) shows that with minor modifications in the modeling setup, the common pool externality can be interpreted as an externality due to time inconsistency. With some caution in interpretation, our

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<sup>3</sup> An excellent survey is Persson and Tabellini (2000), Chapter 9. The seminal contribution is Weingast et al. (1981).

<sup>4</sup> The delayed stabilizations case, developed by Alesina and Drazen (1991), can be seen as a case of common pool.

model and the resulting policy implications hence extend to both types of the deficit bias.

We do not consider the role of parliament in amending and voting on the budget. The role of parliament, and its voting rules, is the object of an important literature that includes the seminal contribution by Baron and Ferejohn (1989). The more general issue of separation of power has been reviewed by Bendor et al. (2001) and an application to the budget process is Grossman and Helpman (2006). We do not ignore that the empirical evidence (e.g. Alesina and Perotti, 1999) is that the issues of separation of power and of parliament voting rules are relevant for the deficit bias, but we wish to focus on the underlying issue of conflicts of interests. One interpretation is that the government decides alone on the budget; another interpretation is that the game that we describe encompasses the government and the parliament, both of which are politically captured and let the interest groups bargain on their own.

In principle, the deficit bias ought to be addressed where it arises, namely at the national level. Yet, we observe instances of interventions by an external agent, for example the IMF or Europe's Stability and Growth Pact. This is likely to be desirable in the presence of international externalities. Discussions of the Stability and Growth Pact have identified different externalities<sup>5</sup>. One channel is the interest rate. The assertion is that one country's deficit raises the interest rate and therefore the cost of debt service throughout the euro area. Alternatively, the prospect of a sharply contractionary fiscal policy may force the hand of an imperfectly independent central bank to raise the inflation rate<sup>6</sup>. Another channel is that the threat of debt default by one member country could affect the monetary union's common exchange rate depreciation and generate a risk premium if the common central bank would have to monetize some or all the debt. To eliminate this possibility, the Treaty includes a no-bailout clause. But this clause has not been tested yet and is sometimes considered as weak. The existence of a significant international externality remains a matter of debate, yet it figures prominently in policy discussions. Rather than modeling a particular mechanism, we simply assume that each country expects to be able to impose some of its debt service on other countries.

Our model is an extension of Velasco (2000). The advantage of this model is to focus on deficits while leaving levels of spending and taxes out. This neatly allows to separate the deficit bias from the issue of government size. We extend this model in several ways. First we allow for productive public spending in addition to unproductive public good provision. Without productive public spending, the optimal fiscal rule is trivially a zero deficit ceiling. Second, to simplify, we consider only two periods. Third, we consider two countries linked by a negative debt externality. The resulting model allows us to obtain intuitive analytical solutions. We use it to conduct a broad analysis of alternative policies, comparing fiscal rules and fiscal institutions that can be welfare-ranked.

The paper is structured as follows. The next section presents the model and characterizes the socially optimal equilibrium and the Nash and Stackelberg solutions in the presence of both domestic and international externalities. Section 3 determines the Pigouvian taxes that allow for the full internalization of both domestic and international externalities, and which hence take us to social optimum. We show that

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<sup>5</sup>See the papers collected in Brunila, Buti and Franco (2001). See also Giuliadori and Beetsma (2004) for a discussion of these channels.

<sup>6</sup>Beetsma and Uhlig (1999) model an international externality of debt in a Monetary Union along such lines.

given the two sources of externalities, more than one tax is needed, and the taxes are highly impractical. This leads us to examine the properties of various often-discussed policies. In Section 4 we look at the institutional approach whereby deficits are delegated to a national social planner. In Section 5, we examine the properties of deficit ceilings or budget rules. Golden rules are then studied in Section 6. The welfare implications of these various solutions and brought together in Section 7 and the final section concludes.

## The Deficit Bias

### The Model

The domestic deficit bias is due to a common pool problem, where the common pool is the present and future deficits that can be run given the budget constraint. The domestic externality arises when interest groups seek to redistribute resources to their advantage through the public tax and transfer system. The corresponding gross transfers can be seen either as pure transfers or entitlement spending, or as the provision of public goods that are useful only for the receiving interest group. We use the term interest groups, but these can alternatively be interpreted as spending ministries represented by a minister or as parties in a coalition government. Another interpretation is that spending ministries are captured by interest groups. Yet another interpretation is that interest groups are represented by parties, which in turn are members of coalition governments. Here we portray the extreme case where interest groups are in complete control of the net transfer part of the budget.

As discussed above, there is no consensus on the source and strength of an international externality of public debt. We therefore postulate a general international externality: each country intends to have some of its debt paid for by the other country.

The domestic common pool problem follows Velasco (2000). In each country, there exist  $n \geq 1$  interest groups, indexed by  $i$ ,  $i = 1, 2, \dots, n$ . We assume that all interest groups are of the same size. Each group can decide on the amount of net transfers,  $g_t^i$ , that it obtains in period  $t = 1, 2$ . Net transfers in the home country,  $g_t^{h,i}$ , are defined as transfers received less taxes paid. The same applies to net transfers  $g_t^{f,i}$  in the foreign country.

Excessive deficits will arise when interest groups fail to internalize debt service. In addition, some deficits may be socially desirable because we allow for an other budget item, aggregate productive spending. This spending is productive in the sense that it raises public revenues in the next period. It is aggregate because it does not accrue to interest groups. One interpretation is that it covers infrastructure or effective reforms that will raise GDP and therefore taxable income. This is the interpretation given by Beetsma and Debrun (2004, 2005). Alternatively, we can think of efficient countercyclical fiscal policy that brings GDP back towards its potential level and thus reduces waste and inefficiencies. This second interpretation matches current debates in Europe over the discretionary use of fiscal policy. Denote productive spending at home in period 1 as  $X^h$ . Spending  $X^h$  in period 1 raises tax revenues by  $\theta(X^h)$  in period 2. We assume  $\theta' > 0$  and  $\theta'' < 0$ , i.e. these expenditures are subject to decreasing returns, which is needed for the second order condition to be satisfied.

We introduce a second actor, the Finance Minister, alongside the interest groups. The Finance Minister has no direct control over net transfers to interest groups, but she is in charge of setting productive spending which she does to maximize national welfare. Allowing for a benevolent Finance Minister, as von Hagen and Harden (1995) do, is not crucial to our results. Since national welfare is the sum of the interest groups (which represent the population as a whole) welfare, we could also let the interest groups select productive spending by consensus, or we could let the interest groups select a Finance minister amongst themselves with the aim of maximizing his own welfare, and the outcome would be the same.<sup>7</sup>

The government can borrow or lend internationally any amount that it wishes at the constant real interest rate  $r$  (i.e. the economy is small)<sup>8</sup>, and it is bound by the intertemporal budget constraint. Importantly, the budget constraint is understood and accepted by all interest groups. Thus, by assumption, we rule out defaults, an extremely rare occurrence in developed economies. The budget constraint of the home country government in period one is:

$$\sum_{i=1}^n g_1^{h,i} + X^h = B^h \quad (1)$$

where  $B^h$  is the debt acquired in period 1. For simplicity and without loss of generality, we assume that there is zero initial debt. Crucially, no other actors, including the interest groups, can borrow or lend. This assumption ensures that the public debt is non-neutral, since the private sector cannot offset its intertemporal net transfer profile. The assumption does not change the common pool problem as a driver of deficits, but it is needed for realized deficits to have welfare implications.

The second period budget constraint for the home country is:

$$\sum_{i=1}^n g_2^{h,i} + (1+r) \left[ (1-\alpha)B^h + \alpha B^f \right] = \theta(X^h) \quad (2)$$

where  $\alpha$  represents the international externality. A portion  $\alpha$  of domestic debt  $B^h$  can be passed on to the other country while the home government must serve a portion  $\alpha$  of the foreign government deficit  $B^f$ . This is a rough but simple way of capturing various international externalities previously described, as long as they are zero-sum. It does not account for instance, for the possibility that one country's indiscipline could raise borrowing costs for all countries.

The home country's intertemporal budget constraint thus becomes

$$(1-\alpha) \left[ \sum_{i=1}^n g_1^{h,i} + X^h \right] + \alpha \left[ \sum_{i=1}^n g_1^{f,i} + X^f \right] + R \sum_{i=1}^n g_2^{h,i} = R\theta(X^h) \quad (3)$$

where  $R = (1+r)^{-1}$ . The same constraints apply to the foreign country.

We assume that each interest group can implement its chosen level of net transfers in both periods. For simplicity, they all have the same preference over the own transfers that they can receive, represented by the following utility function:

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<sup>7</sup>To see this, note that the only function of productive spending in this model is to affect the overall common pool. Setting  $X$  cannot be used to redistribute resources among interest groups nor to shift resources from one period to the other; hence the choice of  $X$  cannot be used strategically. It is therefore in all interest groups', as well as that of the benevolent Finance Ministers', interest to set  $X$  so as to maximize the common pool.

<sup>8</sup> The small country assumption, which allows us to treat the real interest rate as exogenous and constant, eliminates one of the sources of the international externality commonly mentioned. As will be made clear shortly, we allow for a direct international externality.

$$U^{h,i} = \log(g_1^{h,i} + \bar{g}) + \beta \log(g_2^{h,i} + \bar{g}). \quad (4)$$

where  $\beta$  is the time preference factor. The term  $\bar{g}$  represents the maximum amount of net taxes that each interest group is willing and able to pay. More precisely, we assume that there is a lower limit  $-\bar{g} < 0$  for the net total transfers received by each interest group<sup>9</sup>. It follows that the maximum net revenues that can be collected is  $\bar{G} = n\bar{g}$ .

The general case where  $\beta \neq R$  is presented in the Appendix. When  $\beta \neq R$  there exists a rationale for shifting income across periods and therefore for a budget deficit or surplus in period 1. This rationale is well understood and not pursued further here. For simplicity, therefore, from now on, we assume that  $\beta = R = 1$ . Again, the situation is identical in the foreign country.

Who are the interest groups? In a more complete model, these interest groups could coexist with citizens devoid of political influence. This would greatly complicate the situation. At this stage, we consider that all citizens belong to one interest group. One interpretation is that interest groups bring together citizens with shared interests, and that all citizens are somehow represented by an interest group. Another interpretation is that each citizen is an interest group of its own, in which case  $n$  is the size of population. What is important is that the Finance Minister and the social planners maximize the unweighted sum of the interest group utilities.

We first consider the socially optimal allocation of deficits between interest groups, Finance Ministers and across countries. Then we consider the free-for-all case when the interest groups effectively control the transfers and the national Finance Ministers decide on productive spending.

## The International Social Planner

The international social planner decides on  $g_t^{k,i}$  and  $X^k$  for  $k = h, f$  to maximize  $\sum_{i=1}^n U^{h,i} + \sum_{i=1}^n U^{f,i}$  subject to the budget constraints (3) both countries. Given the symmetry between all interest groups and countries, it is clear that  $g_t^{k,i} = g_t^k$ ,  $\forall k, i$ , and  $X^h = X^f = X$ . Denoting aggregate transfers  $G_t = ng_t$ , the first order conditions are:

$$\theta'(X) = 1 \quad (5)$$

$$G_1 = G_2 \quad (6)$$

Condition ((5)) implies that the social planner chooses the level of productive spending  $\bar{X}$  that maximizes the surplus  $\theta(X) - X$ . Condition ((6)) means that the social planner equalizes transfers across periods (this is a consequence of the assumption  $R = \beta$ , see the Appendix for the general case).

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<sup>9</sup>This formulation, akin to that used in Velasco (1999), implies that  $U^{h,i} \rightarrow -\infty$  when  $g_t^{h,i} \rightarrow 0$ .

The formulation differs from Velasco (2000) who assumes instead a bliss level for transfers and uses a quadratic loss function.

Note that symmetry also implies that the intertemporal budget constraint ((3)) is the same for each country and simplifies to:

$$G_1 + G_2 = \theta(X) - X \quad (7)$$

The constraint being recognized *ex ante* by the international social planner, the international externality is fully internalized and (5) shows that the same applies to the domestic political distortions. Using definition ((1)), the socially optimal deficit is :

$$B^* = \frac{1}{2} [\theta(X^*) - X^*] + X^* \quad (8)$$

where asterisks denote socially optimal values. Period 1 and 2 net transfers are  $G_1^* = G_2^* = \frac{1}{2} [\theta(X^*) - X^*]$ .

The social optimum implies a deficit to the extent that productive public spending exists. In that case, the interest groups receive positive transfers in both periods, a share of the surplus created by productive spending. If there is no such thing as productive spending, then we have  $X \equiv 0$  and the socially optimal debt is zero. This establishes the obvious point that not all deficits are bad; some deficit may be justified as optimal intertemporal smoothing of future returns to current productive spending.

## Autonomous Governments

We now look at the case where interest groups and Finance Ministers set their respective variables independently. The game is solved backwards. Once in period 2, the debt to be repaid is predetermined by the net transfers chosen in period one and by the surplus  $\theta(X) - X$  created by productive spending. As a result, there is no choice to be made at that stage. Each interest group simply recognizes that its net transfers will have to fit within the country's budget constraint (2). We assume that partition of the budget in period two is symmetric, in that each interest group gets (pays) an equal share<sup>10</sup>:

$$g_2^i = \frac{\theta(X^h) - [(1-\alpha)B^h + \alpha B^f]}{n} \quad (9)$$

((9)) shows the degree to which the cost of period one net transfers in terms of period two net transfers is not internalized by the individual interest group. Since  $B^h = \sum_{i=1}^n g_1^{h,i} + X^h$ , each interest group perceives that the second period cost of raising first period transfers by one unit is equal to  $(1-\alpha)/n < 1$ . The strength of the deficit bias is captured by  $n/(1-\alpha) \geq 1$ ; it logically increases with the number of interest groups and with the size of the international externality.

In period one, we assume that the interest groups in the two countries move simultaneously, and the Finance Ministers in the two countries move simultaneously as well, thus abstracting from any asymmetry of the sequencing of moves within the types of actors in the first period. As a result, we only need to consider two cases in

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<sup>10</sup>A slightly more complex bargaining process in period two, for example along the lines of the Baron and Ferejohn (1989) model, would also be possible, and would not change the central common pool mechanism or our conclusions. But it would introduce uncertainty between the two periods from the point of view of the individual interest group, and it would therefore complicate the derivations correspondingly.

the first period game. The first possible setup is a Nash-Nash game, in which the interest groups play Nash against each other and against the two Finance Ministers and each Finance Minister plays Nash vis a vis the other one and the interest groups. The second setup is a two-stage game. In the first stage, the Finance Ministers of the two countries move as simultaneous Stackelberg leaders. In the second stage, the interest groups observe the move of the two Finance Ministers and then move simultaneously. The Nash-Nash setup turns out to be equivalent to the game in which the interest groups act as Stackelberg leaders since the Finance Ministers' decisions do not depend on the level of the interest groups' transfers.

### Finance Ministers do not precommit (Nash-Nash)

In period one, the interest groups choose the transfers that they will receive taking into account the intertemporal budget constraint, i.e. the fact that they will have to collectively repay in period 2 the debt incurred in period 1. Taking as given what other interest groups do, they each have an incentive to raise their net transfer above the socially optimal level. Moreover, neither interest groups nor the Finance Ministers take into account the effect of their deficit decisions on the other country's second period budget constraint. The domestic common pool problem and the international externality of debt now combine to increase the deficit above the socially optimal level.

Formally, each interest group maximizes its utility function ((4)) subject to ((9)) and to its period 1 budget constraint ((1)),  $g_1^{h,i} = B^h - \sum_{j \neq i} g_1^{h,j} - X^h$ . The first-order condition is:

$$g_1^{h,i} = \frac{1}{2(1-\alpha)} \left[ (\alpha + n - 1) \bar{g} + \theta(X^h) - \alpha(X^f + \sum_{i=1}^n g_1^{f,i}) \right] - \frac{1}{2} \left[ X^h + \sum_{j \neq i} g_1^{h,j} \right] \quad (10)$$

Applying symmetry across interest groups (but not yet across countries) yields the aggregate interest group reaction function in Home:

$$G_1^h = \frac{n}{(2+n)(1-\alpha)} \left[ \frac{\alpha + n - 1}{n} \bar{G} + \theta(X^h) - (1-\alpha)X^h - \alpha(X^f + G_1^f) \right]$$

where  $G_1^h = \sum_{i=1}^n g_1^{h,i}$ . The same conditions apply abroad.

The Finance Ministers each have only one decision to make regarding the level of productive spending  $X^h$  and  $X^f$ , respectively at home and abroad. Their best choice is:

$$\theta'(X) = 1 - \alpha \quad (11)$$

Since  $\theta''(X) < 0$  this means that  $X > X^*$  i.e. productive spending exceeds the socially optimal level that maximizes the surplus  $\theta(X) - X$  as in (5). This is a consequence of the Nash game between governments as each one expects to pass a share  $\alpha$  of its debt to the other government. Importantly, the domestic political distortion only affects the interest groups, not the Finance Minister's choice of  $X$ . In fact, by maximizing the domestically available surplus from productive spending (the last three terms in (10)). Finance Ministers also increase the interest groups' welfare. That the distortion on  $X$  is only related to the international externality will matter for policy responses below.

In equilibrium, we have  $g_t^{k,i} = g_t \forall t, k, i$ ,  $G_t^h = G_t^f$  and  $X^h = X^f = X$ , and the solution for each country is :

$$G_1 = \frac{n-(1-\alpha)}{n+(1-\alpha)} \bar{G} + \frac{n}{n+(1-\alpha)} [\theta(X) - X] \quad (12)$$

which implies a deficit:

$$B = \frac{n-(1-\alpha)}{n+(1-\alpha)} \bar{G} + \frac{n}{n+(1-\alpha)} [\theta(X) - X] + X \quad (13)$$

Note first that when  $n=1$  and  $\alpha=0$  we find the results of the international social planner: (11), (12) and (13) reduce to (5), (7) and (8), respectively. The first term in (11) shows how the potential domestic common pool, the maximum taxing possibility  $\bar{G}$ , is shared among interest groups. In addition to increasing with  $\alpha$ , this term increases with  $n$ . In the limit case where  $n \rightarrow \infty$ , this term is equal to  $\bar{G}$ , which means that infinitely small interest groups fully exhaust their future tax capacity. The role of productive public spending is captured by (11) and by the second and third terms in (13). Much as the competition to capture the common pool of current net transfers and feasible future budget surpluses, interest groups compete for the surplus  $\theta(X) - X$  created by productive spending. Again, in the limit case where  $n \rightarrow \infty$ , each of the infinitely small interest groups attempts to capture the whole surplus. The third term in (13) is simply the borrowing to finance productive public spending in period 1, which is larger than socially desirable.

The case of a single country corresponds to assuming  $\alpha=0$ . In that case, the Finance Minister chooses the socially optimal productive spending as (11) reduces to (5), but the deficit bias is not eliminated since (13) becomes:

$$B = \frac{n-1}{n+1} \bar{G} + \frac{n}{n+1} [\theta(X) - X] + X$$

In this case, the domestic common pool problem creates two deficit bias components. The first term reflects the grab for transfers in the absence of productive spending. The second term shows how the interest groups capture part of the surplus generated by the productive spending. The last term corresponds to government borrowing to finance period 1 productive spending, which is socially optimal when there is no international externality.

### **Finance Ministers precommit (Stackelberg leaders)**

We now let the Finance Ministers precommit to their chosen level of productive spending before the interest groups move. We still assume that the interest groups fully control their net transfers but now they know their respective Finance Ministers' selection of productive spending. This means that each Finance Minister acts as a Stackelberg leader vis a vis the interest groups, yet the Finance Ministers play Nash vis a vis each other.

The interest groups' decisions remain the same as in the previous section. Each group will act according to (10). The Finance Ministers realize this when they decide on  $X^h$  and  $X^f$ . They also recognize the symmetry of the situation, so they know that the interest groups will choose:

$$G_1^h = \frac{\alpha+n-1}{n+(1-\alpha)} \bar{G} + \frac{n}{n+(1-\alpha)} [\theta(X^h) - (1-\alpha)X^h - \alpha(G_1^f + X^f)]$$

$$G_1^f = \frac{\alpha + n - 1}{n + (1 - \alpha)} \bar{G} + \frac{n}{n + (1 - \alpha)} \left[ \theta(X^f) - (1 - \alpha)X^f - \alpha(G_1^h + X^h) \right]$$

The home government now sets  $X^h$  to maximize  $\sum_{i=1}^n U^{h,i}$  subject to the two above conditions and to the interest groups intertemporal constraints, taking  $X^f$ , but not  $G_1^f$ , as given. Its first-order constraint is:

$$\frac{1}{G_1^h + \bar{G}} \frac{dG_1^h}{dX^h} + \frac{1}{G_2^h + \bar{G}} \frac{dG_2^h}{dX^h} = 0$$

By the envelope theorem, this amounts to setting  $X^h$  such that  $\frac{dG_1^h}{dX^h} = 0$ . The equilibrium is symmetric ( $X^h = X^f = X$ ) such that:

$$\theta'(X) = 1 - \alpha - \frac{\alpha^2 n}{(1 - \alpha)(1 + n)} \quad (14)$$

Note that (14) stays positive as long as the international externality is not too large.<sup>11</sup> Finally, the model's symmetry implies that  $G_i^h = G_i^f = G_i$  and the deficit in each country remains given by (13). Thus, by precommitting, the Finance Ministers end up raising productive spending further above the socially optimal level. The  $n$  factor in the last term in (14) actually refers to the number of interest groups in the other country. This implies that this additional effect is entirely due to the international externality (it disappears when  $\alpha = 0$ ). Any increase in  $X^h$  is perceived by the foreign interest groups as a reduction in their domestic common pool since they expect to have to pay for a proportion  $\alpha$  of this increase. Accordingly, they reduce their own transfers  $G_1^f$ , which reduces, by a proportion  $\alpha$  again, the amount of foreign debt that will have to be financed by the home country in period 2. Home's available resources rise, which increases the Finance Minister's incentive to increase  $X^h$ . In comparison with the no pre-commitment case (the Nash-Nash case), transfers to interest groups in both periods are reduced because the surplus  $\theta(X) - X$  is lower in the symmetric equilibrium. The overall deficit is also larger with precommitment because the increase in productive spending  $X$  outweighs the reduction in transfers, which is spread over the two periods.<sup>12</sup> Thus, if the Finance Ministers are able to precommit to productive spending, the result is a large deficit bias and lower

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<sup>11</sup>The exact condition for  $\theta'(X) > 0$  is  $\frac{1 - \alpha}{\alpha} > \sqrt{\frac{n}{1 + n}}$ , which is satisfied for  $\alpha \leq \frac{1}{2}$ .

<sup>12</sup>Formally, call  $B^P$  and  $B^{NP}$  the deficit with and without precommitment, respectively, and correspondingly  $X^P$  and  $X^{NP}$ . We have:

$$\frac{B^P - B^{NP}}{X^P - X^{NP}} = \frac{n}{n + (1 - \alpha)} \frac{\theta(X^P) - \theta(X^{NP})}{X^P - X^{NP}} + \frac{1 - \alpha}{n + (1 - \alpha)} > 0$$

Since  $\theta'(X) > 0$  and  $X^P > X^{NP}$ , it follows that  $B^P > B^{NP}$ .

welfare<sup>13,14</sup>.

Note that if we look at the single country version of the model by setting  $\alpha = 0$ , there is no difference any more between the no-precommitment and precommitment cases.

## Policy Responses: Pigouvian Taxes

Whenever externalities create a wedge between the optimal and actual production of some good, correctly devised and imposed Pigouvian taxes can correct the distortions. Assume for the purposes of this section that an international tax authority exists with the sole purpose of imposing Pigouvian taxes to eliminate the distortions due to the domestic and international externalities of transfers. The tax authority has complete information.

### Internalizing the International Externality

Internalizing the international externality with a Pigouvian tax is straightforward. The international externality concerns the aggregate debt level,  $X + G$ . The international tax authority hence wants to impose a Pigouvian tax,  $\tau^I$ , on the debt in period one such that the total debt level to be repaid in period two is equal to the full amount,  $X + G$ . Formally, the tax must fulfill:

$$\begin{aligned} (X + G) &= (1 + \tau)(1 - \alpha)(X + G) \\ \Rightarrow \tau^I &= \frac{\alpha}{1 - \alpha} \end{aligned}$$

The proceeds from this tax are then paid to the other country:

$$\tau^I (X + G) = \frac{\alpha}{1 - \alpha} (X + G) \quad (15)$$

which implies that the new second period budget constraint becomes

$$\sum_{i=1}^n g_2^{h,i} + \left( (1 - \alpha)(1 + \tau)(X + G) + \alpha(1 + \tau)(X^f + G^f) - \tau(X^f + G^f) \right) = \theta(X^h)$$

which reduces to the old budget constraint once (15) is inserted. With this tax on the total debt level of each country, the international externality is internalized.

### Internalizing the Domestic Externality

Assuming that the Pigouvian tax for the international externality derived above is applied, the model is reduced to the one country case, with only a domestic common pool problem. Since the interest groups do not fully internalize the effect of

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<sup>13</sup>Since the interest groups first order condition implies  $G_2 + \bar{G} = \frac{1 - \alpha}{n}(G_1 + \bar{G})$ , welfare is

$$2 \log(G_1 + \bar{G}) + \log\left(\frac{1 - \alpha}{n}\right).$$

<sup>14</sup>This result depends on the assumption that Finance Ministers take into account the reaction function of the foreign interest groups. The alternative assumption that Finance Ministers only take into account domestic interest groups' reaction function (i.e.  $E \left\{ \frac{\partial G_1^f}{\partial X^h} \right\} = 0$ ) would yield the Nash outcome.

their choice of transfers on the overall budget, a Pigouvian tax should address the cost of transfers in the first period in terms of the associated loss of period two transfers for the individual interest group. There is an added complication here. The revenues from this tax must be channeled back to the country in question without being manipulable by the interest groups. Tax revenue collected from interest group  $i$  should be channeled back to the other interest groups *excluding* interest group  $i$ . But the whole common pool problem per definition does not allow to distinguish between the budgets of the individual interest groups in this way, so assuming that such a design for a Pigouvian tax is possible would amount to assuming away the domestic common pool problem. We hence proceed by looking only at Pigouvian taxes that apply to the whole budget and do not distinguish between interest groups.

We solve the problem by assuming that the international tax authority makes a lump sum transfers to the Finance Minister at the beginning of period one, which has the effect of increasing the overall common pool by an amount  $T$  in the first period, and that this lump sum transfer is equal to the tax revenues from the domestic Pigouvian tax ex post. Thus, a Pigouvian deficit tax of  $\tau^D$  is levied on the part of the deficit comprised of transfers to interest groups,  $G$ . Since the international externality is neutralized, and taking into account the lump sum transfer from the international tax authority, the intertemporal budget constraint becomes:

$$(1 + \tau^D) \sum_{i=1}^n g_1^i + X + \sum_{i=1}^n g_2^i = \theta(X) + T$$

To ensure revenue neutrality of the tax, the international tax authority commits ex ante to paying  $T$  such that ex post, we have:

$$T = \tau^D \sum_{i=1}^n g_1^i \quad (16)$$

where  $g_1^i$  is the optimally chosen transfer of interest group  $i$  given  $T$  and  $\tau^D$ . (Note that for the international tax authority to be able to know  $T$  with certainty, we rely on the assumptions of no uncertainty and complete information). Solving backwards yields the interest groups' response to the taxing scheme<sup>15</sup>:

$$g_1^i(T, \tau^D) = \frac{n(T + \theta(X) - X)}{(1+n)(1+\tau^D)} + \frac{n - (1+\tau^D)}{(1+n)(1+\tau^D)} \bar{G}$$

Since the international tax authority chooses  $T$  such that (16) is satisfied ex post, we have

$$g_1^i(\tau^D) = \frac{n(\theta(X) - X)}{(1+n)(1+\tau^D) - n\tau^D} + \frac{n - (1+\tau^D)}{(1+n)(1+\tau^D) - n\tau^D} \bar{G}$$

The international tax authority now selects the domestic Pigouvian tax,  $\tau^D$ , that induces the socially optimal transfers to the interest groups, which yields

$$\tau^D = n - 1$$

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<sup>15</sup>Noting that  $\theta'(X) = 1$  and using the budget constraint, the second period deficit can be written as a function of first period deficits:

$$g_2^i = \frac{1}{n} [\theta(X^h) - X^h] + \frac{1}{n} [T - (1 + \tau^D) \sum_{i=1}^n g_1^{h,i}]$$

This in turn implies that the initial transfer from the international tax authority to the two countries becomes:

$$\mathbf{P} = \frac{n-1}{2}(\theta(X) - X)$$

where  $X$  is given by the socially optimal level.

In conclusion, if a tax on the overall deficit of  $\tau^I$  and a tax on only the transfers part of the deficit of  $\tau^D$  are levied on the two countries, and moreover,  $\mathbf{P}$  is transferred to each of the two countries from the international tax authority prior to the game (or in period one as the game has started, provided the international tax authority can commit credibly to transferring  $\mathbf{P}$ ), the Nash solution to the game is socially optimal<sup>16</sup>.

Pigouvian taxes can internalize externalities but their implementation is doubtful in the absence of an international authority who can tax sovereign governments. The international social planner is a convenient analytical construct but it does not have a real-life existence. Pigouvian taxes could be raised nationally but this presumes that the interest groups that are powerful enough to capture the government will let their influence vanish; this amounts to assuming the problem away.

## Delegation to National Social Planners

Given our assumption that national governments are fragmented, a natural policy response is to delegate fiscal policy to a benevolent national social planner. This can take the form of formal delegation to a fiscal council, as advocated by Wyplosz (2005), or - since there is no issue of time inconsistency of preferences of government in this model - a Finance Minister who is given broad powers, as recommended by von Hagen and Harden (1994).<sup>17</sup> The social planner can make decisions on  $X^k$  and  $g_t^{k,i}$  for all  $i$ 's in each country, but does not coordinate with the social planner in the other country. In effect, we consider a Nash game where both social planners act simultaneously, taking the other social planner's decision as given. The symmetry of the situation implies that  $g_t^{h,i} = g_t^{h,i} = g_t^i$  and  $X^h = X^f = X$ .

The home social planner chooses  $g_t^{h,i}$  and  $X^h$  to maximize (4) subject to (3). The first-order conditions are:

$$\theta'(X) = 1 - \alpha \quad (17)$$

$$G_1 = \frac{\alpha}{2 - \alpha} \bar{G} + \frac{1}{2 - \alpha} [\theta(X) - X] \quad (18)$$

with the corresponding deficit  $B = G_1 + X$ :

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<sup>16</sup>Note that the transfers of tax revenues from the international pigouvian tax  $\tau^I$  between the two countries in the second period do not actually have to take place, as the same is symmetric and the bilateral transfers hence cancel each other out.

<sup>17</sup>The underlying mechanism behind the domestic externality - common pool or time inconsistency of preferences - becomes important in the interpretation of the national social planner. If we assume time inconsistency of preferences of government, the delegation to the a Finance Minister will not internalize the domestic source of the deficit bias as the Finance Minister is still subject to elections.

$$B = \frac{\alpha}{2-\alpha} \bar{G} + \frac{1}{2-\alpha} [\theta(X) - X] + X \quad (19)$$

The national social planners eliminate the domestic externality but the international externality remains because each national planner expects to pass a portion  $\alpha$  of its debt to the other planner. Indeed, (18) and (19) correspond to (12) and (13) in the Nash case with  $n=1$ . Exactly as in the Nash case (11), productive spending is set higher than  $X^*$ , the level that maximizes the national surplus  $\theta(X) - X$  (compare (5) and (17)). Although  $\theta(X) - X$ , the surplus available to each country is reduced, the deficit in (19) is higher than in (7) since  $\frac{\partial B}{\partial X} > 0$ : the international externality creates a deficit bias in both countries. Note that the first term in (18) shows that the international externality is also an incentive for the social planner to raise transfers to its own interest groups.

If the international externality is small ( $\alpha \approx 0$ ), then (17) reduces to (5) and (18) reduces to (7). Trivially, a national social planner achieves the social optimum in a one-country model.

## Deficit (or Debt) Ceilings

An alternative policy response is a mandatory cap on the deficit or on the debt. Deficit ceilings have been adopted in the case of sub-federal level governments as well as at the national level in Chile or Brazil. The Stability and Growth Pact rests on both a deficit and a debt ceiling, although the latter has been set aside *de facto*.<sup>18</sup> In our model, there is no distinction between deficit and debt, so we leave this important distinction out<sup>19</sup>. We assume that the deficit ceiling is optimally set by an outside authority that we call the international social planner.

A key question is which category of spending is affected by the deficit ceiling. Recall that we assume that the Finance Ministers do not control the transfers to their interest groups. If they cannot precommit, the ceiling only constrains productive spending  $X$ .<sup>20</sup> While it is obviously better to constrain unproductive transfers than productive spending, restraining only the latter may still be welfare-improving. Indeed, we know from ((11)) that, in the absence of any corrective measure, productive spending is excessive ( $X > X^*$ ). Yet, the risk is that the constraint be so tight that it leads to insufficient productive spending ( $X < X^*$ ). Conversely, if the Finance Ministers can precommit, it is the transfers to interest groups that are constrained. Thus we need to consider the two cases of precommitment and no-

<sup>18</sup>The Stability and Growth Pact includes a preventive arm and a corrective arm. The preventive arm prescribes a deficit ceiling set in cyclically adjusted terms. Under the interpretation that  $X$  represents a keynesian expansion, it is only "productive" during periods of slowdown. In normal times, fiscal policy is not needed and could be counter productive (e.g.  $\theta(X) \leq X$ ) and indeed the optimum solution is  $X = 0$ . During periods of slowdown, on the other hand, it is desirable to choose

$X = \bar{X} > 0$ .

<sup>19</sup>Wyplosz (2005) emphasizes the distinction and argues that the public debt is the correct variable to be targeted.

<sup>20</sup>In Section 6 below we look at golden rules that separate out the two budget components.

precommitment by the Finance Minister.

In addition, it matters whether the deficit ceiling chosen by the social planner is credible or not. If the social planner cannot precommit and can change the chosen ceiling once action by either interest groups or Finance Ministers has been taken, the deficit ceiling is not credible; knowing this, the interest groups and the Finance Minister will make different decisions than if the ceilings are seen as carved in stone. If neither the Finance Ministers nor the interest groups internalize the ceiling (i.e. the game in which social planner moves last) we are back to the unconstrained outcomes previously studied. It therefore also matters whether the ceiling is credible. We consider each case and examine four different cases combining commitment and credibility.

Commitment and credibility are modeled by specifying the order in which decisions are made. For the credit ceiling to be credible, it must be set at the outset of the game and taken as given by the Finance Ministers and by the interest groups in both countries. Conversely, when the credit ceiling is set in second stage, it is effective and binds the third stage movers, but non-credible because it will respond to the deficit choices of the first stage movers. We call pre-commitment the Stackelberg case where the Finance Minister moves before the interest groups; this will be stage two of the game when the ceiling is credible and stage one when the ceiling is set in the second stage. Obviously, there is no commitment when it is the interest groups that move ahead of the Finance Minister.

## **Deficit Ceiling When the Finance Minister Can Precommit**

We first consider the case where the Finance Minister can precommit to the level of productive spending before the interest groups choose their net transfers.

### **The deficit ceiling is credible**

Take first the case in which the deficit ceiling is seen as credible by the Finance Ministers and the interest groups in both countries. The sequencing of the game in the first period is as follows. In the first stage, the international social planner selects the deficit ceiling, denoted by  $\hat{B}$ . Given  $\hat{B}$ , in the second stage of the game, the Finance Ministers then set  $X$  at the level  $\hat{X}$  that maximizes national welfare  $\sum_{i=1}^n U^{k,i}$  for  $k = h, f$ . Given the deficit ceiling, the interest groups have no choice but to accept  $G_1(\hat{X}) = \hat{B} - \hat{X}$  in the third stage. It is thus the transfers to interest groups that become the residual item under the budget ceiling. The social planner credibly controls  $\hat{B}$ , not its breakdown between  $G_1$  and  $X$ , but it knows that the Finance Ministers move first. By setting the ceiling at the socially optimal level of debt,  $\hat{B} = X^* + \frac{\theta(X^*) - X^*}{2}$ , the international social planner leads the Finance Minister to choose  $X = X^*$  and, therefore,  $G_1 = \frac{\theta(X^*) - X^*}{2}$ , which delivers the social optimum.

The combination of the domestic fiscal institution which allows precommitment of the Finance Minister, and a credible deficit ceiling, eliminates the deficit bias. The reason is clear: government precommitment eliminates the domestic externality once

the debt ceiling has eliminated the international externality. Note that when there is no international externality, the optimal deficit ceiling can just as well be selected by a national social planner.

### **The deficit ceiling is not credible to the Finance Minister**

Now assume that the deficit ceiling is not credible to the first movers in the game, in this case the Finance Ministers. The sequence of the game is the following. The Finance Ministers set the levels of productive spending in the two countries in the first stage, after which the international social planner sets the deficit ceiling. Transfers to interest groups are then set in the third stage. Given Finance Ministers' choice of  $X$ , the social planner now directly controls net transfers, which she will set at the optimal level given productive spending: she will choose  $\hat{B}$  such that  $G_1 = G_2 = \frac{\theta(X) - X}{2}$  (see (8)). Since the deficit ceiling is symmetric across the two countries, the international externality is eliminated and the Finance Ministers select the socially optimal level of productive spending, i.e.  $X = X^*$ , knowing that the international social planner will make sure in the second stage that the surplus to productive spending will be optimally distributed across the two time periods. As in the case of a credible fiscal rule, we find that when the national Finance Ministers move first, i.e. can precommit, a mandatory deficit ceiling delivers the social optimum. Credibility of the ceiling, as we define it here, does not matter. The reason is that forcing the interest groups to act as residual claimants eliminates the domestic externality while the international externality disappears because the same deficit ceiling applies to both countries.

### **The Finance Minister cannot precommit**

We now consider the properties of a deficit ceiling when the Finance Ministers cannot precommit to the level of productive spending before the interest groups select their net transfers. In our model, this is the case in which the interest groups move before the Finance Ministers.

### **The deficit ceiling is credible**

When the deficit ceiling is credible to all actors, the sequencing of the game is the following. The international social planner sets the deficit ceiling in stage one, after which the interest groups set their net transfers in the second stage. In the third stage, the Finance Ministers simply carry productive spending up to the ceiling, which is assumed to be binding. As they move first, the interest groups recognize that the surplus  $\theta(X) - X$  from productive spending will be constrained. In this situation their budget constraints ((1)) and ((2)) become:

$$\sum_{i=1}^n g_1^{h,i} + X^h = \hat{B} \quad (20)$$

$$\sum_{i=1}^n g_2^{h,i} + [(1-\alpha)\hat{B} + \alpha\hat{B}] = \sum_{i=1}^n g_2^{h,i} + \hat{B} = \theta(X^h) \quad (21)$$

The fact that the same constraint binds both countries' deficits eliminates the

international externality, but the domestic externality now remains. In addition, the interest groups understand that when they decide on the transfers, they effectively set the level of productive spending  $X^h = \hat{B} - \sum_{i=1}^n g_1^{h,i}$ . The symmetry of the situation implies that the optimal choice of the interest groups is:

$$G_1 = \left[ \frac{n - \theta'(X)}{\theta'(X)} \right] \bar{G} + \frac{n}{\theta'(X)} [\theta(X) - \hat{B}] \quad (22)$$

$$G_2 = \theta(X) - \hat{B} \quad (23)$$

Then the Finance Minister spends whatever is left under the ceiling:

$$X = \hat{B} - G_1 \quad (24)$$

The international social planner optimally chooses  $\hat{B}$  to maximize welfare. Given  $G_1$ , by setting  $\hat{B}$  the social planner in effect sets  $X$ . Its first order condition implies:

$$\theta'(X) = \frac{n}{1 + (n-1) \frac{dX}{d\hat{B}}} \quad (25)$$

where:

$$\frac{dX}{d\hat{B}} = \frac{n + \theta'(X)}{(1+n)\theta'(X) - (G_1 + \bar{G})\theta''(X)} \quad (26)$$

Note that substituting (24) into (22) gives the level of transfers:

$$G_1 = \frac{n}{\theta'(X) + n} [\theta(X) - X] - \left[ \frac{\theta'(X) - n}{\theta'(X) + n} \right] \bar{G} \quad (27)$$

Since  $\theta''(X) < 0$ , (25) and (26) imply  $\theta' > 1$  i.e.  $X < X^*$ . Productive spending is now less than optimal. This, in turn, reduces the available surplus  $\theta(X) - X$  and thus indirectly constrains transfers  $G_1$ . Note that  $\theta' > 1$  implies  $\frac{dX}{d\hat{B}} < 1$ : when  $\hat{B}$  is reduced,  $X$  falls by less, which means that  $G_1$  is indirectly constrained as well since the surplus  $\theta(X) - X$  shrinks. As a consequence,  $\frac{\partial \theta'(X)}{\partial n} > 0$ :<sup>21</sup> when the domestic externality rises, the social planner reduces  $\hat{B}$ , which increasingly constrains  $X$  and  $G_1$ . For  $n$  large enough, productive spending is driven to zero. When this happens, the social planner does not face any more a trade-off between squeezing the deficit and reducing the surplus  $\theta(X) - X$  and it sets  $\hat{B} = 0$ .

The upshot is that an optimally set and credible deficit limit cannot deliver the

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<sup>21</sup>  $\frac{\partial \theta'(X)}{\partial n} = \frac{1}{\left[ 1 + (n-1) \frac{dX}{d\hat{B}} \right]^2} \left( 1 - \frac{dX}{d\hat{B}} \right) > 0$ .

social optimum when national governments cannot precommit. This is unrelated to the international externality (which is removed) but due to the domestic political distortion. Indeed, in the absence of the domestic externality, i.e. when  $n=1$ , (25) implies that public spending is at the socially optimal level. Then (27) implies that the social planner uses its choice of  $\hat{B}$  in such a way that  $G_1$  is also socially optimal, see (8). But the deficit ceiling must improve upon the Nash equilibrium; otherwise the social planner would set the ceiling such that the Nash outcome would prevail.

### The ceiling is not credible to interest groups

The interest groups now select net transfers in the first stage and the deficit ceiling is set in the second stage. The Finance Ministers implement  $X = \hat{B} - G_1$  in the third stage. Knowing this, the best that the international social planner can do in the second stage is to ensure that  $\theta'(X) = 1$  i.e. the socially optimal level of productive spending  $X = X^*$ . Knowing this optimal action of the social planner, the interest groups choose  $G_1$  taking into account  $X^*$  and  $\hat{B}$ :

$$G_1 = \frac{n}{n+1} [\theta(X^*) - X^*] + \frac{n-1}{n+1} \bar{G} \quad (28)$$

Now, transfers are higher than in the case of a credible social planner when interest groups move first.<sup>22</sup> The deficit ceiling becomes:

$$\hat{B} = \frac{n\theta(X^*) + X^*}{n+1} + \frac{n-1}{n+1} \bar{G} \quad (29)$$

Since both transfers and productive spending are higher than in the case where the social planner is credible, the deficit ceiling is also higher here. The deficit bias remains because the domestic externality still applies and affects the transfers to interest groups.

The situation is improved relative to the unconstrained Nash case since the outcome corresponds to the Nash outcome in the case of a zero international externality. The deficit is correspondingly smaller and welfare is correspondingly higher. But the situation is worse than when the social planner is credible as in Section (5.2). If this were not the case, the social planner would have chosen the debt ceiling given by ((29)) when acting as a Stackelberg leader in section (5.2). Since she chooses a tighter ceiling under commitment, it must be the case that this tighter ceiling leads to higher welfare.

### Conclusions on Ceilings

Three conclusions emerge from the treatment of deficit ceilings. First, the combination of a domestic fiscal institution allowing precommitment on productive spending and of a mandatory deficit ceiling delivers the social optimum. This conclusion does not depend on whether the Finance Minister considers the deficit ceiling credible or not. The reason for this is that the deficit ceiling is the same in both countries, which eliminates the international externality. In the absence of an

<sup>22</sup>To see this, note that:

$$\frac{n}{n+1} (\theta(X) - X) + \frac{n-1}{n+1} \bar{G} > \frac{n}{n+\theta'(X)} (\theta(X) - X) + \frac{n-\theta'(X)}{n+\theta'(X)} \bar{G}.$$

international externality, the precommitted Finance Ministers always select the socially optimal level of productive spending. The deficit ceiling is then set by the social planner to constrain the transfers to the interest groups to their socially optimal level.

The second point is that when there is no domestic fiscal institution allowing the Finance Ministers to precommit, a deficit ceiling never delivers the social optimum, irrespective of whether the ceiling is seen by the interest groups as credible or not. The reason is that the domestic common pool externality leads the interest groups to always select a level of transfers that exceeds the optimal level.

The third conclusion concerns the debate on rules versus discretion in economic policy. When domestic fiscal institutions are poor, a credible fiscal rule yields a higher level of welfare compared to the non-credible case in which the rule can be changed after interest groups have set net transfers. This result is just one more instance of the general result that it is desirable to build credible institutions.

## Golden Rules

So far we have considered the case of a ceiling that applies to the overall deficit. It has been proposed to leave productive spending out of the ceiling.<sup>23</sup> In the present model, a golden rule would set a limit on  $G_1$  while leaving the Finance Minister free to choose  $X$ . Let  $\hat{G}$  be the limit.

If the ceiling is credible, the interest groups have no decision left.  $G_1 = \hat{G}$  and the domestic externality is eliminated. Irrespective of whether they can precommit or not, the Finance Ministers choose  $X$  to maximize the available surplus. As they fail to internalize the international externality, they set  $X$  according to (11) so  $X > X^*$ .

The social planner chooses  $\hat{G}$  to maximize  $\sum_{i=1}^n U^{h,i} + \sum_{i=1}^n U^{f,i}$  subject to the budget constraints  $\hat{G}^h + G_2^h = \hat{G}^f + G_2^f = \theta(X) - X$ . Not surprisingly, the social planner sets  $\hat{G}$  so that the transfers are optimal given the surplus  $\theta(X) - X$ :

$$G_1 = \hat{G} = \frac{\theta(X) - X}{2} \quad (30)$$

The debt level is now higher than socially optimal due to the suboptimally high levels of productive spending, but lower than the deficit in the Nash outcome since the domestic political distortions are rained in. In short, even if it were possible to distinguish between productive spending and transfers to interest groups, a golden rule is not enough to eliminate the deficit bias in the presence of an international externality. Obviously, if  $\alpha = 0$ , the golden rule delivers the social optimum.

If the ceiling is not credible and if the Finance Ministers cannot precommit, the interest groups move first and we are back to the Nash case. If they can precommit, the Finance Ministers move first and still choose  $X$  according to (11) because they do not internalize the international externality. Then the social planner sets  $\hat{G}$  according to (30). Thus, the effect of a golden rule crucially depends on whether it is credible, but does not depend on whether the Finance Ministers can precommit or not.

It is worthwhile noting that a golden rule raises many practical questions.

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<sup>23</sup>This is the traditional German "Golden Rule", adopted in the British Rule for Fiscal Conduct. See Blanchard and Giavazzi (2004) and Beetsma and Debrun (2004, 2005) for an analytical justification.

Someone must decide which budget items are productive, which is likely to be a politically delicate step. The alternative is to draw up a list of productive items, but the likely outcome is creative accounting.<sup>24</sup>

## Welfare Implications

When both the international and the domestic sources of the deficit bias are present, the welfare ranking of the various policies under consideration is as follows:

$$U^* = \hat{U}^{C,PC} = \hat{U}^{NC,PC} > \left( \begin{array}{l} U^{GR} > U^{NSP} \\ \hat{U}^{C,NPC} > \hat{U}^{NC,NPC} \end{array} \right) > U^N > U^{PC}$$

where  $U^*$  is the social optimum, and subscripts  $C$  and  $NC$  refer to a credible and a not credible deficit ceiling, respectively,  $NSP$  to national social planners,  $PC$  to precommitment by the Finance Minister and  $NPC$  to the opposite situation of no precommitment,  $GR$  to a golden rule,  $N$  to Nash and a hat represents a ceiling. We cannot generally rank all solutions. The relative welfare ranking of  $U^{GR}$ ,  $U^{NSP}$ ,  $\hat{U}^{C,NPC}$  and  $\hat{U}^{NC,NPC}$  depends on the relative strength of the domestic and international externality (i.e. on the relative sizes of  $\alpha$  and  $n$ ).

Except for an improbable international social planner, the social optimum can be reached when the Finance Minister can precommit. This is a necessary but not a sufficient condition, though. Precommitment must be accompanied by an optimally-set deficit (or debt) ceiling. It does not matter whether the ceiling is credible, as long as it is optimally set, constrains net transfers and is imposed. This result is independent of the source of the deficit bias, i.e. the relative strength of the domestic common pool problem and the international externality of debt.

Another way of stating this conclusion is that a deficit ceiling, even optimally set, cannot deliver in and by itself the social optimum. It has to be combined with appropriate domestic budget institutions. Specifically, the domestic budgeting process has to make it possible to precommit the desirable or productive part of spending (productive in the sense that it raises output) in advance of the wasteful part of the budget. A golden rule, which also attempts to separate productive spending from transfers, does not deliver the social optimum because it does not address the international externality.

Excluding the international externality, we deal in effect with a one-country case and (with  $\alpha = 0$  and  $n > 1$ ) the welfare ranking becomes:

$$U^* = \hat{U}^{C,PC} = \hat{U}^{NC,PC} = U^{GR} = U^{NSP} > \hat{U}^{C,NPC} > \hat{U}^{NC,NPC} > U^N > U^{PC}$$

The menu of options that deliver the social optimum is now wider. A golden rule or a national social planner, which can deal with the domestic externality, now deliver the social optimum.

Ignoring instead the domestic externality, with  $\alpha > 0$  and  $n = 1$ , the welfare ranking is:

$$U^* = \hat{U}^{C,PC} = \hat{U}^{NC,PC} = \hat{U}^{C,NPC} = \hat{U}^{NC,NPC} > U^{GR} > U^{NSP} > U^N > U^{PC}$$

Precommitment by the Finance Minister is no longer important. A credit ceiling is now sufficient to achieve the social optimum, but this is not a general result. It relies on the assumption that the two countries are identical so that the deficit ceiling

<sup>24</sup>On the issue of creative accounting, see Milesi-Ferretti (2003), Canova and Pappa (2004), and Buti et al. (2006).

is the same for both countries and that it is binding. Once the deficit is the same, there is no possibility to shift the debt burden and the international externality disappears.

Finally, note that the existence of a binding ceiling, the same for the two identical countries, implies that the international externality is internalized. The situation would be different if the ceilings were different across the two countries, or if the ceiling were not binding in at least one country. This kind of asymmetry - which greatly complicates the calculations - is not examined in the present paper. Note also that when the deficit ceiling is not credible, a zero deficit rule can never be an equilibrium outcome, irrespective of whether the Finance Ministers can precommit or not. To see this, note that a non-credible deficit ceiling can never bind the actors who move in the first stage of the game. That means that, when it is set, the ceiling has to allow for the unconstrained deficit decisions of the actors who move first. We know that the first movers always select strictly positive deficits: interest groups will always choose strictly positive transfers when unconstrained, due to the deficit bias, and the Finance Ministers will always choose the socially optimal - strictly positive - level of productive spending when the overall deficit is capped because the international externality is internalized.

## Conclusions

This paper is a theoretical exploration of optimal fiscal rules and institutions in the presence of a deficit bias. The bias is the result of two distortions: internally, a common pool problem occurs as interest groups compete for transfers (or spending that they favor); externally, the two countries each expect to pass some of its debt onto the other one. The paper seeks to compare the role of rules (a credit ceiling, a golden rule) and institutions (the ability of the Finance Minister to precommit) in containing, and possibly eliminating, the bias.

Except in the extreme and unrealistic case when the only source of the deficit bias is an international externality, the key result is that the combination of precommitment and a deficit/debt ceiling can deliver the social optimum. This conclusion is independent of the relative strength of the domestic common pool problem and the international externality. But the nature of the institution needed to deliver this combination of fiscal restraints depends on the nature of the deficit bias. If the domestic distortion is negligible, a supra-national fiscal authority is needed to set the ceiling, while the precommitment part can be carried out on the national level. If the international externality is negligible, domestic fiscal institutions are sufficient. The question is what, in practice, are the arrangements that can mimic these solutions?

The institution of precommitment must make it possible for the government to isolate in the budget law some spending items that are of general interest, in contrast with spending that favor special interests. Precommitment also requires the government to decide on these items irrespective of the rest of the budget. What is crucial is that the interest groups know *ex ante* that taxation and spending on general-interest public goods will not be affected by the amount of transfers or special-interest public goods that they capture.<sup>25</sup> In practice, however, it is not always possible to draw a line between "productive" and "unproductive" public goods. The implication is that some value judgment is required. Finance Ministers are usually those who are best placed to pass such a judgment, even if they too are likely to be partially

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<sup>25</sup>This must affect the complete budget process, from the preparation and adoption of the budget law by the government to its passage by the parliament.

captured. Under this view, precommitment means that the Finance Minister - or the Prime Minister - is given a dominating role in the budget process. Von Hagen and Harden (1994) provide a detailed discussion and evaluation of existing arrangements. They also show that the performance of these arrangements are intimately linked to the structure of government, i.e. whether it is constituted by a single party or involves a coalition.

More delicate is the question of who is the social planner who sets the deficit (or debt) ceilings. A mandatory ceiling fixed by law, for example a zero-budget rule or the Stability and Growth Pact's 3% limit will not do. The reason is that, in our model, the ceiling is optimally chosen and not set at an arbitrary level through a fixed rule. This is a crucial condition for achieving the social optimum. This reminds us of rules vs. discretion issue: rules can deliver better or worse outcomes than discretion depending on the nature of the disturbances. We cannot pursue this issue further here since we do not allow for uncertainty. In real life, however, the optimal ceiling is likely to vary over time in response to various disturbances, so that any permanently set number is not, possibly never, optimal.

If we interpret our model as describing one of many recurring but always different situations, the social planner must fix a new ceiling for each annual budget. The role of the social planner must be delegated to a fairly sophisticated and non-partisan agent. One possibility would be to delegate this task to the Finance Minister, in addition to the decision on productive spending. This institutional arrangement can work under two main conditions: that the Finance Minister is independent from interest groups and that it is not caught in a conflict of interest between its own spending decisions and the choice of the ceiling.

An attractive alternative is to delegate the social planner's task to someone outside of the political arena. This is what lies behind the proposal of fiscal councils composed of independent wisepersons. Note that the social optimum is achieved whether the ceiling is *ex ante* credible or not in the eyes of the governments as long as the government can pre-commit. Institutionally, this means that the fiscal council can intervene either at the beginning or at the end of the budget process. What matters is that it be given the power to make a final and mandatory decision on the actual budget balance.<sup>26</sup>

The model presented here, and the policy implications, rests on a number of assumptions that are not all innocuous. The most obvious one is that the countries are identical. This assumption brings considerable simplification but at cost. Any asymmetry - country size and structure, but also the prevailing economic conditions - will make it more difficult to deal with the international externality. The assumption that the debt ceiling is identical and simultaneously binding, for instance, solves the international externality. Without symmetry, it will not be generally possible to set ceilings that simultaneously deal with the domestic and international externalities. If, however, the international externality is of second order of importance, the symmetry assumption is not too restrictive.

Another limitation is that we only look at *net* spending. Our model explicitly ignores the level of public spending and the taxation burden. These are important issues, not wholly unrelated to the deficit bias. However, the common pool interpretation of the deficit bias assumes that all parties involved recognize that

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<sup>26</sup>In the European Monetary Union, the Commission intervenes to pass judgement on the reasons why a country might not abide by the deficit ceiling. This can be interpreted as implicitly changing the ceiling in response to particular circumstances. In this interpretation, the Commission acts as social planner.

spending must be tax financed, either immediately or later on. Separating spending and taxation decision, in effect allowing for two separate games linked by the budget constraint, would greatly complicate matters without, we believe, delivering much additional intuition.

A final limitation is that the model ignores the issue of separation of powers. The fact that parliament must vote on the budget raises a host of issues, which have been mentioned in the introductory section. A complete study of the implied interactions is far beyond the scope of the present paper.

Finally comes the question of whether the optimal solution that combines precommitment and a deficit/debt ceiling can be politically supported. In this model, all involved parties benefit from achieving the social optimum. In particular, rational interest groups understand that the grab race inherent in the common pool problem is hurting them individually. They should welcome, therefore, an impartial referee that would eliminate an inefficiency. Of course, they must be convinced that the referee will be impartial, which brings us back to the institution issue.

## Appendix

We present here the general case when the interest rate  $r$  and the rate of time preference  $\delta$ , which appear in (3) and (4) as  $R = (1+r)^{-1}$  and  $\beta = (1+\delta)^{-1}$  are not nil.

### Social optimum

The first-order conditions are:

$$\begin{aligned}\theta'(X^*) &= \frac{1}{R} \\ G_2 + \bar{G} &= \frac{\beta}{R}(G_1 + \bar{G})\end{aligned}\quad (31)$$

The solution is:

$$G_1 = \frac{R - \beta}{1 + \beta} \bar{G} + \frac{(R\theta(X^*) - X^*)}{1 + \beta}$$

Note that when  $R \neq \beta$  there is a rationale for shifting income intertemporally, hence the first term in the budget deficit equation. The corresponding welfare is:

$$U^* = (1 + \beta) \log(G_1 + \bar{G}) + \beta \log\left(\frac{\beta}{R}\right)$$

## National social planners

The first-order conditions are:

$$\theta'(X) = \frac{1-\alpha}{R} \quad (32)$$

$$G_2 + \bar{G} = (1-\alpha) \frac{\beta}{R} (G_1 + \bar{G}) \quad (33)$$

The solution is:

$$G_1 = \frac{R-(1-\alpha)\beta}{1+(1-\alpha)\beta} \bar{G} + \frac{1}{1+(1-\alpha)\beta} (R\theta(X) - X)$$

and welfare:

$$U^{NSP} = (1+\beta) \log(G_1 + \bar{G}) + \beta \log\left((1-\alpha) \frac{\beta}{R}\right)$$

## Nash-Nash

The first-order conditions are:

$$\theta'(X) = \frac{1-\alpha}{R} \quad (34)$$

$$G_2 + \bar{G} = \frac{1-\alpha}{n} \frac{\beta}{R} (G_1 + \bar{G})$$

So:

$$G_1 = \frac{nR-(1-\alpha)\beta}{n+(1-\alpha)\beta} \bar{G} + \frac{n}{n+(1-\alpha)\beta} [R\theta(X) - X] \quad (35)$$

The corresponding welfare is:

$$\begin{aligned} U^N &= (1+\beta) \log\left(\frac{n}{n+(1-\alpha)\beta}\right) - \beta \log n \\ &+ (1+\beta) \log\left((1+R)\bar{G} + R\theta(X) - X\right) + \beta \log\left[\frac{(1-\alpha)\beta}{R}\right] \end{aligned} \quad (36)$$

Note that, as required:

$$\frac{dU}{dn} = -\frac{\beta}{n} \frac{n-(1-\alpha)}{n+(1-\alpha)\beta} < 0$$

## Finance Ministers as Stackelberg leaders

$$R\theta'(X) = 1 - \alpha - \frac{\alpha^2 n}{(1 - \alpha)(n + \beta)} \quad (37)$$

$G_1$  is the same as (35) but the choice of  $X$  is given by (37).

$$G_2 + \bar{G} = \frac{1 - \alpha}{n} \frac{\beta}{R} (G_1 + \bar{G})$$

$$G_1 + \bar{G} = \frac{n}{n + (1 - \alpha)\beta} \left[ (1 + R)\bar{G} + [R\theta(X) - X] \right]$$

Welfare,  $U^{PC}$ , is the same as (36) but with the higher  $X$  (given by (37)),  $R\theta(X) - X$  is now lower, so welfare is lower than in the Nash-Nash case.

## Policy responses

### Pigouvian taxes

The taxes on period 1 debt  $\tau^l = \frac{\alpha}{1 - \alpha}$  and on transfers to interest groups  $\tau^D = n - 1$  remain unchanged. The international tax becomes:

$$\mathbf{\mu} = \frac{n - 1}{\beta + 1} \left[ R\theta(X) - X + (R - \beta)\bar{G} \right]$$

### Credible deficit ceiling

### Finance Minister cannot precommit

The first-order conditions are:

$$R\theta'(X) = \frac{n}{1 + (n - 1) \frac{dX}{d\hat{B}}}$$

$$\frac{dX}{d\hat{B}} = \frac{n + R\theta'(X)}{(1 + n)R\theta'(X) - \beta(G_1 + \bar{G})\theta''(X)}$$

$$\beta\theta'(X) = Rn \frac{G_2 + \bar{G}}{G_1 + \bar{G}}$$

Note that  $R\theta'(X) > 1$  if  $\frac{dX}{d\hat{B}} < 1$ . Then observe that  $\theta''(X) < 0$  implies

$$\frac{dX}{d\hat{B}} < \frac{n + R\theta'(X)}{(1 + n)R\theta'(X)} < 1 \text{ when } R\theta'(X) > 1.$$

The outcome is:

$$G_1 = \frac{n - \beta\theta'(X)}{\beta\theta'(X)} \bar{G} + \frac{n}{\beta\theta'(X)} [\theta(X) - X]$$

### Non-credible deficit ceiling

#### Finance Minister cannot precommit

$$\theta'(X) = \frac{1}{R}$$

$$G_1 = \frac{n(R\theta(X) - X)}{(\beta + n)} + \frac{Rn - \beta}{\beta + n} \bar{G}$$

#### Zero deficit ceiling

When  $X = G_1 = -RG_2 = \hat{B} = 0$  we have:

$$\hat{U}' = (1 + \beta) \log(\bar{G})$$

When  $R = \beta = 1$

$$\hat{U}' = 2 \log(\bar{G})$$

$$U^N - \hat{U}' = 2 \log\left(\frac{n}{n + (1 - \alpha)}\right) - \log n + 2 \log(2\bar{G} + \theta(X) - X) + \log(1 - \alpha) - 2 \log(\bar{G})$$

When  $n = 1$ , we cannot sign  $U^N - \hat{U}'$ . When  $n \rightarrow \infty$  or when  $\alpha \rightarrow 1$   $U^N - \hat{U}' \rightarrow -\infty$ .

#### Golden Rule

The first-order conditions are given by (32) for the choice of  $X$  and (31) for the interest groups. The cap on the net transfers to interest groups in period one is:

$$\hat{G} = \frac{R - \beta}{1 + \beta} \bar{G} + \frac{R\theta(X) - X}{1 + \beta}$$

With  $G_1 = \hat{G}$  The resulting welfare is:

$$U^{GR} = (1 + \beta) \log(\hat{G} + \bar{G}) + \beta \log\left(\frac{\beta}{R}\right)$$

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# The Discipline-Enhancing Role of Fiscal Institutions: Theory and Empirical Evidence

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**Abstract:** This paper discusses the role of fiscal institutions, including budget rules and non-partisan agencies, in enhancing fiscal discipline. A dynamic model of fiscal policy shows that optimal institutions lack credibility unless the costs to bypass them are sufficiently high. In our model, a combination of complete budgetary transparency and strong democratic accountability suffice to establish credibility. Under incomplete budgetary transparency, accountable governments may also use institutions as a signal of competence to increase their reelection chances, which in turn erodes the penchant for excessive deficits. In light of the theory, empirical tests of the effectiveness of institutions are undertaken. The results further emphasize that analysis should pay due attention to simultaneity bias (because disciplined governments may be more likely to adopt strict institutions). Also, interactions among different fiscal institutions, and between the latter and key features of the political system need to be explored further.

*JEL classification:* E61, E63, H62.

*Keywords:* Deficit bias, fiscal rules, credibility, accountability, transparency.

**The opinions expressed in this paper are those of the authors and do not necessarily reflect the views of the IMF.**

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## I. INTRODUCTION

Persistent and widespread evidence of fiscal indiscipline has prompted a debate on the likely distortions causing such behavior, and on effective ways to improve policymakers' incentives. Among them, institutional arrangements—ranging from legally binding fiscal rules to formal commitments supported by strong accountability mechanisms and procedural arrangements—have received considerable attention. The underlying idea is that well-designed institutions effectively discourage deviations from desirable policies. Yet the significance of the role of institutions in improving policy outcomes has been the subject of debate on both theoretical and empirical grounds (see Schick, 2004, for an informal discussion). The issue revolves around the extent to which institutions themselves can alter the motivations of policymakers. In this context, the paper provides a formal assessment of the role of fiscal institutions in improving fiscal discipline, and explores some empirical implications of that analysis.

The paper comprises two parts. In the first, a stylized model of fiscal policy illustrates the theoretical underpinnings of fiscal institutions. As in Tabellini and Alesina (1990), electoral uncertainty shortens the time horizon of partisan policymakers, creating a deficit bias. In principle, institutions—such as a constitutional amendment banning excessive deficits—can alleviate such bias. In line with McCallum (1995) and Jensen (1997), we explore credibility of that fiscal rule and show that it depends on the existence of sufficiently high costs of ignoring or bypassing the rule. The model emphasizes the role of democratic accountability as one natural mechanism through which deviations from the rule can be made costly. However, the power of voters to influence policymakers' behavior is limited by the lack of budgetary transparency and by the possibility that the deficit bias be rooted in political institutions themselves rather than electoral incentives. Although third-party enforcement and market sanctions could also play a role and be investigated in the context of the model, the former is generally limited to subnational fiscal rules whereas market mechanisms are arguably weak and discontinuous in advanced economies (Bayoumi, Goldstein, and Woglom, 1995).

Beyond the credibility issue, the contribution of institutions over and above the influence of other factors, particularly that of specific political constituencies, has been questioned in the literature. It has been argued for instance that institutions only reflect preferences of dominant constituencies for a certain course of action, and what matters therefore are not the institutions per se, but rather the power of these constituencies (Posen 1995). We examine the extent to which this argument overlooks a key role institutions can play to reduce the consequences of asymmetric information between voters and policymakers.

The second part of the paper explores some of the empirical implications of the theory, looking specifically at fiscal behavior in a panel EU-15 countries. We first document broad correlations among various elements of the fiscal framework in these countries, including features that can raise the costs of bypassing institutions (specifically the transparency- and accountability-enhancing dimensions of the fiscal framework). We then turn to quantifying econometrically the relationship between institutions and fiscal outcomes. We explicitly test for the null hypothesis that the relationship between institutions and outcomes is causal. Indeed, our theoretical analysis suggests that intrinsically well-behaved governments may adopt strict institutions merely to signal

competence, pointing to reverse causality (from good outcomes to good institutions) in standard least-squares regressions.

Although our findings are only preliminary, there is some evidence that reverse causality may entail a serious bias in the estimated effect of institutions on outcomes. Incidentally, the instrumental variable approach used to alleviate the endogeneity problem allows us to explore the possibility that various features of the political system that may have no strong direct impact on outcomes might actually influence fiscal performance through the design of institutions only.

Our empirical analysis also explores non-linearities in the relationship between outcomes and institutions. The results suggest that the effectiveness of the latter may vary according to various features of the political landscape, including political stability, government fragmentation, country size, and growth volatility.

The rest of the paper is organized as follows. Section II briefly elaborates the effectiveness of institutions in light of the existing literature, while Section III develops a simple theoretical model and discusses the implications for the theoretical analysis. In Section IV, we undertake the empirical analysis, while policy implications and conclusions are discussed in Section V.

## **II. INSTITUTIONS, DEMOCRATIC ACCOUNTABILITY, AND COST OF EVASION**

### **A. Institutions and Policy Outcomes**

Many potential sources of deficit bias have been identified in the literature, and in dealing with it, the debate has so far largely focused on the design of fiscal rules, in particular, their coverage, nature, degree of state contingency, and the specific targets (see e.g. Calmfors, 2005, and Morris, Ongena and Schuknecht, 2006). As noted by Wyplosz (2005), there is a striking parallel between the current debate and the vast literature that blossomed in the 1980s and the 1990s to analyze the merits of monetary institutions, including rules-based monetary policy frameworks and central bank independence. In both cases, the very same question dominates discussions: how can a Society effectively encourage policymakers to avoid systematic deviations from an optimal policy stance? Wyplosz (2005) observes that after the demise of monetary rules, institutional reforms (in that case, granting political independence to the central bank in day-to-day policy decisions) became the dominant idea in the monetary policy literature, and he argues that independent institutions could play a role in the fiscal realm as well (see Debrun, Hauner, and Kumar, 2005 for a survey).

One strand of the monetary policy literature adopted a more skeptical view on the role of institutions in shaping policy outcomes, and the arguments developed there might apply with even greater strength to the current fiscal policy debate. A key element in the skeptics' thinking is that establishing rules (or institutions) does not change the underlying motivations or preferences of the policymakers. As such they potentially suffer from the same problems as policies themselves, and in particular, optimal

institutions may lack credibility (McCallum, 1995).<sup>4</sup> Proponents of institutions invariably reply that institutions are essentially defined by the very high costs of changing them so that they are intrinsically more credible than discretionary policies.

In the model below, we explicitly address McCallum's point and consider the policymaker as an optimizing agent that decides on both policies *and* the institutions. This leads us to investigate the costs of changing institutions, showing that they must indeed be sufficiently high to deter systematic deviation from optimal policies. To the extent that the fiscal rule is considered as a reasonably good proxy for the optimal policy, a combination of complete budgetary transparency and strong democratic accountability suffice to establish credibility. Even assuming non-transparent budgets, accountable governments may still find it useful to use institutions as a signal of competence.<sup>5</sup> In both cases, the impact of institutions on the deficit does not come from the "stick" of sanctions (either from markets or some third-party enforcer) but from the "carrot" of higher re-election chances, which in turn reduces the temptation for excessive deficits.

Another related critique of the role of institutions is due to Posen (1995) who argues that in a democracy, institutions can only be sustained if they reflect deeper social preferences or permanent features of the political set-up. That argument again implies that institutions *per se* do not change underlying incentives. In the context of central bank independence, Posen (1995) concludes that "*both central bank independence and a coalition in society committed to protecting that independence are necessary to achieve the low inflation heretofore ascribed to central bank independence; either alone is insufficient* (p. 271)." While institutions may well be merely decorative under complete information (i.e. the public knows the true motivation and competence of the government), their signaling role under incomplete information may again explain why governments set up formal fiscal frameworks, even though they may not *directly* affect incentives.

## **B. Key Features of Our Model**

In Section III, we build a simple politico-economic model of fiscal policy aimed at illustrating the issues discussed above. A deficit bias arises because uncertainty about re-election increases the discount rate of partisan policymakers, who, by definition, care about future fiscal policy only if they expect to be in charge. Unlike the standard Tabellini-Alesina (1990) model, electoral uncertainty is endogenous and rooted asymmetric information about policymakers' motivations and competence. Specifically, rational voters only re-elect the incumbent administration if the latter demonstrates sufficient ability to deliver a quantity public goods deemed commensurate to tax revenues. In fact, policymakers themselves are uncertain as to whether their actions will be successful in delivering enough public goods. The less tolerant the voters vis-à-vis policy failures, the greater electoral uncertainty, and the larger the deficit bias.

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<sup>4</sup> In McCallum's words, institutions *per se* do not "*overcome the motivation*" for biased policies but "*merely relocate it.*"

<sup>5</sup> Cukierman (2002) discusses the relationship between accountability and transparency in central banking.

In that context, a simple budget-balance rule can be enacted, and its enforcement should be strict enough to discourage the policymaker to deviate from the optimal policy. The problem is that the enforcement of the rule can only result from the decision of a non-partisan body because in the absence of costs for ignoring the rule, a partisan decisionmaker will always have an incentive to revert to the fully discretionary outcome. One natural way to rationalize such costs is to assume that voters hold policymakers accountable for sticking to the rule (because it encapsulates the optimal policy). Hence, if voters can perfectly observe budgetary outcomes (what we call transparency), compliance is rewarded by certain re-election, and in our model, the elimination of electoral uncertainty removes any incentive to deviate from the rule. That said, the combination of transparency and accountability is not a magic bullet in the case where the fiscal bias comes from elsewhere, including primarily in fiscal illusion (i.e. voters themselves would have a preference for short-term deficits) or in common pool problems (see Krostrup and Wyplosz, 2006, for a discussion of possible solutions to common pool problems).

The lack of budgetary transparency is another obvious obstacle to the effectiveness of fiscal rules and institutions because voters cannot disentangle the deficit from policy failures, and can only observe their sum. In that conjecture, high deficits may be used opportunistically by policymakers to mask policy failures whereas good policy surprises may hide an excessive deficit. However, the adverse electoral consequence of flouting the rules will be stronger if voters do not pay much attention to policy failures and are correspondingly more concerned by evidence of excessive deficits. This implies that under opacity, fiscal rules are more likely to be effective precisely when electoral uncertainty and the discretionary deficit bias are low to start with.

To summarize, and in contrast to existing studies,<sup>6</sup> the model illustrates the importance of the electorate, both as a determinant of the bias itself (through the tolerance for policy failures), and as the key player in rule's enforcement. The institutional set-up is simple and comprises two components: a numerical deficit rule that can be interpreted as a benchmark characterizing the optimal policy, and, most importantly, an enforcement mechanism that imposes a cost on deviations from the benchmark in terms of utility losses for policymakers. In line with McCallum's critique, we show that the credibility of fiscal institutions rests on sufficiently high costs to bypass them, and we characterize such costs.<sup>7</sup>

These theoretical issues raise a number of concerns regarding empirical tests of the effectiveness of institutions. Two areas should receive particular attention. First, simultaneity bias is likely to be important because governments with only moderate deficit bias are more likely than others to benefit from discipline-enhancing institutions. Second, since fiscal rules do not operate in an institutional vacuum and enforcement via democratic accountability is key, the effectiveness of rules is likely to depend on various

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<sup>6</sup> Examples include Tabellini and Alesina (1990), Beetsma and Bovenberg (1997), Peletier, Dur, and Swank (1999), Debrun (2000), Dixit and Lambertini (2003), Manasse (2005), Beetsma and Debrun (2006), and Krostrup and Wyplosz (2006).

<sup>7</sup> In the context of monetary policy delegation, Jensen (1997) overcomes the McCallum critique by introducing exogenous costs to reappoint a new central banker.

features of the political landscape. The relationship between fiscal rules and outcomes may therefore be nonlinear.

### III. EFFECTIVENESS OF FISCAL INSTITUTIONS: A POSITIVE ANALYSIS

This section elaborates on the key issues noted above in the debate on the effectiveness of fiscal institutions. To illustrate the main points in a consistent theoretical framework, we use a simple politico-economic model of fiscal policy in the spirit of Tabellini and Alesina (1990). Our model draws on Beetsma and Debrun (2006) but differs in two important dimensions. Firstly, we introduce voters' behavior to allow for an explicit analysis of institutions' credibility. Secondly, we ignore possible bias in the composition of expenditure, and only look at the overall deficit.

#### C. The Model

Consider a small endowment economy with a large number of atomistic individuals deriving utility from the consumption of both private and public goods. Individuals are identical and the world ends after two periods. The typical individual's preferences are represented by a utility function  $U$  that is separable over time and types of good:

$$U = E_0 \left[ \sum_{t=1}^2 u(c_t) + v(q_t) \right], \quad (1)$$

where  $c_t$  represents consumption of the private good in period  $t$ , while  $q_t$  denotes the provision of a public good. The functions  $u(\cdot)$  and  $v(\cdot)$  are concave, strictly increasing and twice continuously differentiable, that is  $u' > 0$ ,  $v' > 0$ ,  $u'' < 0$ , and  $v'' < 0$ . Moreover, we also assume that  $v(0) = 0$ .  $E_0$  is the expectation operator based on information available at the beginning of period 1. To simplify notation, and without loss of generality, we assume that the real interest rate and the social discount rate are both equal to zero.

All agents in the economy can borrow freely on domestic and international capital markets so that the consumer's intertemporal budget constraint can be written as:

$$c_1 = (1 - \tau)y_1 + l, \quad (2a)$$

$$c_2 = (1 - \tau)y_2 - l, \quad (2b)$$

where  $\tau$  is a constant and exogenous income tax rate (essentially parametrizing the size of the government sector),  $l$  is the stock of net private liabilities at the end of period 1, and  $y_t$  is the endowment at time  $t$ . In addition, we assume that  $c_t \geq 0$ ,  $t = 1, 2$ , which implies  $-(1 - \tau)y_1 \leq l \leq (1 - \tau)y_2$ . Period 1 income is subject to a zero-mean multiplicative

random shock  $\varepsilon \in [-\bar{\varepsilon}; \bar{\varepsilon}]$  with  $\bar{\varepsilon} < 1$ , while period 2 income is assumed to be deterministic:<sup>8</sup>  $y_1 = \bar{y}(1 + \varepsilon)$ , and  $y_2 = \bar{y}$ .

There are two political parties indexed by  $Q = C, L$ . Both parties share individuals' preferences only to the extent that they are in power to deliver the public good. The latter is identical irrespective of the party. Fiscal policy is also subject to a mechanism discouraging policymakers to accumulate public debt  $b$  beyond a certain threshold  $\bar{b}$ . The utility cost of breaching the threshold is denoted by  $S(b)$ , with  $S(b) = 0$  if  $b \leq \bar{b}$ , and  $S(b) = k(b - \bar{b})$  with  $k \geq 0$  if  $b > \bar{b}$ . One can think of  $b - \bar{b}$  as a numerical fiscal rule and of  $k$ , as the enforcement mechanism through which violations of the rule turn into utility losses for policymakers. The objective function of the policymaker (expressed in per-capita terms) therefore writes as follows:

$$V_Q = E_0 \left[ \sum_{t=1}^2 u(c_t) + v(q_{Q,t}) - S(b) \right], \quad Q = C, L. \quad (3)$$

with  $q_{C,t} = 0$  if  $Q = L$ ,  $q_{L,t} = 0$  if  $Q = C$ . In the absence of borrowing restrictions, fiscal policy decisions are subject to the intertemporal budget constraint:

$$q_{Q,1} = \tau y_1 + b - \delta_1, \quad (4a)$$

$$q_{Q,2} = \tau y_2 - b - \delta_2, \quad (4b)$$

where  $\delta_t$  is a random failure in public good delivery attributable to unforeseeable policy mistakes, administrative capacity problems, or the action of corrupt bureaucrats siphoning off government resources (as in Debrun, Masson, and Pattillo, 2005). To simplify the formal analysis, we consider that  $\delta_t$  is uniformly distributed over the interval  $[0; \bar{\delta}]$ . As in the case of consumers' decisions, we impose nonnegativity constraints on public good provision:  $q_t \geq 0$ ,  $t = 1, 2$ , implying  $-\tau y_1 + \bar{\delta} \leq b \leq \tau y_2 - \bar{\delta}$ . Notice that the distribution of policy failures is the same for both parties so that there is no actual difference in "type" (e.g. a more competent versus a less competent) between the two political parties.

The only source of inefficiency in our model is the absence of public information on policymakers' ability to efficiently deliver public goods.<sup>9</sup> As a result, voters can only infer such ability on the basis of actual actions. Specifically, they assign a non-zero probability to the fact that a policy failure beyond a certain threshold  $\delta^+$  signals an

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<sup>8</sup> Randomizing period 2 income only complicates the notation without bringing additional insight to the analysis.

<sup>9</sup> The assumption of an under-informed public is fairly common in theoretical analyses of fiscal bias. See Morris, Ongena, and Schuknecht (2006) for a survey.

underlying lack of competence—in other words, some failures are deemed too big to be purely random. Voters also ignore the true ex-ante probability distribution of  $\delta$ , and whether there exists any difference in type among policymakers of different parties. However, they do observe  $b$ —which we equate with perfect budgetary transparency—which in turn allows them to assess ex-post the magnitude of policy failures, and possibly, adjust their voting decision. Formally, they assign a fixed probability  $\psi \in [0, 1/2[$  that a policy failure  $\delta_t > \delta^+$  can occur under a competent government. At the end of period 1, individuals either re-elect the incumbent (party  $C$  by assumption) or vote it out—in either case by a unanimous vote. Voters will re-elect party  $C$  if:

$$E_1[v(q_{C,2})] \geq E_1[v(q_{L,2})], \quad (5)$$

where  $E_1$  designates the expectations operator at the end of period 1.

Expression (5) indicates that if the incumbent is not believed to be less competent than the challenger in delivering public goods, it will be re-elected. While voters' beliefs about competence are the same for both parties at the beginning of period 1, they are updated following the realization of  $\delta_1$ . The incumbent's ex-ante assessment of re-election chances thus reflects the probability of occurrence of a large policy failure  $\delta_t \geq \delta^+$  (see Proposition 1). Notice that individuals assess policymakers' competence on the sole basis of their ability to deliver public goods in the most efficient way given the budget constraint. The level of the deficit at the end of period 1 therefore plays no role in the voting decision since both political parties will have to repay the debt anyway.

**Proposition 1:**

*If  $0 \leq \psi < 1/2$  and voters follow (5), then, at the beginning of period 1, the incumbent assigns a probability  $r = 1 - (\delta^+ / \bar{\delta})$  of not being re-elected.*

**Proof:** See Appendix.

Importantly, the probability  $r$  of losing the election depends on how flexibly voters assess policy failures. Flexibility (that is when  $\delta^+$  is large but below  $\bar{\delta}$ ) reduces that probability, effectively loosening the link between information asymmetry and electoral uncertainty.

Events unfold as follows. In period 0, a representative constitutional convention (or a referendum) imposes a debt (or deficit) cap  $\bar{b}$  which carries a utility cost  $S(b)$  when  $b > \bar{b}$ . At the beginning of period 1, Nature draws the governing party ( $C$  by assumption). Then, the shock  $\varepsilon$  is realized and government chooses  $b$  and  $q_{C,1}$  so as to maximize  $V_C$ . After that,  $\delta_1$  materializes, and private consumers select  $l$  and  $c_1$  maximizing their expected utility  $U$ . Finally, elections take place. In period 2, all debts are paid off and the world ends. The equilibrium is found by backward induction to ensure time-consistency.

The last three stages of the solution are immediate. Indeed, period 2 decisions result from the budget constraints, and voters' behavior depends on the realization of  $\delta_1$ . Also,

private consumption-saving decisions are independent of fiscal policy. Hence, denoting optimal values by a star superscript, we have  $c_1^* = c_2^* = 1/2[(1-\tau)(y_1 + \bar{y})]$  and  $l^* = -1/2(1-\tau)\bar{y}\varepsilon$ . Of course, fiscal policy would affect private behavior if productive expenditure was introduced in the model (as in Peletier, Dur, and Swank, 1999; or Beetsma and Debrun, 2006) or if the real interest rate depended on  $b$ , which is not the case by virtue of the small economy assumption.

#### D. Optimal Fiscal Policy

Before turning to the political equilibrium, we characterize the first-best fiscal policy, assuming that a social planner is in charge. Electoral constraints and fiscal institutions are therefore irrelevant, and the planner selects a public debt level  $b^*$  defined as:

$$b^* = \arg \max_b [2u(c_1^*) + v(\bar{y}(1+\varepsilon) + b - \bar{\delta}/2) + v(\bar{y} - b - \bar{\delta}/2)] \quad (6)$$

The first order condition for (6) is:<sup>10</sup>

$$v'(\bar{y}(1+\varepsilon) + b^* - \bar{\delta}/2) = v'(\bar{y} - b^* - \bar{\delta}/2) \quad (7)$$

The socially optimal public debt  $b^*$  equates the marginal utility of additional deficit-financed public good provision in period 1 with the marginal disutility of foregone public good provision in period 2 (because additional resources are allocated to debt repayment). The optimal policy thus achieves  $q_1^* = q_2^*$ , and it follows that  $b^* = -\bar{y}\varepsilon/2$ . On average, the optimal public debt is zero, and deficits or surpluses are only used to smooth out the income shock.

#### E. Political Equilibrium and the Role of Fiscal Institutions

In the political equilibrium, the policymaker is exposed to electoral uncertainty and to the possible costs of breaching the fiscal constitution  $S(b)$ . Denoting by  $b^{**}$  the deficit maximizing policymaker's expected utility, we can write:

$$b^{**} = \arg \max_b [2u(c_1^*) + v(\bar{y}(1+\varepsilon) + b - \bar{\delta}/2) + (1-r)v(\bar{y} - b - \bar{\delta}/2) - S(b)] \quad (8)$$

Equation (8) shows that uncertainty about re-election brings the policymaker's discount factor  $(1-r)$  below the social discount factor. The first order condition for (8) is:

$$v'(\bar{y}(1+\varepsilon) + b^{**} - \bar{\delta}/2) = (1-r)v'(\bar{y} - b^{**} - \bar{\delta}/2) + \Gamma(b^{**}) \quad (9)$$

with  $\Gamma(b) = 0$  if  $b \leq \bar{b}$ , and  $\Gamma(b) = k > 0$  if  $b > \bar{b}$ .

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<sup>10</sup> The second-order condition is satisfied by concavity of  $v(\cdot)$ .

Equation (9) implicitly defines  $b^{**}$  (and the corresponding  $q_1^{**}$  and  $q_2^{**}$ ) as a function of all other parameters and variables in the model. The main features of the political equilibrium are formalized in Proposition 2.

**Proposition 2:**

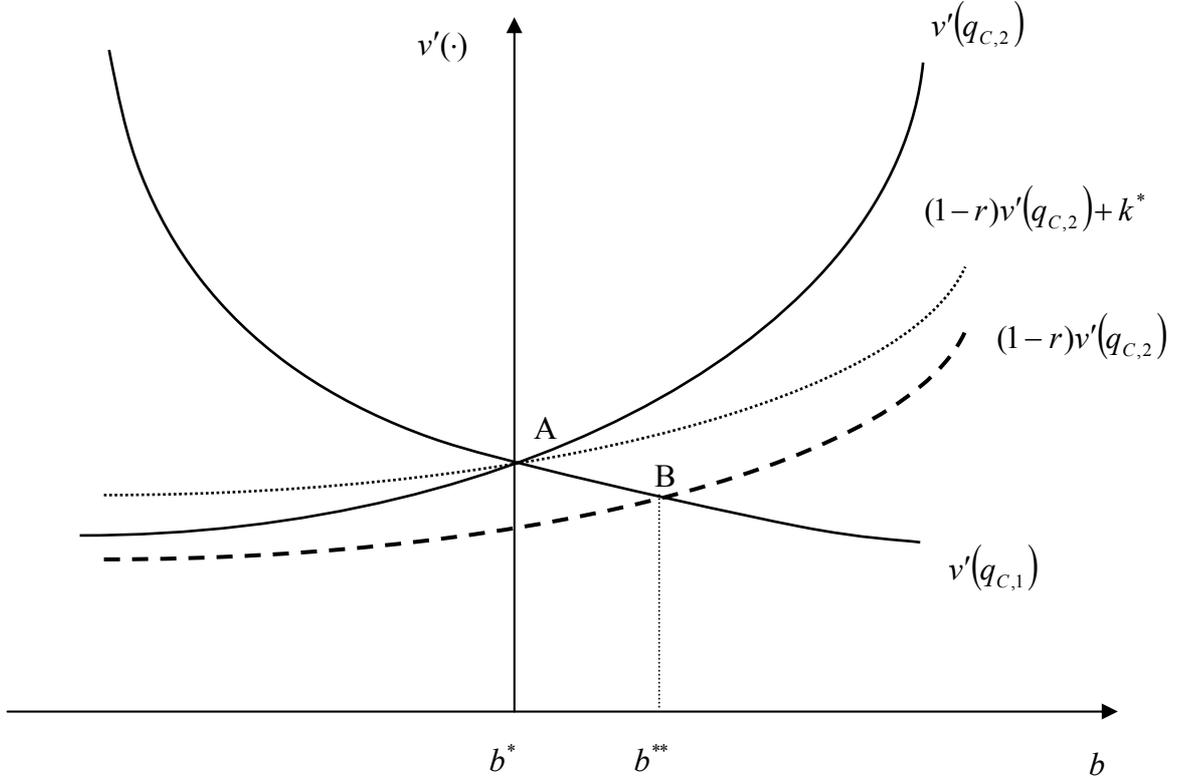
1. **Deficit (debt) bias:** In general, the equilibrium public debt  $b^{**}$  differs from its optimal level  $b^*$ . Specifically, if  $\bar{b} > b^*$  for all  $\varepsilon \in [-\bar{\varepsilon}; \bar{\varepsilon}]$ , the equilibrium public debt is suboptimally high for all  $0 < r \leq 1$ .
2. **Fiscal institutions:** If  $b^{**} > \bar{b}$ , a higher marginal disutility of breaching the fiscal rule ( $k$ ) reduces equilibrium public debt. Specifically, a fiscal constitution characterized by  $k^* = rv'(q_{C,1}^*) > 0$  and  $\bar{b} = b^*$  ensures that  $b^*$  is implemented in the political equilibrium (i.e.  $b^{**} = b^*$ ).

**Proof:** See the Appendix.

A geometrical illustration of Proposition 2 is useful. Figure 1 displays the graph of marginal utility functions  $v'(\cdot)$  in terms of  $b$  for  $\varepsilon = 0$ . The downward sloping curve represents the marginal utility derived from current public good provision  $v'(q_{C,1})$ , whereas upward sloping curves show the expected marginal utility of future public good provision under different conjectures: a social planner (plain line), electoral uncertainty (bold dotted line), and electoral uncertainty under an optimal fiscal rule (light dotted line). Each intersection between two curves with opposite slopes describes a solution to the optimization problem, and its projection on the horizontal axis gives the corresponding deficit.

Point A identifies the planner solution defined by (7). There, the two marginal utility curves are symmetric with respect to the vertical axis so that equilibrium debt is  $b^* = 0$ . Electoral uncertainty leads policymakers to discount the expected marginal utility of future public good provision more heavily than a social planner. The upward-sloping curve is consequently flatter (bold, dotted line), leading to a political equilibrium B, defined by (9) and characterized by a deficit  $b^{**} > b^*$ . A degree of enforcement  $k > 0$  associated with the fiscal rule  $b = b^*$  pushes up the upward-sloping curve, reducing equilibrium deficit. In particular, an enforcement level  $k^* = rv'(q_{C,2}) = rv'(q_{C,1})$  eliminates the “wedge” between the political and the socially optimal discount factors (light dotted line).

Figure 1: The Geometry of Interior Solutions (for  $\varepsilon = 0$ )



The optimal institutional setup can be interpreted as a state-contingent deficit rule whose violation entails a utility loss (or sanction) that depends upon the nature of sanction and the strictness of enforcement ( $k$ ). While the model offers no insight on the former, it suggests that the latter should increase with the incentive to deviate from  $b^*$ . It is easy to verify that such incentive increases with the extent of political uncertainty ( $r = 1 - (\delta^+ / \bar{\delta})$ ) and the related capacity constraints altering public good delivery ( $\bar{\delta} / 2$ ), and decreases with the size of the government sector ( $\tau$ ), and the level of per-capita income ( $\bar{y}$ ). The impact of  $r$  on the fiscal wedge operates directly through the policymaker's subjective discount factor (the higher  $r$ , the greater the relative importance of period-1 expenditure). The effect of the magnitude of policy failures, government size, and per-capita income all reflect induced changes in the marginal utility of public goods. Specifically, elements contributing to a low delivery of public goods increases their marginal utility, and thereby, the government's incentive to spend.

Quite intuitively, these results suggest that a fiscal bias is expected to be large in poor countries with small governments facing significant capacity constraints and political instability. These countries correspondingly need fiscal institutions providing stricter enforcement mechanisms to support their commitment to the optimal fiscal policy. By contrast, affluent countries with large government sectors, good delivery capacities, and

enjoying political stability should experience less severe deviations from the optimal policy, relaxing somewhat the need for strict enforcement mechanisms.<sup>11</sup>

## F. Are Optimal Institutions Credible?

### Time-Consistency

While Proposition 2 establishes the joint existence of a fiscal bias and of an institutional response to it, the effectiveness of the latter is assumed. A classic argument in the literature is that of a given constitutional clause that policymakers diligently observe (Tabellini and Alesina, 1990). In our theoretical setup, it is easy to check that the fiscal arrangement  $(k^*, b^*)$  results from the maximization problem of a *representative agent* (a benevolent “founding father,” a nonpartisan constitutional convention, or the outcome of a referendum) that fully internalizes the features of the political equilibrium in periods 1 and 2.

In practice, however, constitutions and lower-level norms can be amended or scrapped; and if they prove too hard to change, they may simply not be enforced.<sup>12</sup> Allowing policymakers to amend  $(k^*, b^*)$  or to bypass it adds one step to our solution procedure, providing a test for the time-consistency of fiscal institutions (see also Krogstrup and Wyplosz, 2006).

The eventual re-optimization of  $k$  (which we can interpret as either a change in the rule itself or in its enforcement) takes place just before fiscal policy is selected. It is easy to show that if changing  $(k^*, b^*)$  entails no cost for the policymaker, the fiscal arrangement will be scrapped or fall into abeyance, yielding  $k^{**} = 0$ . Specifically, we can write:

$$k^{**} = \arg \max_k [2u(c_1^*) + v(\bar{y}(1 + \varepsilon) + b^{**} - \bar{\delta}/2) + (1 - r)v(\bar{y} - b^{**} - \bar{\delta}/2) - S(b^{**})] \quad (10)$$

At  $b^{**} > \bar{b}$ , the first order condition for  $k^{**}$  follows:

$$\left[ v'(\bar{y}(1 + \varepsilon) + b^{**} - \bar{\delta}/2) - (1 - r)v'(\bar{y} - b^{**} - \bar{\delta}/2) - k^{**} \right] \frac{\partial b^{**}}{\partial k} - (b^{**} - \bar{b}) = 0, \quad (11)$$

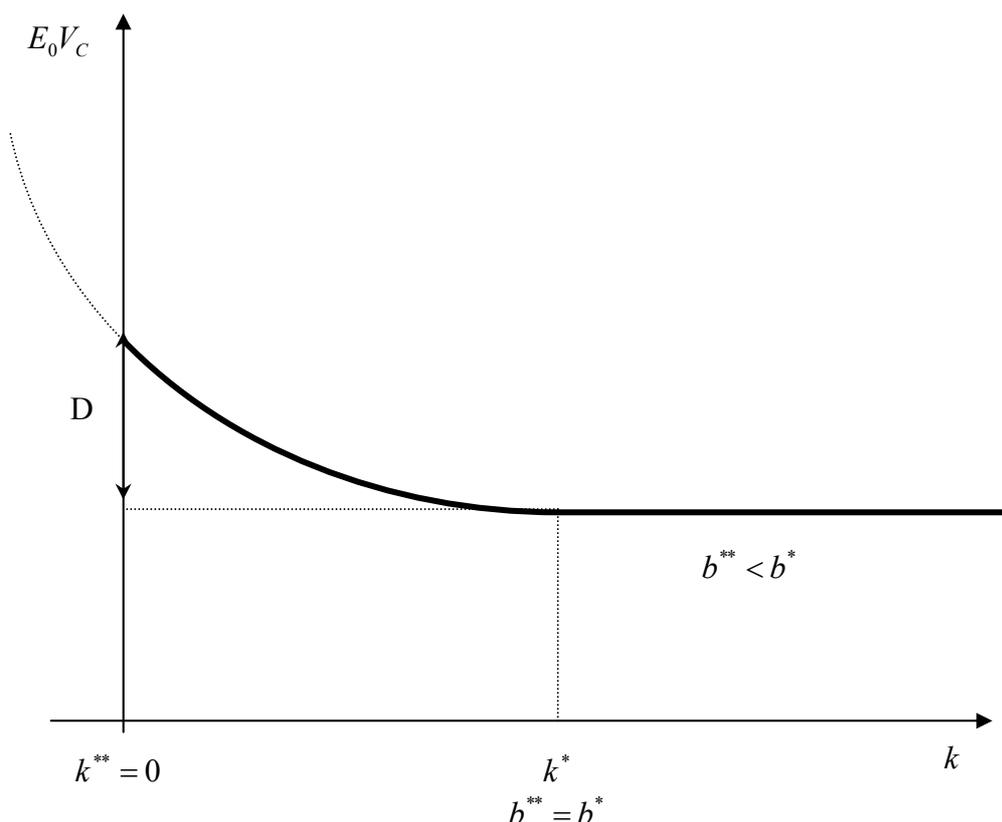
which simplifies to  $-(b^{**} - \bar{b}) = 0$  because (9) implies that the terms inside the square brackets sum to zero. It follows that (11) is satisfied as long as  $b^{**} = \bar{b}$ . However, the second order condition indicates that this strategy actually *minimizes*  $V_C$  because

<sup>11</sup> One way to interpret this is that governments facing severe resource constraints may need strict conditionality attached to an IMF-supported program to avoid a deficit bias, while richer governments may rely on possibly less demanding domestic arrangements.

<sup>12</sup> In the monetary sphere, McCallum (1995) notes the absence of a constitutional amendment abolishing the metallic standard in the United States.

$\frac{\partial^2 E_0 V_C}{\partial k^2} = -\frac{\partial b^{**}}{\partial k} > 0$ . Given the first and second derivative functions of  $E_0 V_C$  with respect to  $k$ , and taking into account the fact that  $k=0$  for all  $b < \bar{b}$ , we can immediately conclude that the value of  $k$  maximizing  $V_C$  is a corner solution  $k^{**} = 0$  (see Figure 2).

Figure 2: Re-optimization of  $k$  by Politicians (for  $\bar{b} = b^*$ )



### Democratic Accountability and “Ownership” of the Rule

Figure 2 suggests that optimal institutions can only be credible if changing (or ignoring) them brings about specific utility losses—which should be strictly greater than the vertical distance  $D$ . These losses can be rationalized in various ways. One possibility is to argue that the *raison d’être* of a fiscal rule is to guide underinformed voters in assessing fiscal performance. In that conjecture, the rule could reduce or even eliminate the effect of asymmetric information on voters’ behavior and thereby, on equilibrium fiscal policy. In the presence of a rule, the government’s capacity to adhere to it would thus become a reliable indication of competence in the eyes of the voters.<sup>13</sup> Given equation (5) and by

<sup>13</sup> This of course requires that voters do not suffer from a myopic appetite for fiscal deficits—or “fiscal illusion.” Calmfors (2005) and Morris, Ongena, and Schuknecht (2006) discuss fiscal illusion in detail.

analogy with Proposition 1, compliance with the fiscal rule would then ensure reelection.<sup>14</sup>

In our model, the guarantee of re-election in case of compliance readily neutralizes the effect of information asymmetry, and is therefore a *sufficient* reward to encourage politicians to stick to the fiscal rule. Formally, one can check that a compliant government derives more utility than a cheater:  $E_0 \left[ \sum_{t=1}^2 v(q_{C,t}^*) \right] > E_0 \left[ v(q_{C,1}^{**} |_{r=1}) \right]$ . Because a cheater would be voted out with certainty (i.e.  $r=1$ ) and  $v' > 0$ , he would select the corner solution  $b^{**} |_{r=1} = \tau y_2 - \bar{\delta}$ . Substituting  $q_{C,t}^*$  and  $q_{C,1}^{**} |_{r=1}$  with the budget constraints and using the (explicit) solutions for  $b^*$  and  $b^{**} |_{r=1}$ , the concavity of  $v(\cdot)$  guarantees that the inequality holds:  $2v(\tau \bar{y}(1 + \varepsilon/2) - \bar{\delta}/2) > v(\tau \bar{y}(2 + \varepsilon) - (3/2)\bar{\delta})$ .

This result illustrates that, absent fiscal illusion, democratic accountability can play a key role in ensuring the credibility of optimal fiscal institutions. What is more, if electoral uncertainty is the only source of deficit bias, democratic accountability is sufficient to establish such credibility.<sup>15</sup> However, if the bias is rooted in other distortions, accountability may not be enough to deter unpleasant outcomes. For instance, policymakers may be intrinsically more impatient than the representative consumer (e.g., they may have a subjective discount rate  $\rho > 0$ ), in which case the inequality discussed above may not hold:  $(2 - \rho)v(\tau \bar{y}(1 + \varepsilon/2) - \bar{\delta}/2) ? v(\tau \bar{y}(2 + \varepsilon) - (3/2)\bar{\delta})$ . The effectiveness of the rules thus also depends upon the specific nature of the fiscal bias.

Another critical assumption underlying the above result is that voters perfectly observe all the components of the budget identities (4-a/b); in short, the budget is transparent.<sup>16</sup> Mounting evidence of creative accounting and outright manipulation of budget numbers undermines the assumption that formal adherence to the rule is perceived as a sufficient indication of competence. To study budgetary opacity in our model, we assume that fiscal outturns are revealed to individuals *after* the elections.

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<sup>14</sup> In a model of monetary policy delegation, Jensen (1997) argues that reneging on central bank independence causes reputation losses, which can help sustain near-optimal institutions in a repeated game. In our three-period setup, however, repeated games become quite cumbersome and it is more convenient to think in terms of political costs associated with either a change in institutions or an attempt to bypass them. Another well-known shortcoming of repeated games is the multiplicity of reputational equilibria, reflecting the arbitrary definition of the “trigger strategies.”

<sup>15</sup> Observe also that in this instance, rewarding compliance with the fiscal rule is a socially optimal voting strategy for voters.

<sup>16</sup> See Castellani (2002) for a formal analysis of accountability and transparency along similar lines in a model of monetary policy delegation.

## The Implications of Budgetary Opacity

Opacity implies that voters can only observe  $q_{C,1}$  (what they get from government),  $\varphi_1$  (what they pay to government), and the aggregate  $\Lambda = b - \delta_1$ . Although the deficit and the policy failure cannot be observed separately, a low  $\Lambda$  may indicate a large policy failure while a high  $\Lambda$  may reflect a deviation from the rule, two events that individuals would interpret as a sign of incompetence. Hence, opacity prevents the detection of combinations of large policy failure and a high deficit.<sup>17</sup>

By analogy with Proposition 1, we assume that voters revise upward their belief that the incumbent is incompetent—and elect the challenger—if  $\Lambda$  lies outside some interval around  $b^*$ . We define that interval as  $[b^* - \delta^+; b^* - \delta^-]$ , with  $\delta^- \leq 0$ , indicating that voters intend to punish deviations from  $b^*$  that they could not plausibly explain by random shocks on public good delivery.<sup>18</sup>

Budgetary opacity modifies policymakers' perception of re-election chances. Specifically, the probability  $r_0$  of being voted out is now:

$$r_0 \equiv \Pr(\delta_1 > \delta^+ + (b - b^*)) + \Pr(\delta_1 < (b - b^*) + \delta^-) \quad (12)$$

Equation (12) highlights the link between fiscal policy choices, voters' behavior, and the extent of political uncertainty. The first term indicates that higher deficits help offset the impact of policy failures on  $\Lambda$ , lowering the probability that voters perceive such failures. This points to circumstances under which opacity provides policymakers with an opportunity to increase re-election chances by boosting current borrowing. Opacity may thus lead to an opportunistic deficit bias.<sup>19</sup> The second term captures the effect of opacity on democratic accountability: random policy failures hamper the detection of breaches of the fiscal rule, especially if voters' tolerance for  $\Lambda > b^*$  is large (i.e.  $\delta^-$  is large in absolute value).

Because the actual distribution of  $\delta$  is bounded between 0 and  $\bar{\delta}$ , there are limits to the effect of fiscal policy on electoral outcomes. In particular, higher deficits reduce the risk of detection of policy failures only if  $b - b^* \leq \bar{\delta} - \delta^+$ . Beyond that, the first term in (12) remains equal to zero as  $b$  increases because the deficit is already large enough to

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<sup>17</sup> Recall that competence is only an issue for the under-informed voters. In reality, neither high deficits nor large policy failures originate in a lack of competence.

<sup>18</sup> A negative value for the delivery shock is possible from the voters' perspective because they do not know the true distribution. Of course,  $\delta^-$  could be strictly positive if individuals had a profound distrust of policymakers' capacity to efficiently deliver public goods. For the sake of brevity, we do not explicitly analyze this issue here.

<sup>19</sup> See Rogoff (1990) although here the argument is related specifically to a lack of transparency, rather than information asymmetry per se.

prevent the detection of policy failures through low realizations of  $\Lambda$ . Likewise, any change in  $b$  leaves the second term in (12) equal to zero as long as  $b < b^* - \delta^-$  because the deviation of  $b$  from  $b^*$  would be too small to be attributed to cheating. The implication for the formal analysis is that the marginal utility of future public good provision exhibits discontinuities at  $b^* - \delta^-$  and  $b^* + \bar{\delta} - \delta^+$ . In the remainder of this section, we focus on selected solutions with interesting policy implications.

**Case # 1: Voters have a low tolerance for signs of excessive deficits (i.e.  $\delta^-$  is small in absolute value)**

If voters revise their assessment of incumbent's incompetence for only small positive deviations of  $\Lambda$  from  $b^*$ , then the policymaker's marginal utility function (for  $k=0$ ) writes as follows:

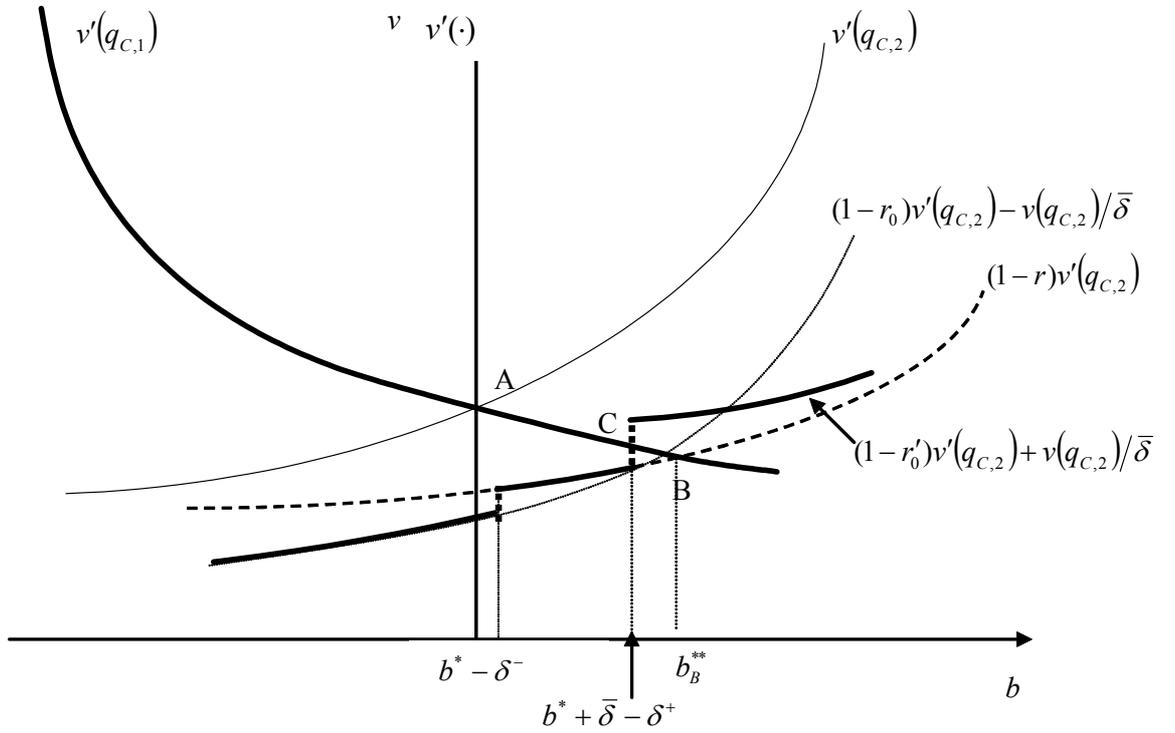
$$\frac{\partial V_C}{\partial b} = \begin{cases} v'(q_{C,1}) - \frac{\delta^+ + (b - b^*)}{\bar{\delta}} v'(q_{C,2}) + \frac{v(q_{C,2})}{\bar{\delta}}, & \text{if } b \leq b^* - \delta^- \\ v'(q_{C,1}) - (1-r)v'(q_{C,2}), & \text{if } b^* - \delta^- < b \leq b^* + \bar{\delta} - \delta^+ \\ v'(q_{C,1}) - \left(1 - \frac{(b - b^*) + \delta^-}{\bar{\delta}}\right) v'(q_{C,2}) - \frac{v(q_{C,2})}{\bar{\delta}}, & \text{if } b^* + \bar{\delta} - \delta^+ < b \end{cases} \quad (13)$$

If the deficit is such that  $b \leq b^* - \delta^-$ , then it is too small for voters to detect cheating on the rule. In that interval, the probability of re-election only depends on their capacity to detect policy failures. As higher deficits lessens that capacity, opportunistic policymakers have an additional motive to deviate from  $b^*$  (raising  $b$  lowers  $r_0$ ). Clearly, if  $\delta^-$  is small enough and  $v(q_{C,2})/\bar{\delta}$ , large enough, the first order condition for maximum utility is unlikely to be satisfied in that interval (see however Case #2 below)

When  $b \in [b^* - \delta^-; b^* + \bar{\delta} - \delta^+]$ , the link between ex-ante fiscal policy and electoral outcomes breaks down because the electoral benefits from higher deficits (i.e. making the detection of policy failures less likely) are completely offset by a higher probability of being found cheating on the fiscal rule. An interior solution for equilibrium fiscal policy located in that interval would thus satisfy a first-order condition identical to (9) with  $k=0$ .

Finally, if  $b > b^* + \bar{\delta} - \delta^+$ , policymakers know that the deficit is too high for voters to detect any policy failure, and  $r_0 = \Pr(\delta_1 < (b - b^*) + \delta^-) = [b - b^* + \delta^-] / \bar{\delta}$ . Opportunistic policymakers are now encouraged to show *restraint* because increasing the deficit entails a higher risk of being voted out for violating the rule. If the latter effect is sufficiently strong, a corner solution where  $b^{**} = b^* + \bar{\delta} - \delta^+$  may be observed (see Figure 3). The resulting deficit would be lower than in the case of an interior solution (despite being associated with the same degree of political uncertainty).

Figure 3: Example of Equilibrium Deficit Under Budgetary Opacity (for  $\varepsilon_1 = 0$ )



A number of interesting equilibria are therefore possible:

- If voters are prone to sanction the incumbent with only limited evidence of policy failure (i.e.  $\delta^+$  is low), equation (9) is satisfied for  $k=0$  and  $b^{**} \in [b^* - \delta^-; b^* + \bar{\delta} - \delta^+]$ . This is the interior solution depicted by point B in Figure 3. Hence, if information asymmetry seriously distorts voters' behavior (leading to a large deficit bias under full discretion), budgetary opacity renders democratic accountability (and fiscal institutions) completely ineffective: the equilibrium deficit remains  $b_B^{**}$ .
- By contrast, if voters show substantial flexibility in the face of signs of policy failure (i.e.,  $\delta^+$  is large), the equilibrium deficit is more likely to be lower than in B. Indeed, voters are unable to detect policy failures even at fairly low deficit levels so that the only impact of higher deficits on re-election chances operate through a greater risk of being caught cheating on the rule. In Figure 3, the corresponding equilibrium could be a corner solution C or an interior solution if the last segment of the upward-sloping curve crosses the downward sloping bold curve to the left of B.

Overall, governments faced with less electoral uncertainty arising from information asymmetry—and correspondingly lower deficit bias—are also more likely to extract benefits discipline-enhancing fiscal institutions, making them more likely to adopt such mechanisms.

**Case #2: Voters treat evidence of excessive deficit “flexibly” (i.e.  $\delta^-$  is large in absolute value)**

The policymaker’s marginal utility function (for  $k = 0$ ) now writes:

$$\frac{\partial V_C}{\partial b} = \begin{cases} v'(q_{C,1}) - \frac{\delta^+ + (b - b^*)}{\bar{\delta}} v'(q_{C,2}) + \frac{v(q_{C,2})}{\bar{\delta}}, & \text{if } b \leq b^* + \bar{\delta} - \delta^+ \\ v'(q_{C,1}) - v'(q_{C,2}), & \text{if } b^* + \bar{\delta} - \delta^+ < b \leq b^* - \delta^- \\ v'(q_{C,1}) - \left(1 - \frac{(b - b^*) + \delta^-}{\bar{\delta}}\right) v'(q_{C,2}) - \frac{v(q_{C,2})}{\bar{\delta}}, & \text{if } b^* - \delta^- < b \end{cases} \quad (14)$$

Because the second term in (12) drops off for all deficits  $b < b^* - \delta^-$ , the incumbent can increase re-election chances by raising the public debt (opportunistic deficit bias). If  $\delta^-$  is large enough in absolute value, then voters never conclude that the fiscal rule has been violated, and an interior solution exists.

In that case, the impact of opacity on the resulting equilibrium deficit is ambiguous. On the one hand, higher deficits reduce voters’ ability to detect large policy mistakes, and correspondingly increase the likelihood of re-election. On the other hand, the greater probability of re-election associated with higher deficits reduces the bias stemming from electoral uncertainty. The tension between these two effects determines whether the equilibrium deficit is larger or smaller than under transparency and full discretion (Figure 4).

Figure 4: Interior Solutions Under Budgetary Opacity (for  $\varepsilon_1 = 0$  and  $b < b^* - \delta^-$ )

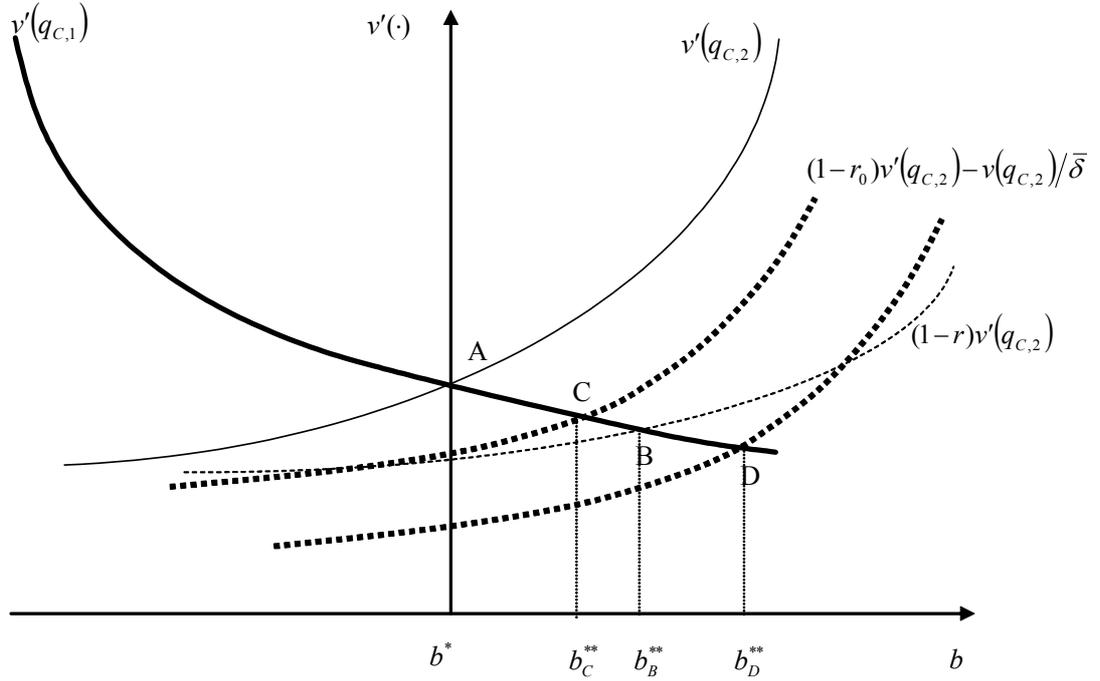
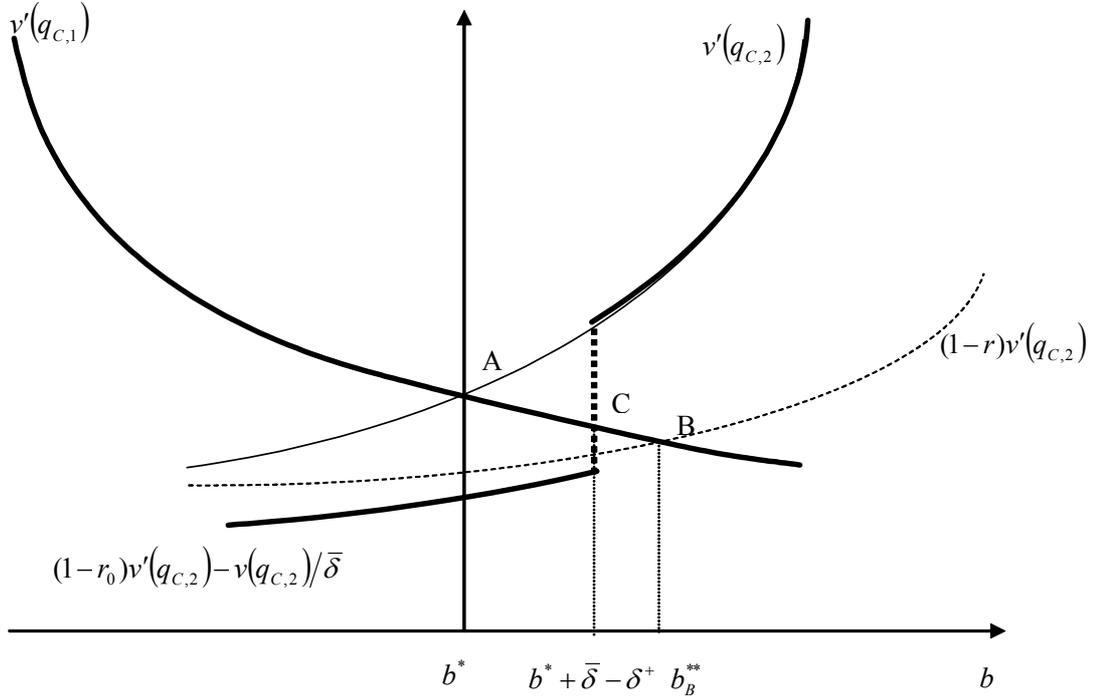


Figure 4 shows that if the “opportunistic wedge”  $v(q_{C,2})/\bar{\delta}$  is sufficiently small with respect to  $v'(q_{C,2})$ , the impact of higher deficits on electoral uncertainty can be strong enough to deliver a lower debt level ( $b_C^{**}$ ) than in the absence of the rule but full budget transparency ( $b_B^{**}$ ). By contrast, strongly opportunistic policymakers ( $v(q_{C,2})/\bar{\delta}$  is large) could be lured into a high deficit equilibrium  $b_D^{**} > b_B^{**}$ . Hence, to the extent that it creates an opportunistic deficit bias, a rule operating under budgetary opacity could be counterproductive.

For the same reason as in Case #1, a corner solution  $b^* + \bar{\delta} - \delta^+$  may emerge if voters consider that only large policy failures warrant an adjustment of their beliefs regarding policymaker’s competence (Figure 5). Indeed, for all  $b \in [b^* + \bar{\delta} - \delta^+; b^* - \delta^-]$ , the deficit is too high for voters to perceive any policy failure, and too low to raise concerns about possible violations of the rule, resulting in the absence of electoral uncertainty (i.e.  $r_0 = 0$ ).

Figure 5: Corner Solution Under Budgetary Opacity (for  $\varepsilon_1 = 0$ )



### G. Summary and Implications for the Empirical Analysis

The model points to a number of important determinants of fiscal outcomes and institutions that are interesting in their own right, and which an empirical analysis should consider. It also suggests that OLS estimates of the quantitative relationship between institutions and fiscal performance may be biased.

First, the model assumes that electoral uncertainty is a key source of deficit bias. The reason is that the perceived risk of not being re-elected drives policymakers' discount rate below the social discount rate. That risk originates in voters' incomplete information about the true motivations of elected officials. The model thus suggests that, other things equal, countries with higher political instability (and a correspondingly higher risk of officials being voted out) should experience higher deficits on average. In what follows, we examine whether this is indeed the case in our sample of industrial and EU countries because the validity of some key conclusions of the above analysis, including those related to the effectiveness of institutions, is sensitive to that assumption

The second insight of the model is that enforcement is key. Hence, to be useful, quantitative indicators of fiscal restraints need to properly capture the enforcement dimension. We have seen that the key parameter in the fiscal framework is not the numerical deficit rule—which simply provides voters with a benchmark characterizing the optimal policy—but the strength of the enforcement mechanism, whose role is to turn deviations from the rule into actual utility losses for policymakers. There are of course a number of ways, including through an outside enforcer, that this can occur.

The third insight is the possibility of reverse causality that may bias quantitative estimates of the impact of institutions on outcomes. A first reason for reverse causality is that institutions may be time-inconsistent because fiscal arrangements are self-enforced. This means that intrinsically less stable governments are likely to be more prone to weaken the disciplinary aspect of fiscal institutions (or not to adopt them in the first place), and that such weakening is more likely to occur in bad times than in good times (when even noncredible institutions are unlikely to be binding). A second reason for reverse causality relates to the fact that budgetary opacity may create an incentive for policymakers to opportunistically increase the deficit in order to secure electoral gains. Indeed, an analysis of the possible equilibria under opacity showed that if voters are sufficiently strict when holding the government accountable for suspected deviations from the rule, institutions are more likely to reduce equilibrium deficits if the deficit bias is low to start with. This implies that countries with relatively minor fiscal problems may be more likely to effectively implement discipline-enhancing fiscal rules than countries with serious fiscal issues.

The final insight is that the effectiveness of fiscal institutions is likely to be country-specific. This suggests that panel analyses—which are now common in quantitative approaches of fiscal behavior<sup>20</sup>—should pay particular attention to cross-sectional heterogeneity. Specifically, the model illustrates the important role of transparency and democratic accountability (and by extension, of the broader political context). Indeed, to the extent that a fiscal rule crystallizes social consensus on what constitutes “optimal” policy, it will be used by voters to assess fiscal performance, possibly leading them to hold the incumbent accountable for complying with the rule. Democratic accountability can be a sufficient enforcement mechanism and make the rule credible. Of course, accountability works best if budgets are transparent—in the sense that its components are perfectly observable by voters.

### III. EMPIRICAL ANALYSIS

This section undertakes empirical analysis drawing on the above insights provided by our model. We focus on 14 European Union Member States (the EU-15 excluding Luxembourg) over the period 1990–2004, using the European Commission’s (2006) database on fiscal institutions. The latter, based on a recent survey among member states, comprises quantitative, time-varying indices of fiscal rule restrictiveness and coverage, as well as qualitative data on nonpartisan fiscal agencies.<sup>21</sup> We first provide a brief description of some stylized facts on the link between fiscal institutions and budgetary performance, and on the main characteristics of institutional arrangements. We then undertake more systematic econometric analysis regarding fiscal behavior with a view to test the robustness of the apparent relationship between institutions and outcomes.

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<sup>20</sup> See Mélitz (1997), Ballabriga and Martinez-Mongay (2002), Gali and Perotti (2003), Debrun and Faruqee (2004), or Annett (2006), among others.

<sup>21</sup> A full description of the data can be found in European Commission (2006).

## A. Fiscal Institutions and Budgetary Performance: Some Stylized Facts

As the detailed European Commission (2006) study notes, the restrictiveness and coverage of national fiscal rules have increased in EU countries over the past two decades. This immediately raises two questions. The first is whether these developments have been associated with an improvement in fiscal performance. The second question relates to the role of underlying policy preferences—what should ultimately matter according to our model. We look at the way different features of institutional arrangements tend to be associated across countries.

### Institutional Reforms and Fiscal Performance

Under the null hypothesis that fiscal institutions effectively influence policymakers' behavior, institutional changes—a tightening of the rules or an expansion of their coverage—should *lead* to improvements in fiscal performance. Charts 1a to 1c below display the time path of a median fiscal indicator before and after a meaningful “tightening” in institutional indicators (i.e., increased restrictiveness and or expanded coverage).<sup>22</sup>

The first of these charts shows that in the three-year prior to the institutional change, there was a steady but quite pronounced improvement in the primary balance.<sup>23</sup> In other words, institutional reforms do appear to *lag* improvements in fiscal performance. In fact, in the three years following the change ( $T$  to  $T+3$ ), there was no further improvement (and even some deterioration) in the balance<sup>24</sup>. This suggests that at the time of the reform at least, institutional changes sought to consolidate a prior change in policy preferences or priorities rather than to effectively constrain policymakers' to adopt policies they would not have opted for in the absence of reform.

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<sup>22</sup> The “change” or the “event” is predetermined as an increase in the index of fiscal restrictiveness of at least 10 percent. Alternative larger cut offs reduced the sample size somewhat but did not lead to an appreciable change in the conclusions.

<sup>23</sup> Similar results were obtained for the cyclically-adjusted primary balance.

<sup>24</sup> Using mean rather than median provides similar results.

Chart 1a. Fiscal Rules Restrictiveness and Primary Balances

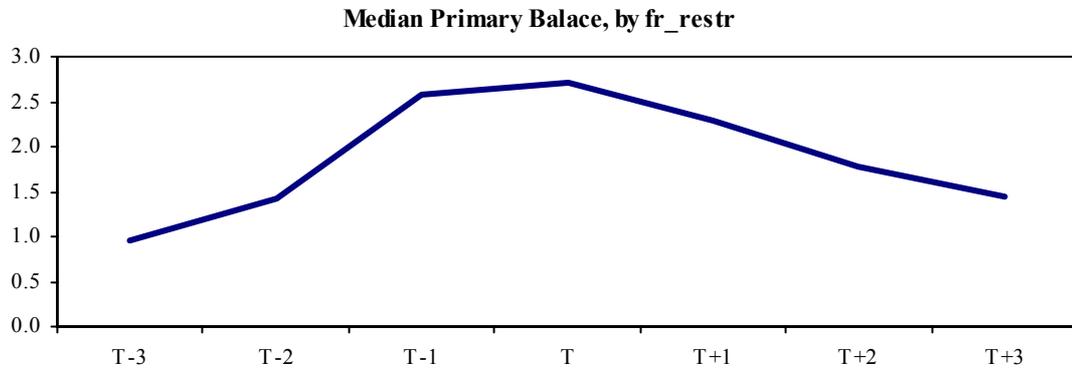


Chart 1b. Fiscal Coverage and Primary Balances

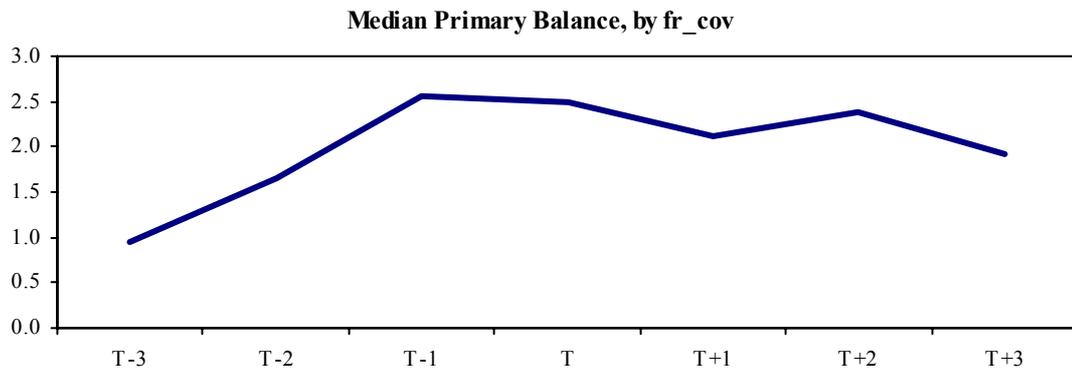
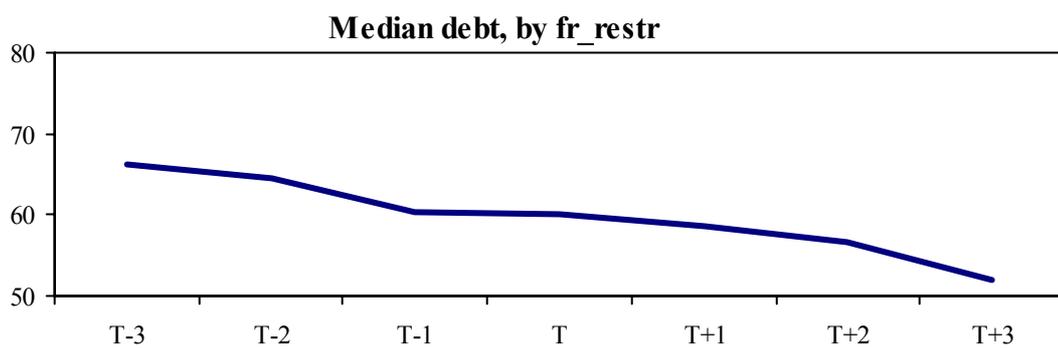


Chart 1c. Fiscal Rules Restrictiveness and Debt



The above interpretation is corroborated when we examine the change in the coverage of fiscal rules. In the three years prior to the increase in the coverage, there appeared to have been quite a noticeable increase in the average primary balance of the sample countries. However, after the broadening of the rules, the primary balance stabilized with little change in the three subsequent years.

Using the public debt as a fiscal indicator (Table 1c), we see that a noticeable decline in the debt to GDP ratio had begun in the three year period to the reform, and that the decline continued albeit at a slightly weaker pace in the subsequent period. The stabilization in the primary balance after that period may thus reflect a lesser need to run high primary surpluses, probably reflecting a decline interest rates in many countries over the period covered by our analysis. Yet the conclusion remains: reforms do not appear to affect underlying policy trends.

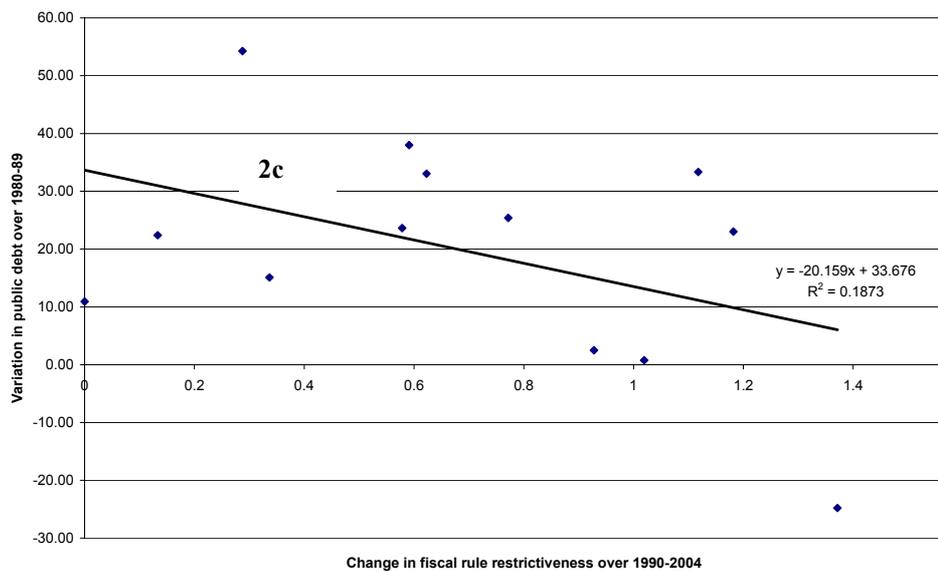
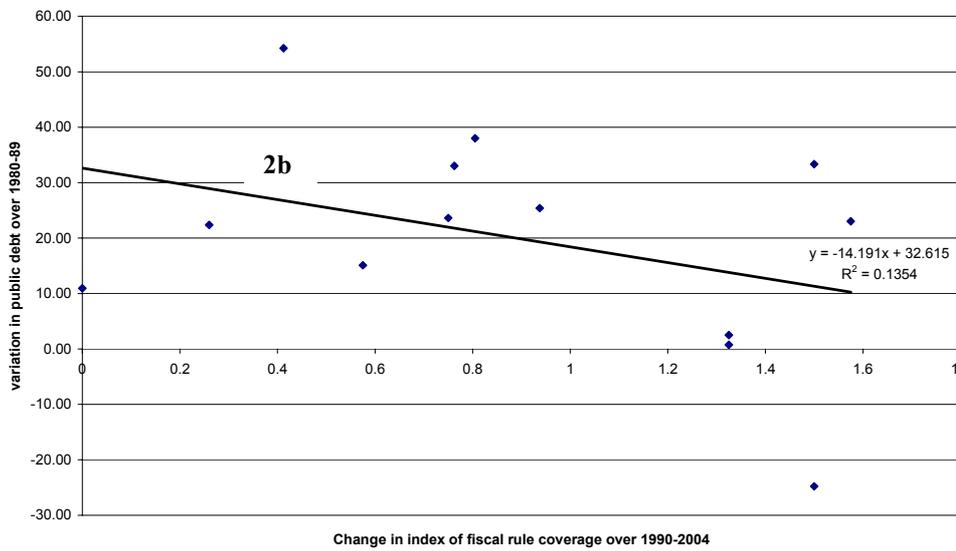
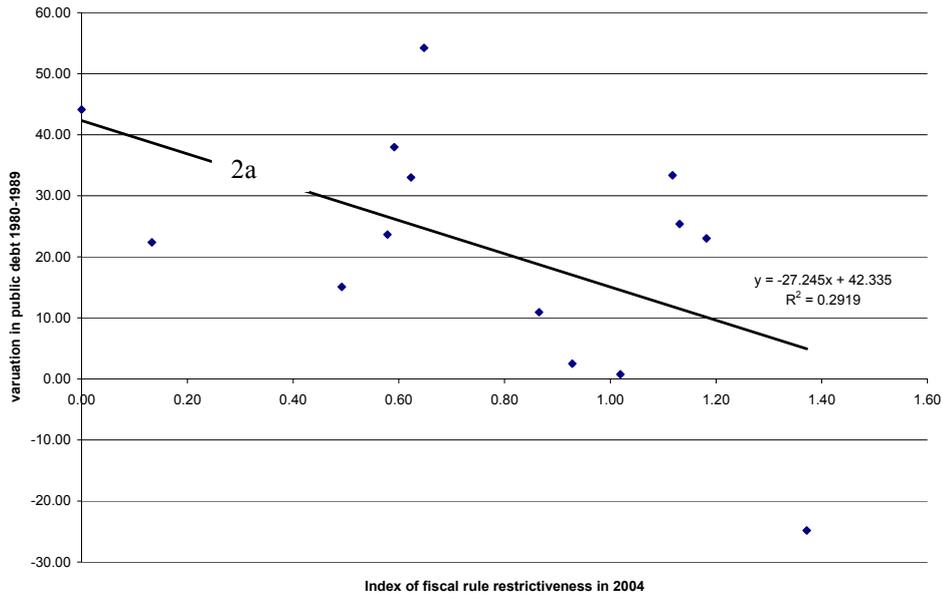
### **Institutions and “Revealed Preferences”**

To check whether consistent stylized facts also emerge over a longer period of time, we looked at the correlation between countries’ “revealed preference” for fiscal prudence—measured by the change in the public debt-to-GDP ratio over the 1980s—and the level of the Commission’s institutional indices in 2004. In line with the above, one would expect countries that tended to have relatively disciplined fiscal policy end up having opted for more restrictive rules in the last 15 years. Of course, it could be that the countries with restrictive rules in 2004, already had some form of rules-based fiscal policy. We therefore did the same exercise using the change in the rule restrictiveness index over 1990–2004, instead of the level in 2004.<sup>25</sup>

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<sup>25</sup> Given that there has been relatively much less change in the role played by fiscal agencies, the above analysis was confined to the restrictiveness and coverage of fiscal rules.

Chart 2. Institutions and Revealed Preferences



The results given in Charts 2a to 2c again suggest that countries that had large increases in public debt during the 1980s also ended up being the countries that had the least restrictive fiscal rules in 2004. Similarly, the countries that had the largest increase in debt were the ones that had the narrower coverage of fiscal rules. The same holds true—albeit with a somewhat lower correlation—if we take the change in the rules restrictiveness index. Of course, the unconditional correlations are not spectacularly high, the dispersion around regression lines is substantial, and the fact that outliers may be shaping the overall picture cannot be dismissed. However, one cannot reject a priori the possibility that a revealed preference for fiscal conservatism could drive countries' attitudes vis-à-vis fiscal rules.

### **Fiscal Councils: Main features and Interaction with Rules**

In addition to rules, many countries set up, some of them a long-time ago, nonpartisan agencies expected to provide an independent input to the budget process, with a view to limit the scope for politicization of fiscal decisions (see Debrun, Hauner and Kumar, 2005 for a discussion of the issues and country experiences). The Commission's survey covered many relevant dimensions of these institutions, including the legal guarantees on their independence, their potential impact on the policymaking process (including through the provision of independent forecasts, and their perceived influence on the public debate. We calculated summary indices for these dimensions.

Unlike the above two exercises that focused on the relationship between rules and performance, here we examine more closely the channels through which the fiscal councils might be able to have an impact, and also the relationship between the fiscal council and fiscal rules. One premise is that the greater the degree of restraint exercised by the fiscal council, or the greater the guarantee of independence from political interference, the greater the likelihood of perceived or actual impact. There may also be a presumption of some complementarity between fiscal rules and fiscal councils, with the latter contributing to a more effective enforcement of the former.

Figure 3. Fiscal Councils

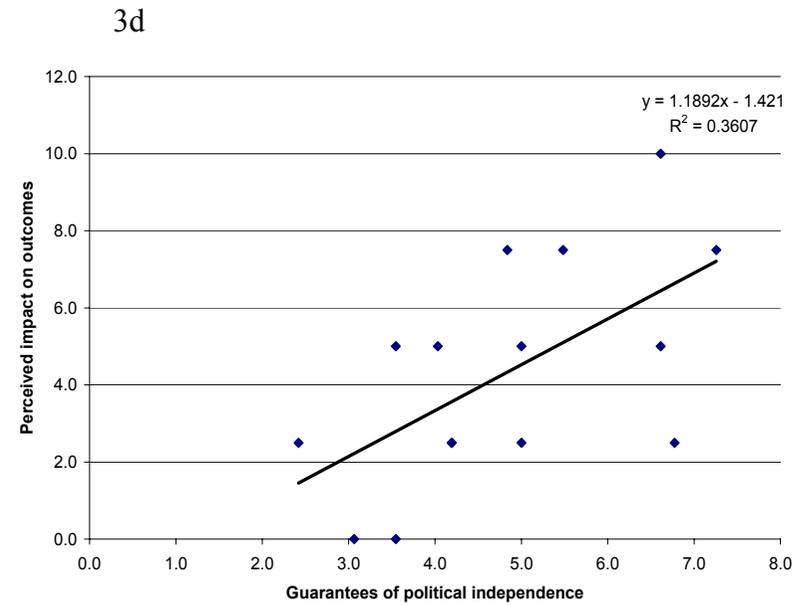
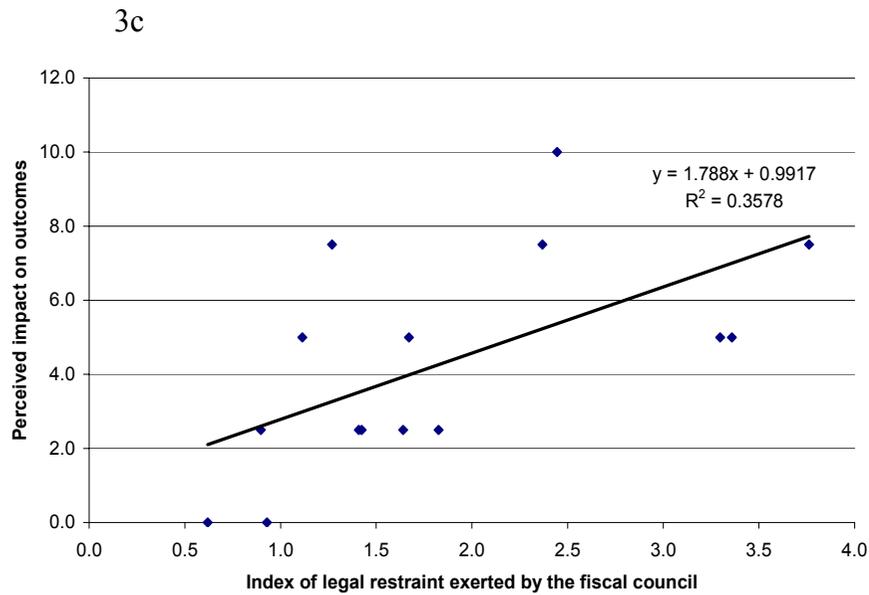
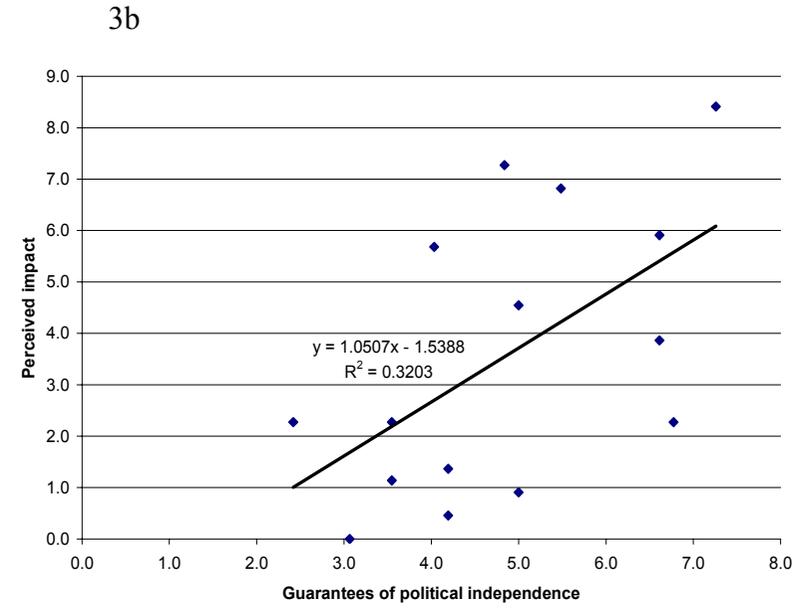
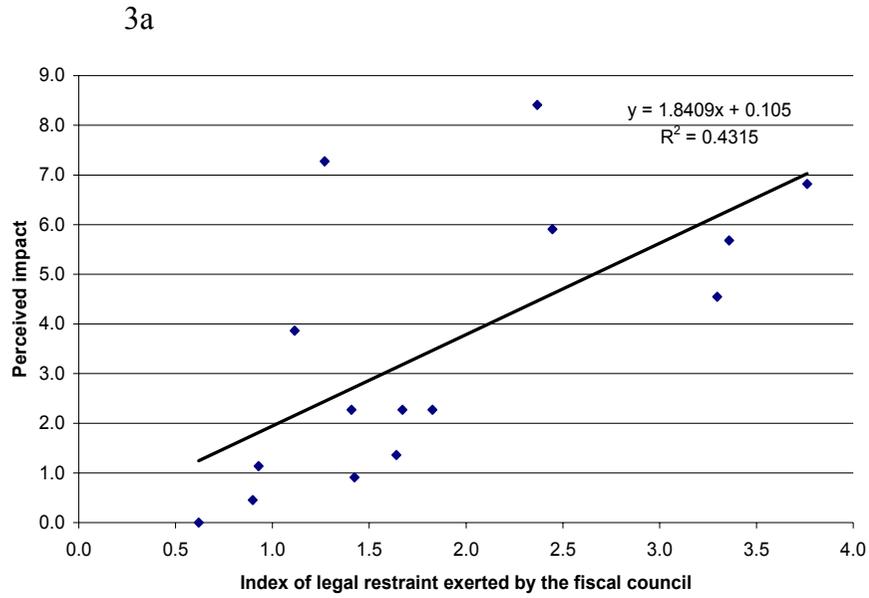
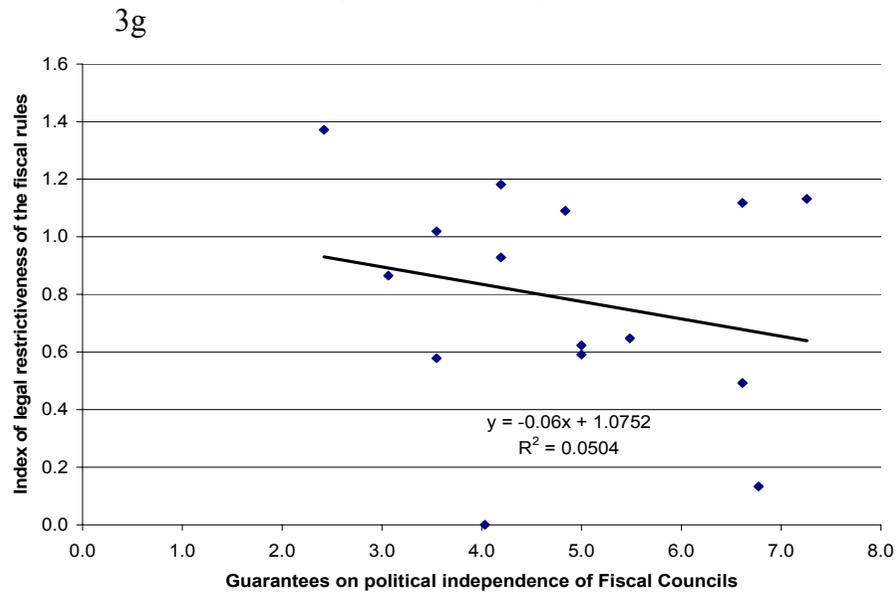
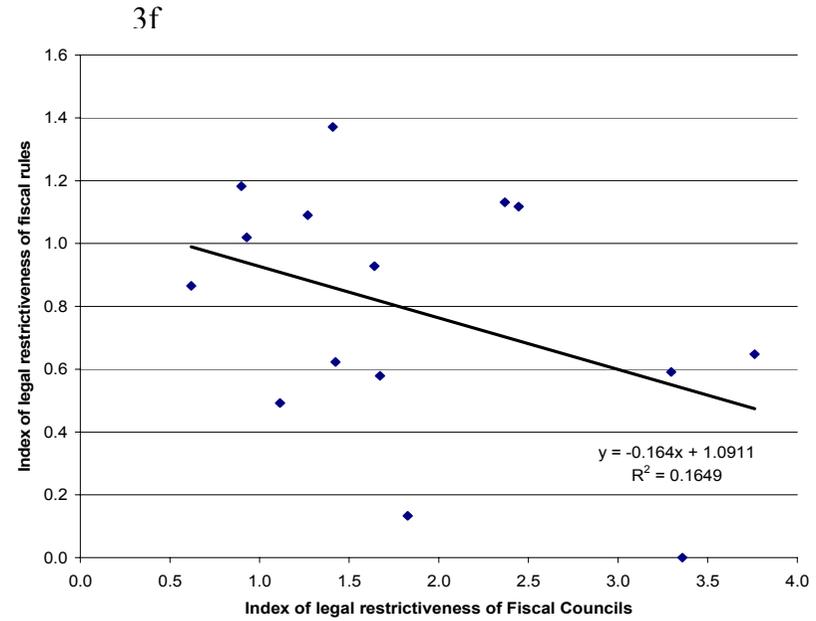
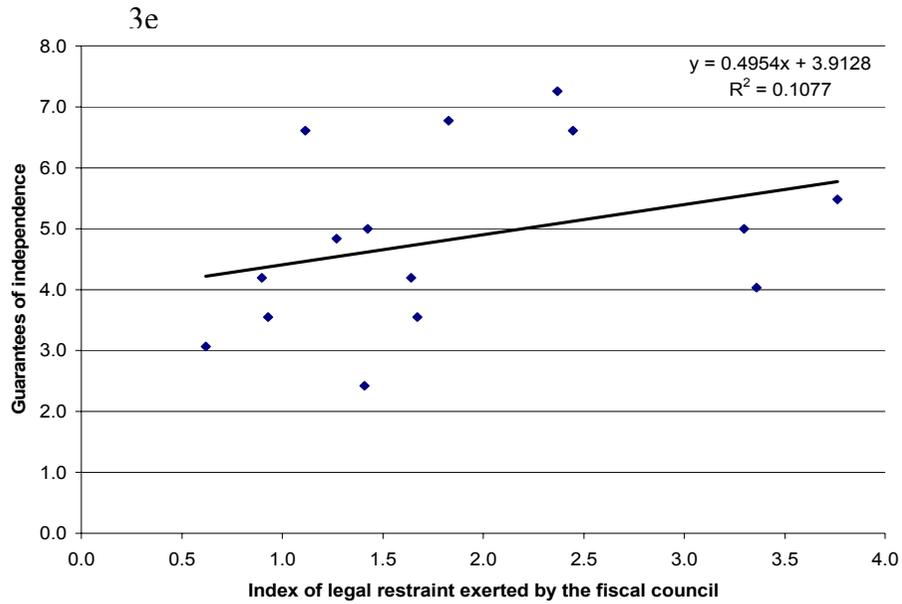


Figure 3. Fiscal Councils (continued)



The results are shown in Charts 3a to 3g. The first of these shows that there is a strong positive relationship between the extent of legal restraint exerted by the fiscal council and its perceived impact on fiscal performance. This is complemented by a positive relationship between formal guarantees of political independence and the perceived impact of the fiscal council. It is also interesting to note that, as shown in Chart 3e, there appears to have been some positive relationship between the index of legal restraint and the guarantee of independence, suggesting that countries instituting such agencies seemed serious in their willingness to establish the council's effectiveness.

Finally, consider the relationship between the legal restrictiveness of fiscal councils and the restrictiveness of fiscal rules. Contrary to what might be expected on an a priori basis, the unconditional correlation points to the possibility of substitution between the two, although the relationship is certainly not strong. This may suggest that countries that feel the need for relatively restrictive fiscal rules, may be reluctant to allow for additional external influence on the policymaking process, possibly because they value discretion per se. The same correlation holds, although in an even weaker form, when one consider the guarantees on political independence of fiscal councils and the legal restrictiveness of fiscal rules.

Unconditional correlations need of course to be complemented with a systematic assessment of fiscal rules and institutions in the context of a more comprehensive, multivariate model of fiscal behavior. In line with our theoretical analysis, we focus on the role of political variables, and explore the issue of reverse causality and possible interactions between the effectiveness of institutions and other economic and political variables.

## B. Econometric Analysis

Fiscal behavior can be assessed by estimating fiscal policy "reaction functions" similar to Bohn (1998). Because of the relatively short time-series available for most fiscal variables, panel data techniques have increasingly been used despite the likely heterogeneity among individual countries' behavior. In line with the literature, the general specification is given by:

$$p_{i,t} = \alpha_0 + \rho d_{i,t-1} + \gamma Institutions_{i,t} + x'_{i,t} \beta + \eta_i + \varepsilon_{i,t}, \quad t = 1, \dots, T, \quad i = 1, \dots, N, \quad (1)$$

where  $p_{i,t}$  is the ratio of the primary balance to GDP in country  $i$  and time  $t$ ,  $d_{i,t-1}$  is the public debt to GDP ratio at the end of period  $t-1$ ,  $Institutions_{i,t}$  is a time- and country-specific measure of fiscal institutions,  $x_{i,t}$  is a vector of control variables,  $\eta_i$  are unobserved country effects, and  $\varepsilon_{i,t}$  is a time- and country-specific disturbance. To better capture fiscal behavior, it is common to filter out the impact of automatic stabilizers on the primary balance, using the cyclically-adjusted primary balance (CAPB) as the dependent variable.

We proceed in three steps. First, we estimate standard reaction functions for a broader panel of 18 industrial countries, ignoring fiscal institutions. The idea is to identify features of the political system that may cause a deficit bias in industrial countries.<sup>26</sup> In a second step, we build on the European Commission's (2006) work to evaluate the potential for reverse causality and the possible role of non-partisan fiscal agencies. Finally, we explore country-specific factors that may systematically influence the effectiveness of fiscal rules by introducing interaction terms in our basic specification.

### **Fiscal Behavior Omitting Fiscal Institutions**

The results reported in Table 1 confirm earlier findings in similar studies. First, fiscal behavior tends to exhibit a fairly high persistence, with an AR(1) term estimated to be around 0.7. Second, the negative sign on the output gap variable suggests that on average, the countries in our panel have a tendency to react in a destabilizing fashion to output fluctuations (procyclicality). Thirdly, the response of the CAPB to the public debt is significant, robust, and positive, which is consistent with long-term solvency (Bohn, 1998). Those results are generally robust to the use of alternative estimators, including pooled OLS, LSDV (country fixed-effects), IV (instrumenting the output gap only), and GMM (Arelano and Bond's dynamic panel estimator, which accounts for the possible small sample bias associated with fixed-effects estimation of an AR(1) panel data model).

One interesting finding is that the introduction of political variables—a measure of government fragmentation, an ideology variable that increases with the degree of conservatism, and an index of government stability—eliminates most of the unexplained cross-sectional heterogeneity captured by country fixed effects (see the F-test of the null hypothesis that country effects are jointly redundant, and that fixed-effect and GMM estimators are correspondingly suffering from a specification bias). In particular, the significant and positive impact of government stability on fiscal outcomes is interesting.<sup>27</sup> To the extent that government stability is likely to be inversely correlated with electoral uncertainty (i.e., the government stability variable is a plausible proxy of the risk faced by an incumbent to be voted out), our result is consistent with the key assumption of the theoretical model, and namely that electoral uncertainty is an important source of deficit bias. Our estimates suggest that a reduction in government stability by one standard-deviation would reduce the CAPB by about 0.25 percent of GDP on average. Similarly, the sample range of the index (between 3 and 11) corresponds to a difference of about 1 percent of GDP between the CAPB of a country with a very unstable government, and that of a very stable one.

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<sup>26</sup> The EU-15 minus Luxembourg, plus Australia, Canada, Switzerland, and the U.S.

<sup>27</sup> The government stability variable is an index ranging from 0 to 12, with the highest figure indicating perfect stability. The index is taken from the International Country Risk Guide (ICRG), compiled by the PRS Group, a consultancy. Other political variables have been constructed using the World Bank's Database on Political Institutions.

Table 1. Fiscal Behavior in a Panel of Industrial Countries  
(Dependent variable: cyclically-adjusted primary balance)

Estimator:	OLS	IV-DV	GMM	IV-DV	IV	GMM	IV-DV	IV	GMM
	(Robust t- or z-statistics in parentheses)								
Lagged dependent variable	0.73 *** (28.79)	0.73 *** (28.53)	0.72 *** (47.65)	0.68 *** (16.14)	0.76 *** (20.57)	0.68 *** (25.30)	0.67 *** (13.12)	0.72 *** (15.86)	0.63 *** (14.83)
Output gap	-0.02 (-0.99)	-0.01 (-0.45)	-0.02 (-0.54)	-0.05 (-1.04)	-0.10 *** (-2.64)	-0.04 (-0.70)	-0.06 (-1.14)	-0.10 ** (-2.25)	-0.07 ** (-1.72)
Lagged public debt	0.03 *** (8.21)	0.03 *** (8.19)	0.03 *** (5.93)	0.03 *** (4.35)	0.02 *** (4.70)	0.03 *** (4.09)	0.03 *** (3.64)	0.02 *** (4.28)	0.04 *** (5.44)
Government fragmentation	...	...	...	-0.10 (-0.17)	0.34 (1.22)	-0.10 (-0.09)	-0.63 (0.93)	-0.19 (-0.47)	-0.83 (-1.44)
Ideology (conservative)	...	...	...	-0.03 (-1.10)	-0.03 (-1.15)	-0.03 (0.75)	0.03 (0.78)	0.02 (0.62)	0.00 (-0.11)
Government stability	...	...	...	0.12 *** (2.31)	0.10 ** (2.18)	0.11 * (1.61)	0.14 ** (2.22)	0.11 ** (2.06)	0.14 *** (1.41)
Delegation (dummy)	...	...	...	...	...	...	-0.37 (-0.79)	-0.01 (-0.03)	-0.15 *** (-2.51)
Commitment (dummy)	...	...	...	...	...	...	0.50 (1.35)	0.51 (1.44)	0.06 (1.13)
Constant	-1.60 *** (-7.52)	-1.61 *** (-7.54)	...	-2.49 *** (-3.87)	-1.51 *** (-3.21)	0.01 (0.46)	-2.56 *** (-3.41)	-1.99 *** (-3.33)	0.02 (0.46)
R-squared (overall)	0.75	0.75	...	0.73	0.76	...	0.75	0.77	...
F-test (country effects)	2.75 ***	2.77 ***	...	1.10	...	...	0.71	...	...
Sargan test (p-value)	...	...	0.98	...	...	0.98	...	...	1.00
Arellano-Bond test (p-value)	...	...	0.11	...	...	0.66	...	...	0.70
Fixed effects (country)	Yes	Yes	...	Yes	No	...	Yes	No	...
Number of observations	490	490	490	279	279	261	234	234	234
Number of cross-sections	18	18	18	18	18	18	15	15	15

With regard to the other explanatory variables, we see that government fragmentation and ideology do not appear to have any *direct* effect on the fiscal balance. Finally, it is worth noting that country specific dummies characterizing the type of fiscal governance in place to alleviate common pool problems (the so-called delegation and commitment models) have no robust impact on the average balance, which is in line with the findings of Annett (2006) for the post-1992 period, but also indicative of a potential collinearity problem between the two.

### The Role of Fiscal Institutions

The availability of time-varying indices of restrictiveness and coverage of fiscal rules allows for a direct statistical test of their impact on fiscal behavior. In that regard, the Commission's indices of fiscal rules are particularly useful as they encompass the strictness of enforcement, which is key according to our theoretical model. In addition to focusing on political control variables, one original aspect of our analysis is to examine the role of fiscal councils. As noted earlier, there is little to guide the construction of meaningful quantitative indices summarizing features of nonpartisan agencies likely to affect fiscal policy choices. Nonetheless, using the analytical framework proposed in Debrun, Hauner and Kumar (2005), we compiled indices of different features of fiscal councils (FCs) that might be regarded as likely to be related to fiscal performance. Extensive robustness checks clearly remain to be performed on those indices, and the results should therefore be taken with care.

As noted earlier, there are good theoretical reasons and some prima facie evidence that the relationship between budgetary balances and fiscal rules may not be causal. First, it can be argued—and the theoretical analysis suggests—that intrinsically profligate governments would be reluctant to adopt or maintain constraining fiscal arrangements, while fiscally conservative governments are more prone to do so. Second, beyond the obvious possibility of reverse causality, omitted determinants of fiscal behavior could be correlated with institutions, also causing a bias in OLS estimates.

Whereas instrumenting the fiscal rule indices emerges as a natural technical response to this potential issue, there is a scarcity of quality instruments (which have to be orthogonal to the error term but highly correlated with the explanatory variable to instrument) for institutional variables. One way to alleviate this problem is to rely on standard specification tests to exclude exogenous political variables that appear to play no direct role in fiscal behavior, and use them as instruments. In our model, good candidates are government fragmentation and ideology. We also introduce other excluded instruments to capture exogenous factors that may have affected the decision to introduce national fiscal rules. The European Commission's analysis points to the role played by the run-up to EMU, which may have encouraged countries to adopt stricter national rules to accompany the fiscal adjustment process, and by the introduction of the Stability and Growth Pact. Dummy variables capturing these events are therefore used as excluded instruments as well.<sup>28</sup> Estimates reported in Table 2 below also consider a dummy variable identifying election years in the EU countries.

Another problem is that other explanatory variables may suffer from an endogeneity problem and could also be candidates for instrumentation. In particular, the fiscal council index, the output gap, the lagged primary balance, and the lagged public debt may all be correlated with the error term of the primary surplus equation, making them debatable instruments.<sup>29</sup> However, instrumenting more than one variable raises a number of difficulties, including potential problems in the overall quality of the set of instruments (e.g. a good instrument for the output gap may prove to be very weak for fiscal institutions). This is why Table 2 reports results where we have instrumented only one variable at a time, namely the output gap and fiscal rule indices. In the absence of obvious instruments for the lagged public debt and the lagged CAPB, we rely on standard specification tests to check whether they are orthogonal to the error term. (The same tests are used to check for the exogeneity of the fiscal council index.) Of course, the power of these tests is still a matter of debate, and for all practical purposes, one should treat these results with caution.

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<sup>28</sup> These dummies proved highly insignificant when included in the model.

<sup>29</sup> One reason for such correlation is the possibility of time-invariant factors affecting the capacity or willingness to generate high primary surpluses in each country. Another reason is the possible persistence in the idiosyncratic shocks to primary surplus behavior. See Celasun, Debrun, and Ostry (2006) for a detailed discussion of the statistical biases related to the estimation of fiscal reaction functions, and Celasun and Kang (2006) for a technical discussion of alternative estimators.

Table 2. Fiscal Reaction Functions: Exploring Reverse Causality  
(Dependent variable: cyclically-adjusted primary balance)

	Instrumenting the output gap			Instrumenting fiscal rules		
	(Robust t- or z-statistics in parentheses)					
Lagged CAPB	0.63 *** (12.46)	0.63 *** (12.51)	0.63 *** (12.34)	0.66 ** (10.42)	0.69 *** (12.20)	0.68 ** (12.43)
Output gap	-0.05 (-1.02)	-0.05 (-1.04)	-0.05 (-1.05)	-0.07 (-1.48)	-0.08 * (-1.77)	-0.08 * (-1.77)
Lagged public debt	0.03 *** (5.84)	0.03 *** (5.74)	0.02 *** (6.31)	0.02 *** (4.51)	0.02 *** (5.12)	0.02 *** (5.16)
Government stability	0.07 (1.53)	0.07 (1.60)	0.07 (1.59)	0.10 ** (2.00)	0.12 ** (2.31)	0.12 ** (2.36)
Fiscal governance ("Commitment" dummy)	0.65 *** (2.71)	0.66 *** (2.71)	0.57 *** (3.07)	0.56 *** (2.91)	0.56 *** (2.86)	0.56 *** (2.87)
Government fragmentation	-0.24 (-0.51)	-0.31 (-0.63)	...	...	...	...
Ideology	0.02 (0.58)	0.02 (0.55)	...	...	...	...
Election year (dummy)	-0.32 ** (-1.93)	-0.32 * (-1.89)	-0.33 ** (-2.02)	-0.33 ** (-2.00)	-0.33 ** (-1.99)	-0.33 ** (-1.98)
Fiscal council index	-0.13 ** (-2.10)	-0.13 ** (-2.10)	-0.12 ** (-2.04)	-0.07 (-0.90)	...	...
Fiscal rule overall index	0.72 *** (2.96)	...	0.68 *** (2.88)	0.23 (0.43)	-0.06 (-0.15)	...
Fiscal rule coverage index	...	0.54 *** (2.85)	...	...	...	-0.06 (-0.23)
Constant	-1.98 *** (-3.99)	-1.96 *** (-3.73)	-1.93 *** (3.76)	-2.00 *** (-3.89)	-2.02 *** (3.79)	-2.01 *** (-3.74)
R-squared (overall)	0.79	0.79	0.79	0.78	0.78	0.77
F-test (country effects)	1.53	1.43	1.29	1.02	0.61	0.85
Hansen J statistic (p-value)	0.98	0.99	0.84	0.98	0.93	0.94
Durbin-Wu-Hausman Chi-squared (p-value)	0.36	0.35	0.44	0.31	0.06	0.05
Cragg-Donald statistic (weak instrument)	...	...	...	9.64	14.3	16.11
Exogeneity of suspect instrument (C statistic, p-value)						
- fiscal council index	...	...	...	0.66	0.40	0.45
- lagged debt	...	...	...	...	0.37	0.40
- lagged CAPB	...	...	...	...	0.58	0.58
- all of the above (joint test)	...	...	...	...	0.80	0.83

Notes: All estimates are obtained by two-stage least squares. Excluded instruments for the output gap are the lagged output gap and the average output gap in the US, France and Germany, except for France (Germany, US, and UK), and Germany (US, UK, and France). Instruments for the fiscal rule indices include government fragmentation, ideology, and dummies for SGP, the runup to EMU, and the delegation form of fiscal governance. In the last two columns, the fiscal council index was also used as an excluded instrument.

Table 2 confirms the broad patterns observed in Table 1. The first 3 columns only instrument the output gap, assuming that fiscal institutions (both rules and the fiscal council index) are exogenous. While stricter and broader fiscal rules are associated with higher CAPBs (supporting the European Commission's findings), elections also seem to play a role, with lower CAPBs being observed in election years. By contrast, the impact of government stability is less precisely estimated, and its coefficient is lower, reflecting possible collinearity with rules and elections. Our fiscal council index enters with a negative and significant sign, which corroborates the (unconditional) correlation reported earlier. It is also worth noting that the Durbin-Hu-Hausman test does not reject the null hypothesis that the output gap is exogenous, despite the usual assumption of the contrary in most related empirical studies (e.g. Galí and Perotti, 2003). However, that result may also reflect a relatively low power of the test in the context of our panel.

Instrumenting the rules deeply affects estimates of fiscal behavior (Table 2). It now appears that both the restrictiveness of the rules and their coverage have no meaningful

effect on the CAPB. The Durbin-Hu-Hausman tests indicate that the potential endogeneity problem is at least as large as for the output gap. Exogeneity is even unambiguously rejected at standard levels of significance if the fiscal council variable (which loses significance when the rule index is instrumented) is used as an excluded instrument. Although there remain many caveats and that extensive robustness checks are still needed, these results thus suggest that one should not dismiss a priori the possibility of a serious endogeneity problem when estimating the impact of fiscal rules on fiscal behavior.

For the sake of completeness, Table 3 confirms the impression conveyed by specification tests that first-stage regressions for rules are of good quality. The significant role of excluded exogenous variables is particularly noteworthy. These regressions support the stylized fact that more disciplined governments (i.e. low public debt and high CAPB) tend to have more restrictive (or a broader coverage of) fiscal rules. Also, government stability—which is associated with better fiscal performance—is significantly positively correlated with the restrictiveness of the rules: the more stable the government, the more it will be willing to forgo discretion and implement rules. Rather strikingly, when controlling for all other determinants of the rules, delegation countries tend to have tightened fiscal rules by more than commitment countries over the sample period, perhaps reflecting a “catching up” effect as the former were generally less prone than the latter to have rules-based fiscal frameworks.

Government fragmentation and ideology also appear to have a significant effect on the preference for tighter and more encompassing fiscal rules. Specifically, more fragmented governments seem to find it more convenient to enact binding rules committing all parties to the same aggregate objective than to rely on endless and paralyzing bargaining sessions among coalition partners. Also, right-leaning governments seem to have an intrinsic appetite for less constraining arrangements than left-leaning governments. Finally, the fiscal council index enters with a positive, quantitatively large, and statistically significant coefficient. Once one appropriately controls for other determinants of rules, the presence of fiscal councils would thus appear to contribute positively to either the emergence of fiscal rules or their more effective enforcement.

Table 3. First-stage Regressions for the Fiscal Rules Indices  
(Dependent variable: fiscal rule index)

	Fourth column in Table 2	Sixth column in Table 2
Lagged public debt	-0.00 *** (-3.36)	-0.01 *** (-3.70)
Lagged CAPB	0.06 *** (4.97)	0.08 *** (4.95)
Government stability	0.05 *** (2.18)	0.04 (1.52)
Delegation (dummy)	0.44 *** (6.64)	0.58 *** (7.22)
Commitment (dummy)	0.20 *** (3.03)	0.28 *** (3.24)
Government fragmentation	0.29 *** (3.15)	0.48 *** (4.10)
Ideology (conservative)	-0.03 *** (-3.08)	-0.04 *** (3.33)
Output gap	-0.01 (-1.12)	-0.01 (-0.82)
SGP (dummy)	-0.09 (-1.36)	-0.04 (-0.42)
Runup to EMU (dummy)	-0.10 * (-1.79)	-0.08 (1.08)
Elections	0.03 (0.48)	0.02 (0.32)
Fiscal council index	0.11 *** (6.90)	0.14 *** (7.07)
Constant	-0.12 (-0.66)	-0.03 (-0.15)
R-squared (overall)	0.47	0.48
Partial R-squared of excluded instruments	0.21	0.35
F test of excluded instruments	11.82 ***	19.24 ***

In Table 4, we document the existence of suggestive nonlinearities, indicating that, as suggested by our theoretical analysis, the effectiveness of rules depends upon the broader economic and political context.

Table 4. Interactions between Fiscal Institutions and other Country-Specific Features  
(Dependent variable: cyclically-adjusted primary balance)

Estimator:	LSDV				
	(Robust t-statistics in parentheses)				
Lagged dependent variable	0.60 *** (8.84)	0.60 *** (8.91)	0.64 *** (13.53)	0.68 *** (15.13)	0.68 *** (15.67)
Output gap	-0.04 (-0.72)	-0.05 (-0.89)	-0.09 (-1.04)	-0.09 (-1.05)	-0.09 (-1.06)
Lagged public debt	0.03 *** (2.58)	0.03 *** (2.46)	0.02 *** (5.03)	0.02 *** (4.57)	0.02 *** (4.42)
Fiscal rule restrictiveness	-0.47 (-0.51)	0.22 (0.78)	1.52 *** (3.13)	0.30 (1.17)	0.80 *** (3.12)
<i>interacted with:</i>					
Government stability	0.16 * (1.88)	...	...	...	...
Growth volatility	...	0.50 *** (4.62)	...	...	...
Country size	...	...	-0.26 ** (-1.92)	...	...
Commitment	...	...	...	0.51 ** (2.24)	...
Delegation	...	...	...	...	-0.52 ** (-2.18)
Country size (population)	...	...	-0.13 * (-1.69)	...	...
Constant	-1.81 *** (-2.50)	-1.86 *** (-2.59)	-0.83 *** (-2.76)	-1.07 *** (-3.88)	-1.05 *** (-3.74)
R-squared (overall)	0.79	0.80	0.80	0.79	0.79
F-test (country effects)	1.46 *	1.92 **	1.63 *	1.50	1.50
Fixed effects (country)	Yes	Yes	Yes	Yes	Yes
Number of observations	195	195	195	195	195
Number of cross-sections	13	13	13	13	13

The results show the following. First, there is a positive and highly significant interaction between volatility of growth and fiscal rule restrictiveness, suggesting that the uncertainty engendered by output volatility, and the need to have some “anchor” likely impels authorities to opt for more restrictive rules. This complements the results for the interaction between fiscal rule restrictiveness and government stability, which indicates that a given rule is more likely to have an impact in a stable political context than in less stable one. Rules also appear to be less effective in large countries, perhaps capturing the fact that part of those rules are somehow connected to the implementation of the Stability and Growth Pact (we think of the adoption of internal SGPs in some countries). However, the strength of the effect is probably not unrelated to the fact large countries also tend to adopt a delegation mode of fiscal governance, which also appears to undermine the effectiveness of rules (last column of Table 4).

#### IV. CONCLUSIONS

This paper has developed a stylized model of fiscal policy to illustrate the theoretical underpinnings of fiscal institutions. Two sets of issues were addressed: the credibility of optimal institutions; and the contribution of institutions over and above the influence of other factors, particularly that of specific political constituencies.

The results highlight a number of important issues relating to fiscal outcomes and institutions. First, they suggest that electoral uncertainty is a key source of deficit bias, and therefore, a central determinant of fiscal institutions. The reason is that the perceived risk of not being re-elected drives policymakers' discount rate below the social discount rate. That risk originates in voters' incomplete information about the true motivations or competence of elected officials. The model thus suggests that, other things equal, countries with higher political instability (and a correspondingly higher risk of officials being voted out) should experience higher deficits on average. Such countries should correspondingly adopt stricter enforcement mechanisms of fiscal rules to ensure that deviations from the rule entail significant costs for the policymakers.

Second, the model highlighted the possibility of reverse causality between institutions and outcomes. One reason for reverse causality is that institutions may be time-inconsistent because fiscal arrangements are self-enforced. This means that intrinsically less stable governments will be more prone to weaken the disciplinary aspect of fiscal institutions (or not to adopt them in the first place), and that such weakening is more likely to occur in bad times than in good times (when even noncredible institutions are unlikely to be binding). Another reason for reverse causality is that, under certain circumstances, fiscal institutions are more likely to be effective if the deficit bias is low to start with. Hence, low-deficit countries may be more likely to set up such institutions.

The second part of the paper explored some of the empirical implications of the theory. We first documented broad correlations among various elements of the fiscal framework in EU countries, and then turned to quantifying the relationship between institutions and fiscal outcomes, focusing on three key dimensions: (i) the potential sources of fiscal bias, (ii) the relationship between the restrictiveness and coverage of fiscal rules and fiscal outcomes; and (iii) the interactions between our institutional variables and various country specific features, as the effectiveness of fiscal institutions may vary according the political landscape and commitment to fiscal discipline.

The results do not reject the role of political instability as a source of bias. Instability was also found to be associated with less restrictive and narrower rules. Finally, we found suggestive evidence that it interacts with the effectiveness of fiscal rules, with more stable political environments being conducive to a greater effectiveness of the rule, as suggested in our theoretical analysis. We found evidence that the greater the restraint exerted by the fiscal council, or the greater its political independence, the greater the perceived impact on outcomes. Our econometric results indicate that this perception may be related to a more pronounced tendency of countries with fiscal councils to adopt rules and/or to better enforce them. As to the relationship between rules and outcomes, we found evidence that simultaneity issues could be at least as meaningful as in the case of the output gap, which is generally assumed to be endogenous in most empirical studies. Accounting for that potential endogeneity bias contributes to a severe weakening of the estimated impact of rules under the null hypothesis of exogeneity. Overall, our analysis suggests that further research is needed to check the robustness of these findings to alternative specifications of the fiscal reaction functions, and to capture in a more systematic and robust way, the non-linearities that appear to matter.

A broad policy conclusion emerging from our findings is that rules can provide an important signaling mechanism that can help crystallize underlying preferences for good fiscal behavior, and thereby strengthen the reward for being well-behaved (e.g. through greater re-election chances, but also lower borrowing costs). To put it simply, rules and institutions work best when they are not meant to be binding. However, when they become truly binding, rules may well work effectively only to the extent that there is enough political capital to support their enforcement, or that there are high costs to bypass them, including the action of external enforcer or a strong response from capital markets.

## Appendix

### A. Proof of Proposition 1

At the beginning of period 1, voters assign a probability  $z_{Q,0}$  of  $\delta_1 \geq \delta^+$  equal to  $p - \psi(2p - 1)$ ,  $Q = C, L$ , where  $p$  is a probability symbolizing voters' prior about politicians' incompetence.<sup>30</sup> With  $0 \leq \psi < 1/2$ , voters update their beliefs using Bayes' rule: if they observe  $\delta_1 \geq \delta^+$ , the probability that party  $C$  is incompetent is revised to  $p^+ = \frac{(1-\psi)p}{(1-\psi)p + \psi(1-p)}$ , and  $p < p^+ \leq 1$ . As a result, the probability of  $\delta_2 \geq \delta^+$  under Party  $C$ 's rule is increased to  $z_{C,1} = p^+ - \psi(2p^+ - 1)$ . At the same time,  $z_{L,1} = z_{L,0} < z_{C,1}$  so that  $E_1[v(q_{C,2})] < E_1[v(q_{L,2})]$ , and party  $L$  wins the election. If  $\delta_1 < \delta^+$ , the probability that party  $C$  is incompetent is revised downward to  $p^- = \frac{\psi p}{\psi p + (1-\psi)(1-p)}$ , which guarantees  $E_1[v(q_{C,2})] > E_1[v(q_{L,2})]$ , and the re-election of party  $C$ . This establishes that, from the perspective of the incumbent, the probability of being re-elected is simply equal to the *true* probability of  $\delta_1 < \delta^+$ , that is  $\delta^+ / \bar{\delta}$ .

### B. Proof of Proposition 2

The first part of the proposition follows from the fact that no rationally chosen debt threshold  $\bar{b}$  should discourage the selection of the optimal debt  $b^*$  for any income shock  $\varepsilon \in [-\bar{\varepsilon}; \bar{\varepsilon}]$ , so that  $\bar{b} \geq b^*$ . In the case of a strict inequality ( $\bar{b} > b^*$ ),  $b^*$  is never an equilibrium strategy because for  $k = 0$ ,  $v'(q_{C,1}^*) > (1-r)v'(q_{C,2}^*)$ . Restoring equality between these two terms (while keeping  $k = 0$ ) requires more spending on public goods in period 1 than in period 2:  $q_{C,1}^{**} > q_{C,2}^{**}$ , or equivalently  $b^{**} > b^*$  (see Figure 1). The second part of the Proposition is established by applying the implicit function theorem to (9), which yields:  $\partial b^{**} / \partial k = [v''(q_{C,1}^{**}) + (1-r)v''(q_{C,2}^{**})]^{-1} < 0$ . Then it is clear from (9) that  $k^* = v'(q_{C,1}^*) - (1-r)v'(q_{C,2}^*) = rv'(q_{C,1}^*) > 0$  makes any deviation from  $b^*$  sufficiently costly to deter a deficit bias.<sup>31</sup>

<sup>30</sup> If  $\psi = 1/2$ , then  $\delta_1$  is not a signal of competence, and  $z_{Q,0} = z_{Q,1}$ ,  $Q = C, L$  irrespective of  $\delta_1$ . In that case, the incumbent government is assured to be re-elected, and the analysis of the political equilibrium loses any interest.

<sup>31</sup> See Beetsma and Debrun (2006) for a similar characterization of optimal fiscal institutions.

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# The Surplus Factor

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## Abstract

A remarkable change in fiscal outcomes has taken place at the end of the 1990s when budgetary surpluses emerged or re-appeared in 13 out of 22 OECD countries, after deficits had been the norm in fiscal policy since the early 1970s. This paper investigates why surpluses emerged in some countries but not in others, investigating the role of economic, political and institutional variables. Results show that surpluses coincided with fewer spending ministers, a higher perception that corruption is under control, stronger expenditure rules and more transparent fiscal policies. Regarding budgetary behaviour, results indicate that (i) revenue booms lead to a procyclical increase in spending in deficit countries whereas this effect is absent in surplus countries and (ii) that a political budget cycle in expenditure is present in deficit countries but not in surplus countries. Finally, results show that cross country differences in expected expenditure pressures due to ageing populations cannot explain why surpluses emerged in some countries but not in others. The current policy discussion on the perceived need to move towards budgetary surpluses in many countries may therefore need to include the underlying political-institutional setting in which the advice needs to be implemented.

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# 1 Introduction

During the 1950s and 1960s, budget surpluses were as common as budget deficits (Grilli et al., 1991). This changed from the 1970s onwards, when budget deficits became a regular feature of fiscal policies in almost all industrial countries. As a result, a large literature has developed that attempts explaining why a deficit bias emerged since the early 1970s and why the build-up in debt differed substantially across countries. For overviews, see Alesina and Perotti (1994) and Mueller (2003).

In this paper, we depart from the traditional perspective on budget deficits and focus on budgetary surpluses instead. As we will show in detail in section 2, a remarkable but largely unnoticed change in fiscal outcomes has taken place during the last decade. Whereas before 1998 very few OECD countries were running budgetary surpluses, this has changed since then. The stylised fact is that 13 out of 22 OECD countries have recorded budgetary surpluses for longer periods (i.e. at least three years) since 1998. This paper attempts to explain why surpluses emerged in some countries but not in others. More precisely, we investigate whether differences in economic, political and institutional variables can explain why some countries have recorded surpluses while others have not. Our main interest is in budgetary behaviour of Euro area countries and to compare their budgetary behaviour to that of other OECD countries.

Our investigation should be seen in the context of increasing emphasis by policymakers on the need to move towards budgetary surpluses in the years ahead. Several studies have provided estimates of future expenditure pressures due to ageing populations (e.g. Economic Policy Committee, 2001). On the basis of this input, the European Commission has recently calculated ‘required primary surpluses’ for the coming years that range from 1.6% of GDP in Austria to 9.2% of GDP in Greece within the Euro area (European Commission, 2006b). This perception that budgetary surpluses are needed in order to prepare for the costs of ageing populations is not limited to EU countries. See for example McKissack and Comley (2005) on the Australian experience and for an overview of experiences of industrial countries in ‘pre-funding’ known future fiscal pressures.

Existing studies that calculate the consequences of ageing populations for current fiscal policy abstract from the question how these policy-recommendations should be implemented. Positive theories from the political economy however underline the difficulties of maintaining surpluses, and provide clues on the political-institutional variables that may drive budgetary

outcomes away from surpluses. In this context, our paper aims at deepening the analysis on the perceived need to maintain surpluses in the years ahead by adding a political-economy perspective and focusing explicitly on the political-institutional structure in which the policy advice needs to be implemented.

The rest of this paper is organised as follows. Section 2 briefly reviews the facts on how budgetary surpluses have re-emerged in some countries during the last decade but not in others, and puts our discussion on surpluses in a historical perspective. Section 3 briefly recalls the literature on the variables that help explaining fiscal policies outcomes, and classifies them into economic, political and institutional variables. The empirical relevance of these variables is discussed in section 4. It first investigates whether the explanatory variables as highlighted in section 3 show different *values* for countries and periods in which surpluses or deficits were recorded. It then investigates whether fiscal policy behaviour is different for surpluses, by estimating whether the *impact* of the variables mentioned is different. The analysis is completed by investigating whether countryspecific factors may explain the appearance of surpluses in some countries but not in others. Section 5 summarises the main findings and provides policy recommendations. As a related side-issue, Annex 1 investigates the effectiveness of recommendations that countries with stronger long-run expenditure pressures should aim for higher budgetary surpluses. Finally, Annex 2 describes our data set that draws on a range of different sources as used in the literature.

## **2 Budgetary surpluses in OECD countries: a brief history**

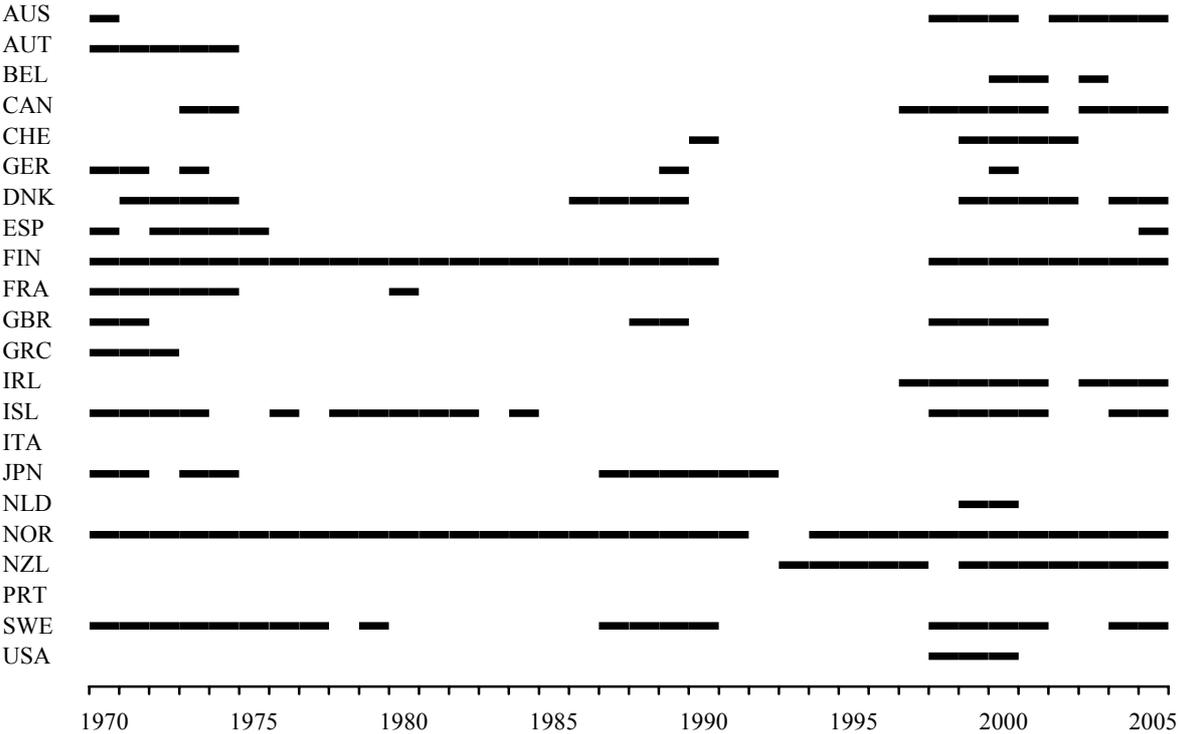
Figure 1 provides an overview of the periods during which OECD countries have been recording budgetary surpluses, as indicated by the black marks in the timelines for each country. Budgetary surpluses were still very common during the first half of the 1970s. Out of 22 OECD countries, 9 were running surpluses for at least three years in a row. Between 1975 and 1998 budgetary surpluses disappeared in most countries. The most obvious exceptions to this rule are Norway and Finland that maintained surpluses up to the early 1990s.<sup>3</sup> A remarkable turnaround in fiscal outcomes took place around 1998/1999, when surpluses emerged or re-appeared in many OECD countries. Out of 22 countries included in the sample,

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<sup>3</sup> In addition, Sweden, Japan, Iceland and Denmark also continued recording surpluses for shorter periods of time.

13 have been running a budgetary surplus for at least 3 years in a row during the last decade. This group of countries consists of Australia, Belgium, Canada, Denmark, Finland, Iceland, Ireland, New Zealand, Norway, Sweden, Switzerland, the UK and the US. In several of these countries, surpluses have disappeared again recently (most notably in the US), so that by 2005, 10 countries were running a budgetary surplus, including three countries of the Euro area (Finland, Spain and Belgium).

**Figure 1 Budgetary surpluses in OECD countries 1970-2005**



Note: no data are available for Switzerland (1970-1989), New Zealand (1970-1984) and Portugal (1970-1976)

The timelines in Figure 1 allow for a very brief review of the history of the dominant thinking on fiscal surpluses that serves to put the current discussion in a historical perspective. Buchanan and Wagner (1977) provide an overview of the fiscal principles according to ‘the old time fiscal religion’ (i.e. the ‘pre-Keynesian period’). The central principle was that public finance and private finance are analogous, and that the norms for prudent conduct are similar: *‘barring extraordinary circumstances, public expenditures were supposed to be financed by taxation, just as private spending was supposed to be financed from income’*. As a result, surpluses were normally produced during peace-time, and these surpluses were used to retire the debt created during war emergencies.

The disappearance of budgetary surpluses in the early 1970s has obviously inspired the subsequent literature on the deficit bias. In the view of Buchanan and Wagner (1977), Keynesian thinking has destroyed the old time principles of fiscal prudence. Indeed, Keynesian theories have had a profound influence on normative thinking about how fiscal policy should be run. Nevertheless, this argument cannot account for the fact that surpluses disappear specifically in the early 1970s and why debt increased much more in some countries than in others (see Alesina and Perotti, 1994, for an elaboration of this argument). Positive political economy theories have provided explanations as to why observed fiscal policy may deviate from this normative benchmark. This literature has pointed to the role of political and institutional variables in explaining a deficit bias in fiscal policy outcomes. Section 4 will provide further details on the main explanatory variables.

The question not yet addressed in the literature is why budgetary surpluses re-emerged in several countries by the end of the 1990s. The historical perspective allows to put forward several hypotheses that will be tested formally in the remainder of this paper. Firstly, as usual in budgetary policy, growth may matter: surpluses re-emerged at a time of the boom of the late 1990s. Secondly, the re-emergence of surpluses took place after a decade during which increasing emphasis was put on institutional reform in many Member States. For example, von Hagen (2006) notes that in the EU, budgetary institutions improved over the 1990s. At the same time, the use of national fiscal rules increased markedly in EU countries (European Commission, 2006a) while in the US surpluses appeared after the Budget Enforcement Act had been in place during the 1990s (while the surpluses disappeared after the Budget Enforcement Act was not prolonged). Thirdly, it should be noted that there are two countries (Norway and Finland) that have maintained budgetary surpluses through almost the entire period under investigation, so that countryspecific 'special' factors may play a role, such as oil in Norway and the decision to build up pension assets within the public sector in Finland. Finally, during the last decade many studies have pointed out that surpluses would be needed for keeping fiscal policies on a sustainable path in the light of ageing populations. Perhaps this policy advice has been successful in influencing policy outcomes?

### **3 Explaining budgetary outcomes by economic, political and institutional variables**

Several authors have summarised existing theories that aim at explaining why fiscal deficits became the norm after the early 1970s, including Alesina and Perotti (1994) and Mueller (2003). The conclusion of Mueller (2003, p. 469) is that the evidence is somewhat equivocal as to what *the* determinants of fiscal deficits are: ‘*Clearly no single hypothesis can account for all the differences*’. In this light, explanations as to why surpluses re-emerged may also need to include insights of a range of existing theories.

Our starting point in explaining fiscal outcomes is the large literature on fiscal reaction functions that include lagged debt (due to a sustainability motive) and the output gap (due to a stabilisation motive) as the main explanatory variables (see e.g. Bohn, 1998, Ballabriga and Martinez-Mongay, 2005, or European Commission, 2006a) and then ‘augment’ these reaction functions by political and institutional variables. To save space we immediately focus on the political and institutional variables that may help to explain budgetary outcomes, by summarising evidence in recent empirical studies.

#### **3.1 Political variables**

The main political variables that have been related to budgetary outcomes in terms of the budget balance are: fragmentation, political instability, polarisation, ideology, elections and corruption.

##### *Political fragmentation*

Political fragmentation is expected to influence budgetary outcomes through the common pool problem. The more fragmented is the system of budgetary decision-making, the weaker are the incentives for each participant to internalise the full tax burden of its spending bids. The original version of the common pool problem as in Shepsle and Weingast (1981) explains expenditure pressures, and not necessarily a tendency towards budget deficits.<sup>4</sup> However, in

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<sup>4</sup> A related issue is the literature on the effect of electoral rules and political regimes on fiscal policy outcomes. Persson and Tabellini (2002) find evidence that presidential regimes lead to smaller governments, while majoritarian elections lead to smaller governments and smaller welfare programs. However, the underlying

recent years a variant of the common pool problems has been developed that explains the speedy disappearance of budgetary surpluses due to a voracity effect (Tornell and Lane, 1999; Lane, 2003). In a situation of surpluses, the incentive to act prudently is low, as each party knows that if it refrains from using the surplus to implement its desired policy, competing parties will do so. In addition political fragmentation may also explain why deficits persist despite general recognition that adjustment is needed. The reason is a “war of attrition” between e.g. the coalition parties, waiting for each other to concede (Alesina and Drazen, 1991).

In the recent literature, a common indicator for measuring fragmentation is the number of spending ministers (NSM). Perotti and Koptopolous (2002) find that this indicator matters for explaining expenditure outcomes and to a lesser extent also for the budget balance. Therefore, we expect surpluses to coincide with fewer spending ministers.

#### *Political instability and polarisation*

Political instability and polarisation may matter for budgetary outcomes given that they influence the degree to which the incumbent government uses debt as a strategic variable to influence the policy options of its successor (Tabellini and Alesina, 1990). The incentive to run deficits and leave debt is larger the lower are the chances for re-election (political stability) and the larger are the differences in policy preferences between alternating parties in power (polarisation).

The empirical evidence regarding the impact of the frequency of government changes and polarisation on the budget balance is mixed; see Drazen (2000) for an overview. Both Grilli et al. (1991) and Hallerberg and Von Hagen (1999) find that time fragmentation matters. However, Ricciuti (2004) finds no evidence that it does. Furthermore, Grilli et al. (1991) find no evidence that polarisation matters. Therefore, we expect to find at best weak evidence that surpluses coincide with less instability and polarisation.

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theories and the evidence in this strand of the literature concentrates on public expenditure, and not on the budget balance, so that it falls outside the scope of the current paper.

## *Ideology*

Different predictions have been made concerning the impact of ideology on budgetary outcomes. Intuition may suggest that leftwing governments run deficits, while rightwing governments may run surpluses or smaller deficits. However, in the model of Persson and Svensson (1989) in which a rightwing government favours low spending while a leftwing government favours a large government, the rightwing government has an incentive to run deficits in order to restrain the spending possibilities of its successor.

Regarding the empirical evidence, Perotti and Kontopoulos (2002) find that ideology is not an important determinant of the deficit when using panel estimations.<sup>5</sup> However, Alt and Lassen (2006) find that rightwing government is associated with higher government debt when using a cross-sectional approach that focuses on average values over the 1990s.<sup>6</sup> As a result, we also expect to find mixed evidence on the link between surpluses and ideology.

## *Elections*

Political competition can be modelled on the basis of partisan motives (i.e. the desire to implement preferred policies) and opportunistic motives (i.e. the desire for re-election). The latter motive has given rise to the literature on political business cycles, starting from Nordhaus (1975). On the empirical side, there is some evidence of a political budget cycle in transfers in OECD countries (see Drazen, 2000, for an overview of the literature). At the same time, the political budget cycle seems especially strong in young and developing democracies, whereas it is less apparent in established democracies (Brender and Drazen, 2005b), that are the main focus in this paper.<sup>7</sup> Looking from a different angle, we investigate whether the political budget cycle differs between surplus and deficit countries.

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<sup>5</sup> Ideology does however impact on transfers in an intuitive way (leftwing governments spend more on transfers).

<sup>6</sup> As a variable for rightwing government they use the ‘proportion of years from 1990-1999 with a rightwing party in office’.

<sup>7</sup> Moreover, Brender and Drazen (2005a) show that budget deficits decrease chances for re-election.

## *Corruption*

The model of Alesina and Tabellini (2005) predicts that procyclical fiscal policy should mainly be observed in democratic countries where political corruption is widespread. The intuition is that, if corruption is higher (i.e. the incumbent government extracts more rents in office), voters do not trust the government and demand that revenue booms are given back the form of lower taxes or higher spending. Empirical results of Alesina and Tabellini (2005) confirm that corruption matters. Their results also indicate that procyclicality is more often driven by a distorted policy reaction to booms, rather than to recession. These findings may also imply that surpluses are less likely to emerge when ‘control of corruption’ (which is the main indicator in their study) is lower.

### **3.2 Institutional variables**

With dissatisfaction about persistent deficits increasing during the 1980s, attention naturally shifted towards fiscal rules and institutions that could act as a counterweight against existing spending and deficit biases. The role of rules and institutions in influencing fiscal policy outcomes should therefore be seen in combination with the underlying political factors that cause the spending and deficit biases in the first place.<sup>8</sup> Focusing on *only* the political or the institutional variables as is common in existing empirical work should therefore cause a problem of omitted variable bias.

Much of the empirical work on the interaction of budgetary institutions and fiscal outcomes has used aggregate indices of budgetary institutions; many studies in this line of research have confirmed that aggregate indices of budgetary institutions matter during different sample periods and for different groups of countries (Von Hagen, 1992; Gleich, 2003; Yläoutinen, 2006). However, this approach is less suitable for our purposes for two reasons. First, our focus is on the role of *specific* political and institutional variables. Second, we concentrate on variables that may have an impact in *any* political set-up, and do not depend on the underlying political structure as in theories on political institutionalism. We focus on two variables that have figured prominently in the literature: fiscal rules and transparency.

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<sup>8</sup> At the extreme, in a model of a social planner there are no conflicts of interest between individual decision makers so that neither political variables, nor fiscal rules or institutions can play a useful role.

### *Fiscal rules*

Fiscal rules may have an impact on the budget balance given that they constrain the discretion of policy makers. The effectiveness of fiscal rules is however controversial given that the rules may distort budgetary behaviour towards non-constrained form of fiscal policy (Milesi-Ferretti, 2003) or may be less effective if independent enforcement is lacking.

The effectiveness of the rules may therefore depend on their institutional design (Kopits and Symanski, 1998). Deroose, Moulin and Wiertz (2006) test this hypothesis by building an index of the institutional ‘strength’ of expenditure rules. European Commission (2006a) extends their approach to all types of fiscal rules in EU Member States, and finds that the presence, coverage and design of fiscal rules all matter for explaining fiscal policy outcomes.

### *Transparency*

According to Alt and Lassen (2006) fiscal transparency may matter for fiscal outcomes given that with more transparency, incumbent governments have less of an incentive to feign competence by issuing debt. The main finding from their cross-sectional estimations is that, indeed, a higher degree of fiscal transparency is associated with lower public debt and deficits.

## **4 Empirical evidence**

We now turn to the empirical evidence as to why surpluses emerged in some countries but not in others, focusing on the role of economic, political and institutional variables. Our empirical analysis draws on a range of data sources from different institutions and authors (details on the sample period, sources and data availability are provided in Annex 2). We test three complementary hypotheses:

- (i) The *values* of the explanatory variables differ between deficits and surpluses. Based on the review in section 3, one may expect that surpluses coincide with, e.g., less political fragmentation and corruption, stronger fiscal rules, more transparency, etc. Section 4.1 discusses the empirical evidence along these lines.

- (ii) The *impact* of explanatory variables may differ for deficits and surpluses. According to this hypothesis, budgetary behaviour may differ between surplus and deficit countries (countries may respond differently to, e.g., the economic cycle or the degree of political fragmentation). To test this hypothesis, section 4.2 estimates fiscal reaction functions for the budget balance, while section 4.3 focuses on government expenditure.
- (iii) Surpluses may be due to countryspecific factors that are not covered by our explanatory variables. If, e.g., the presence of oil would explain the emergence of surpluses in Norway, then one would expect this effect to be reflected in the country fixed effect of fiscal reaction functions. See section 4.4.

A relevant issue is how to divide our sample into a surplus and a deficit group. In principle, there are two options. We can either select *countries* that have recorded surpluses or deficits over extended periods of time, or we can concentrate on the *periods* during which surpluses have been recorded. When grouping countries, we look at accumulated deficits, or government debt. In our baseline specification, we consider a country as ‘surplus’ if it is both among the 11 countries with lowest debt ratio in 2003, and among the 11 countries with the largest drop of the debt ratio between 1980 and 2003. If a country fails on both criteria, it is labelled ‘deficit’; if it fails on one, we consider it a doubtful case and therefore drop it from the sample.<sup>9</sup> Our alternative selection criterion labels the 11 countries with the lowest debt ratios in 2003 as surplus, and the other 11 as deficit.<sup>10</sup> When grouping periods, we take as alternative criteria the nominal, the cyclically-adjusted and the primary balance. When the budget is in surplus for at least 3 consecutive years, it is qualified as a surplus period. One and two years of surpluses are considered ‘coincidents’ and are dropped from the sample.

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<sup>9</sup> This yields the following division. Surplus countries are Australia, Denmark, Iceland, Ireland, Norway, New Zealand, Sweden, Switzerland, and the UK. ‘Deficit countries’ are Austria, Belgium, Canada, France, Germany, Greece, Italy, Japan and Portugal. Ambiguous cases excluded from the sample are Finland, Netherlands, Spain and the USA.

<sup>10</sup> This alternative criterion overlaps with the baseline criterion. In addition, the previously unclassified countries are now grouped as well: Spain and Finland are surplus countries, while the Netherlands and the USA are deficit countries.

Both countries and periods as the distinctive criterion have their pros and cons. The criterion based on surplus periods is closest to the idea of investigating what is different about surplus periods. However, the characteristics that establish surpluses do not necessarily coincide with the occurrence of actual surpluses. The ‘surplus characteristics’ we are looking for may already occur in the run-up to the actual surplus period. For example, one could argue that the USA started exhibiting surplus characteristics in the beginning of the 1990s. Actual surpluses did not occur until 1998. This illustrates that the run-up to a surplus can take a decade or longer. *During* surplus times on the other hand, a country may already be slowly gliding back into expansionary policy. To overcome the shortcomings of each indicator, and to check the robustness of our results, we use both countries and periods to group our sample.

#### **4.1 Surpluses and economic, political and institutional variables**

In order to test our first hypothesis of whether the values of our range of explanatory variables differ between surplus and deficit observations we use standard t-tests that are complemented with nonparametric ranksum tests given that our variables are not normally distributed. In interpreting the results of these tests, it should be kept in mind that they do not indicate a direction of causality, as they simply measure whether averages differ between groups of observations. Results are reported in Table 1 (distinguishing between surplus/deficit countries) and

Table 2 (focusing on periods, and reporting results for the nominal balance, the cyclically-adjusted balance and the primary balance). Overall, the tests confirm that economic, political and institutional variables all differ between surpluses and deficits, that these differences are mostly as theoretically predicted, and that they are statistically significant. We first discuss results that are fairly robust across different indicators and methods, and then discuss variables that show more mixed results.

The average debt ratio is much lower for surplus *countries*, which is a result of our grouping of countries based on debt ratios. The debt ratio is also lower for surplus *periods*, which suggests that surpluses are not primarily a reaction to high debt ratios. Turning to the results for political variables, it turns out that surplus countries are characterised by fewer spending ministers, a higher perception that corruption is under control, stronger expenditure rules and a higher degree of fiscal transparency. However, results for the institutional variables should be interpreted with care given the low number of observations available for these variables (see Annex 2; data on institutional variables generally lack a time dimension and are available for EU countries only).

Results for the output gap are statistically insignificant when focusing on surplus/deficit countries, but are significant for the distinction between surplus/deficit periods, with surpluses emerging in ‘good times’ (this results even holds for the cyclically-adjusted balance). Furthermore, surpluses are recorded by governments that are somewhat less rightwing<sup>11</sup>, while political stability also seems to matter according to some of our indicators of surpluses/deficits (especially when focusing on the primary balance: the average number of government changes per year is 0.5 for surplus periods and 0.6 for deficit periods).

In addition, we also investigated the variation over time of these variables, in order to see what changed by the end of the 1990s when surpluses were re-emerging. In this respect, the data show time variation in the economic and institutional variables, and much less variability in the political variables. At an aggregate level, the data indicate that by the end of the 1990s the output gap turned positive, interest rates had been on a declining trend for several years already, and an increase in fiscal rules and transparency took place. In order to investigate in detail why in some countries the upturn of the end of the 1990s translated into surpluses, while in others it did not, we now investigate how budgetary behaviour differs for surpluses and deficits.

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<sup>11</sup> See Annex 2 for the definition of the variable used for the ideological composition of the government.

**Table 1 Do economical, political and institutional variables differ between surplus and deficit countries?**

<i>Variables</i>	<i>Nominal balance (% GDP)</i>			
	<i>Mean (n=number of observations)</i>		<i>t-test for (1)=(2) (p-value)</i>	<i>Rank-sum test for (1)=(2) (p-value)</i>
	<i>Surplus (1)</i>	<i>Deficit (2)</i>		
<b><i>Economic variables</i></b>				
Debt (%GDP)	44.7 (n=312)	63.2 (n=344)	0.00***	0.00***
Output Gap	-0.48 (n=293)	-0.35 (n=315)	0.52	0.65
Rate long	8.5 (n=349)	8.1 (n=359)	0.26	0.10*
<b><i>Political variables</i></b>				
Number of spending ministers	13.9 (n=307)	17.9 (n=295)	0.00***	0.00***
Number of government changes per year	0.51 (n=396)	0.62 (n=372)	0.02**	0.13
Ideological Composition Government	2.6 (n=396)	2.2 (n=371)	0.00***	0.00***
Years left in current term	1.5 (n=270)	1.8 (n=268)	0.02**	0.02**
Control of corruption	2.2 (n=81)	1.4 (n=81)	0.00***	0.00***
<b><i>Institutional variables</i></b>				
Expenditure rules	6.2 (n=24)	3.3 (n=24)	0.00***	0.00***
Transparency according to Alt and Lassen (2006)	4.7 (n=45)	2.9 (n=35)	0.00***	0.02**
Transparency according to Hallerberg et al. (2001)	0.64 (n=100)	0.62 (n=175)	0.30	0.27

*Source:* Calculations by the authors based on the data sources mentioned in Annex 2.

*Note:* \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

**Table 2 Do economical political and institutional variables differ between surplus and deficit periods?**

Variables	Nominal balance (% GDP)				Cyclically-adjusted nominal balance (%GDP)				Primary balance (%GDP)			
	Mean, (n=number of observations)		t-test for (1)=(2) (p-value)	Rank-sum test for (1)=(2)	Mean, (n=number of observations)		t-test for (1)=(2) (p-value)	Rank-sum test for (1)=(2)	Mean, (n=number of observations)		t-test for (1)=(2) (p-value)	Rank-sum test for (1)=(2)
	Surplus (1)	Deficit (2)			Surplus (1)	Deficit (2)			Surplus (1)	Deficit (2)		
<b>Economic variables</b>												
Debt (%GDP)	37.8% GDP (n=182)	61.7% GDP (n=553)	0.00***	0.00***	47.9%GDP (n=124)	61.0% GDP (n=527)	0.00***	0.00***	56.5%GDP (n=356)	54.8%GDP (n=353)	0.44	0.92
Output Gap	0.82 (n=161)	-0.99 (n=529)	0.00***	0.00***	0.26 (n=124)	-0.68 (n=543)	0.00***	0.00***	0.26 (n=323)	-1.32 (n=343)	0.00***	0.00***
Rate long	7.4 (n=212)	8.9 (n=542)	0.00***	0.00***	7.3 (n=124)	9.0 (n=512)	0.00***	0.00***	7.5 (n=360)	9.5 (n=339)	0.00***	0.00***
<b>Political variables</b>												
Number of spending ministers	15.1 (n=154)	16.1 (n=508)	0.01***	0.08*	15.5 (n=112)	16.1 (n=507)	0.15	0.58	15.4 (n=305)	16.3 (n=329)	0.01**	0.01**
Number of government changes per year	0.53 (n=218)	0.54 (n=568)	0.87	0.99	0.43 (n=112)	0.53 (n=517)	0.099*	0.21	0.48 (n=358)	0.59 (n=365)	0.03**	0.06*
Ideological Composition	2.6 (n=218)	2.3 (n=567)	0.00***	0.00***	2.7(n=112)	2.4 (n=516)	0.14	0.16	2.5 (n=357)	2.3 (n=365)	0.06*	0.11
Years left in current term	1.5 (n=127)	1.6 (n=484)	0.37	0.51	1.45 (n=111)	1.64 (n=487)	0.12	0.21	1.6 (n=276)	1.6 (n=317)	0.85	0.90
Control of corruption	2.2 (n=69)	1.6 (n=122)	0.00***	0.00***	2.2 (n=68)	1.6 (n=125)	0.00***	0.00***	1.9 (n=149)	1.7 (n=45)	0.01**	0.00***
<b>Institutional variables</b>												
Expenditure rules	5.6 (n=20)	4.4 (n=37)	0.00***	0.00***	5.7 (n=26)	4.4 (n=37)	0.00***	0.00***	5.1 (n=46)	4.4 (n=17)	0.13	0.03**
Transparency according to Alt and Lassen (2006)	4.7 (n=49)	3.6 (n=44)	0.04**	0.13	5.0 (n=46)	3.4 (n=47)	0.00***	0.00***	4.4 (n=86)	2.1 (n=10)	0.06*	0.00***
Transparency according to Hallerberg et al. (2001)	0.79 (n=47)	0.66 (n=292)	0.00***	0.00***	0.79 (n=57)	0.66 (n=287)	0.00***	0.00***	0.71 (n=182)	0.64 (n=152)	0.00***	0.02**

Source: Calculations by the authors based on the data sources mentioned in Annex 2.

Note: \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

## 4.2 Surpluses and budgetary behaviour: evidence from fiscal reaction functions

We now turn to the question whether the *impact* of explanatory variables may differ for deficits and surpluses. Econometrically, this translates to the question whether the intercept and the coefficients of explanatory variables differ in an augmented fiscal reaction function. The baseline specification of the function is:

$$b_{i,t} = \alpha + x'_{i,t} \beta + z'_{i,t} \gamma + \eta_i + \varepsilon_{i,t}, \quad t=1, \dots, T, \quad i=1, \dots, N,$$

with  $t$  denoting time and  $i$  countries.  $b$  is the nominal balance as a share of GDP,  $x$  is a vector of standard explanatory variables (lagged dependent variable, output gap, lagged government debt ratio, lagged long term interest rate and dependency ratio),  $z$  is a vector of political and institutional explanatory variables and  $\eta$  represents the country fixed effects. We want to determine the coefficients  $\beta$  and  $\gamma$  by estimating the above equation for both deficit and surplus countries/periods. We do this by introducing a dummy  $D$  that takes the value 1 for surplus observations and is 0 otherwise. We can then combine the equations for deficits and surpluses by estimating the following single equation:<sup>12</sup>

$$b_{i,t} = \alpha_d + \alpha_s D_{i,t} + x'_{i,t} \beta_d + (Dx)'_{i,t} (\beta_s - \beta_d) + z'_{i,t} \gamma_d + (Dz)'_{i,t} (\gamma_s - \gamma_d) + \eta_i + \varepsilon_{i,t}, \quad t=1, \dots, T, \\ i=1, \dots, N,$$

with subscript  $d$  indicating the coefficient for deficit observations, and subscript  $s$  denoting surplus observations. For every variable, the coefficient  $\beta_d$  of the uninteracted variable can be interpreted as applicable to deficit observations, while for surpluses, the coefficients of the normal and interacted variables ( $\beta_d$  and  $\beta_s$ ) should be added up. Similar reasoning applies to the intercept  $\alpha$ .<sup>13</sup>

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<sup>12</sup> Econometrically, this is the same as estimating separate regressions for surplus and deficit observations.

<sup>13</sup> Note that separate intercepts  $\alpha_s$  and  $\alpha_d$  can only be calculated when using surplus *periods* as a criterion. When using *countries* as a criterion,  $\alpha_s$  cannot be estimated, as it is collinear with the country fixed effects. Any common differences in the intercept among surplus countries therefore show in the country fixed effects, which are discussed in section 4.4.

We estimate the reaction function using standard IV fixed effects, which is the method used in the majority of studies in this field.<sup>14</sup> Given that especially for the institutional variables insufficient observations were available, they could unfortunately not be included in the regression. Our sample covers the years 1975 to 2003. The first column of table Table 3 presents the baseline regression, with no distinction being made between surpluses and deficits. Column 2 introduces interaction variables, showing separate coefficients for deficit and surplus countries. A significant interaction coefficient indicates that the impact of the variable concerned differs between deficit and surplus countries. Column 3 shows the result with the primary balance as dependent variable. To test robustness for our baseline country selection criterion, we use our alternative criterion in column 4. Column 5 shows the results when distinguishing periods instead of countries.

The coefficients have the expected sign. Looking at the sample as a whole (column 1), the output gap is positively correlated with the nominal balance, reflecting the cyclical sensitivity of the budget.<sup>15</sup> The lagged debt ratio has a positive coefficient, in line with the intertemporal budget constraint. Distinguishing deficit and surplus countries (column 2), our main result is that differences in budgetary behaviour between surpluses and deficits are related to the ‘fundamentals’ of fiscal policy: the sustainability and stabilisation motives.

The lagged debt ratio turns out to be more important in surplus countries: the higher this ratio, the higher the budget balance. This suggests a stronger role of sustainability considerations in surplus countries. This result should not surprise us however, since the criterion used to select surplus countries is partly based on the debt development over time. When selecting surplus countries based only on the debt level at the end of the sample (column 4), this result is no longer significant.

It also turns out that the coefficient of the output gap is not significant in deficit countries. With full automatic stabilisation, we would expect a positive correlation between the output

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<sup>14</sup> As noted by Gáli and Perotti (2003) and the European Commission (2004b), this method would yield inconsistent estimates in a dynamic panel setup because of the lagged endogenous variable on the right-hand side. For sample sizes of about  $T=25$  and  $N=20$  as we have, the bias in the estimates of the other independent variables, on which we focus, is typically small. Moreover, Gáli and Perotti note that small sample properties of the consistent estimators that have been proposed in the literature are not well understood.

<sup>15</sup> The output gap is likely to be endogenous to contemporaneous budgetary policy. We therefore instrument it using its own lags and lagged real GDP growth rates.

gap and the (cyclically unadjusted) balance. Interestingly, for *surplus* countries, we do find this expected positive coefficient. This suggests that deficit countries tend to have procyclical fiscal policies, using budgetary room available in cyclical upturns and implementing fiscal austerity measures in downturns, while in surplus countries automatic stabilisers are allowed to operate more freely. The stabilisation motive thus appears more important in surplus countries. We do not find a difference in cyclical policy between surplus and deficit *periods* (column 5). This suggests that the importance of the stabilisation motive is a longer-term property of fiscal policy.

Finally, it should be noted that the *impact* of political variables does not differ significantly between surpluses and deficits (although, as shown in section 4.1, the *values* do differ).<sup>16</sup>

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<sup>16</sup> In addition, we included dummies for EU countries for the years 1993-1998, and 1999-2003, capturing the effects of EU fiscal rules and the Stability and Growth Pact. None of these dummies proved significant.

**Table 3 Does the impact of political and institutional variables differ between surpluses and deficits?**

	(1)	(2)	(3)	(4)	(5)
Dependent variable	Nominal balance	Nominal balance	Primary balance	Nominal balance	Nominal balance
Lagged dependent variable	0.74*** (0.044)	0.84*** (0.045)	0.81*** (0.044)	0.82*** (0.041)	0.66*** (0.034)
Output gap	0.21** (0.089)	-0.061 (0.078)	0.0073 (0.078)	0.0016 (0.068)	0.11** (0.049)
Lagged debt ratio	0.017** (0.0069)	0.0058 (0.0073)	0.015* (0.0076)	0.0093 (0.0068)	0.013*** (0.0049)
Lagged long interest rate	-0.047 (0.034)	-0.091** (0.045)	0.027 (0.044)	-0.076* (0.041)	-0.081*** (0.030)
Dependency ratio	-0.16** (0.069)	-0.063 (0.090)	-0.12 (0.089)	-0.043 (0.079)	-0.030 (0.058)
Years left in current term	0.063 (0.057)	0.13 (0.082)	0.11 (0.080)	0.12 (0.072)	0.094 (0.058)
Number of spending ministers	-0.088** (0.040)	-0.11*** (0.039)	-0.089** (0.038)	-0.11*** (0.038)	-0.10*** (0.031)
Surplus					0.44 (2.30)
Surplus*Lagged dependent variable		-0.18*** (0.065)	-0.16*** (0.063)	-0.18*** (0.059)	-0.12* (0.071)
Surplus*Output gap		0.35*** (0.11)	0.30*** (0.11)	0.30*** (0.087)	0.0064 (0.10)
Surplus*Lagged debt ratio		0.022* (0.012)	0.036*** (0.011)	0.011 (0.010)	-0.0073 (0.0093)
Surplus*Lagged long interest rate		0.0044 (0.066)	-0.061 (0.064)	-0.035 (0.059)	0.0065 (0.071)
Surplus*Dependency ratio		-0.22 (0.15)	-0.11 (0.15)	-0.14 (0.13)	0.0099 (0.068)
Surplus*Years left in current term		-0.13 (0.13)	-0.13 (0.12)	-0.047 (0.11)	-0.16 (0.14)
Surplus*Number of spending ministers		0.053 (0.082)	0.036 (0.081)	0.063 (0.073)	0.13** (0.052)
Surplus selection criterion	n.a.	Countries	Countries	Countries (alt)	Periods
Number of observations	435	426	425	531	522
Number of countries	18	18	18	22	22

*Source:* Calculations by the authors based on the data sources mentioned in Annex 2. *Notes:* Standard errors in parentheses. Other controls always included: Constant and country fixed effects. Output gap instrumented using lagged output gap and lagged real GDP growth. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

### 4.3 Surpluses and expenditure policy

The conjecture of a stronger cyclical response of the budget balance in surplus countries deserves closer examination. As procyclical policy is conducted mainly on the expenditure side of the budget (Alesina and Tabellini, 2005; European Commission, 2006b), we focus on spending. During cyclical upturns, revenues boom and the budget balance improves so that possibly a surplus emerges. These are the times when the budgetary framework of a country is

put to the test: can pressures to spend the inflowing money be resisted (so that a possibly a surplus is maintained), or does expenditure growth follow revenues? If our conjecture is correct, we would observe a stronger relationship between revenue and expenditure growth in deficit countries than in surplus countries. We therefore estimate the following equation:

$$g_{i,t} = \alpha_d + \alpha_s D_{i,t} + x'_{i,t} \beta_d + (Dx)'_{i,t} (\beta_s - \beta_d) + z'_{i,t} \gamma_d + (Dz)'_{i,t} (\gamma_s - \gamma_d) + \eta_i + \varepsilon_{i,t}, \quad t=1, \dots, T, \\ i=1, \dots, N,$$

with  $g$  denoting real growth of government expenditure,  $x$  a vector of standard explanatory variables (output gap, government revenue growth at different lags, lagged government debt ratio, lagged long term interest rate, and dependency ratio),  $z$  a vector of political and institutional explanatory variables, with subscript  $d$  indicating the coefficient for deficit observations, and subscript  $s$  denoting surplus observations. All real variables have been deflated using the GDP deflator. Results are presented in Table 4. When evaluating the undivided sample (column 1), expenditure and revenue growth are correlated. Splitting the sample (column 2) reveals an interesting difference. In *deficit* countries, expenditure growth co-moves with simultaneous revenue growth.<sup>17</sup> Interestingly, the coefficients of revenue growth and interacted revenue growth roughly cancel each other out. This means that in *surplus* countries, there is no clear co-movement between revenue and expenditure growth.<sup>18</sup> A second difference between deficit and surplus countries is the political budget cycle. Theory predicts accelerating expenditure growth over the government period. Indeed, the (ex ante) number of years left in the current term has a negative coefficient for *deficit* countries.

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<sup>17</sup> Simultaneous revenue growth may be endogenous and is therefore instrumented using the lagged output gap and lagged real GDP growth.

<sup>18</sup> The interacted coefficient of real government revenue growth is not significant. A Wald-test however does not reject the hypothesis that the coefficients of revenue growth and of interacted revenue growth add up to zero. As a robustness check, we have re-estimated the regression using a sample of only surplus countries. In that case, the coefficient of real government revenue growth is negative and insignificant. Moreover, column 3 shows that using our alternative country selection criterion, the interacted coefficient *is* significant. These findings corroborate the absence of (positive) co-movement of revenue and expenditure in surplus countries.

In *surplus* countries on the other hand, we find no evidence of a political budget cycle-effect related to the years left in office.<sup>19</sup>

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<sup>19</sup> In fact, the coefficients of the normal and interacted Years left in the current term (YRCURNT) more than cancel out. A Wald-test does not reject the hypothesis that the coefficients of YRCURNT and of YRCURNT times DUMSURP add up to zero. Alternatively, in a sample of surplus countries only, YRCURNT has a positive but insignificant coefficient.

**Table 4 The determinants of expenditure growth**

	(1)	(2)	(3)	(4)
Dependent variable	Real govt exp growth	Real govt exp growth	Real govt exp growth	Real govt exp growth
Real government revenue growth	0.22* (0.12)	0.38** (0.15)	0.33** (0.13)	0.19* (0.10)
Lagged real govt revenue growth	0.029 (0.047)	0.069 (0.069)	0.047 (0.060)	0.014 (0.046)
Two period lagged real govt revenue growth	0.10** (0.044)	0.072 (0.067)	0.093 (0.058)	0.088** (0.043)
Lagged debt ratio	-0.056*** (0.0080)	-0.039*** (0.011)	-0.042*** (0.010)	-0.064*** (0.0075)
Dependency	0.10 (0.12)	0.22 (0.18)	0.20 (0.15)	0.046 (0.11)
Years left in current term	-0.11 (0.12)	-0.35** (0.16)	-0.28** (0.14)	-0.13 (0.11)
Number of spending ministers	0.18*** (0.064)	0.22*** (0.076)	0.21*** (0.071)	0.17*** (0.060)
Surplus				-2.98 (4.61)
Surplus*Real government revenue growth		-0.37 (0.23)	-0.37** (0.19)	-0.40 (0.27)
Surplus*Lagged real govt revenue growth		-0.054 (0.095)	-0.019 (0.082)	0.11 (0.10)
Surplus*Two period lagged real govt revenue growth		0.066 (0.091)	0.069 (0.079)	0.19* (0.099)
Surplus*Lagged debt ratio		-0.047** (0.019)	-0.044*** (0.016)	0.00069 (0.016)
Surplus*Dependency		-0.095 (0.26)	-0.12 (0.22)	0.11 (0.13)
Surplus*Years left in current term		0.61** (0.25)	0.41* (0.22)	0.18 (0.27)
Surplus*Number of spending ministers		0.063 (0.16)	0.036 (0.14)	-0.076 (0.097)
Surplus selection criterion	n.a.	Countries	Countries (alt)	Periods
Method of estimation	LS FE	LS FE	LS FE	LS FE
Number of observations	456	456	561	551
Number of countries	18	18	22	22

*Source:* Calculations by the authors based on the data sources mentioned in Annex 2. *Notes:* Standard errors in parentheses. Other controls always included: Constant and country fixed effects. Real government revenue growth instrumented using lagged output gap and real GDP growth. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

#### 4.4 Surpluses and countryspecific factors

In the previous sections, we have shown that both the value and the impact of some explanatory variables indeed differ between surpluses and deficits. In addition, it may be that surpluses can be explained by countryspecific factors that are not covered by our variables. We investigate this by looking at the dispersion of the country fixed effects (CFEs) within the group of surplus countries that result from the regressions of section 4.2. The CFEs capture remaining country-specific variation that is constant over time. An F-test formally investigates the null-hypothesis that fixed effects are equal for all surplus countries (Greene, 2003).

Results as reported in Table 5 (upper two lines) strongly reject the hypothesis of equality for both our selections of surplus countries. This suggests that in addition to different values and coefficients of the variables in our regressions, there countryspecific factors at play. Upon closer examination, two countries have clearly different CFEs: Finland and Norway. For Finland this may be due to the public sector pension fund within the public sector, while public finances in Norway benefit from oil revenues. Leaving out these two countries, CFEs do not differ significantly anymore (Table 5, lower two lines).

**Table 5 F-test that all CFEs are the same**

<i>Selection criterion</i>	<i>Countries</i>	<i>p-value</i>
Countries, baseline	9	0.00
Countries, alternative	11	0.00
Countries, baseline excluding NOR	8	0.16
Countries, alternative excluding FIN and NOR	9	0.32

*Source:* Calculations by the authors based on the regressions with interaction variables, columns 2 and 4 of table 4.

## 5 Findings and policy implications

In this paper, we have investigated why surpluses emerged in some countries but not in others. In investigating how an increasing number of countries have succeeded in overcoming the fiscal deficit bias, we have focused on the role of a wide range of economic, political and institutional variables that have been highlighted in the literature. Three complementary hypotheses have been formulated, asking (i) whether the *level* of explanatory variables is

different for surpluses and deficits; (ii) whether the *impact* of explanatory variables differs for surpluses and deficits, and (iii) whether *country-specific* factors play a role in explaining why some countries have recorded surpluses while others have not. Results confirm the relevance of all three hypotheses. Concerning the *level* of our explanatory variables, results show that surpluses coincided with fewer spending ministers, a high perception that corruption is under control, stronger expenditure rules and more transparent fiscal policies. Regarding the *impact* of explanatory variables, we find that revenue fluctuations lead to a procyclical response in spending in deficit countries whereas this effect is absent in surplus countries. Moreover, the political budget cycle seems present in deficit countries but not in surplus countries. With respect to *country-specific* factors, results show that not all the differences in budgetary outcomes between countries can be explained by the explanatory variables that we have included in our estimations.

Overall, our paper shows that cross-country differences in the values of political and institutional variables coincide with fundamental differences in budgetary behaviour. As a possible avenue for future research, more insight in the underlying mechanisms that drive these differences would be welcome. Finally, results as presented in Annex 1 show that cross country differences in expected expenditure pressures due to ageing populations cannot explain why surpluses emerged in some countries but not in others. Therefore, the current policy discussion on the perceived need to move towards budgetary surpluses in many countries may need to include the underlying political-institutional setting in which the advice needs to be implemented.

## Annex 1. Surpluses and future expenditure pressures

Our quest for the surplus factor (why surpluses re-emerged in some countries but not in others) has been motivated by the strong emphasis on budgetary surpluses in the context of discussions on the long-term sustainability of public finances. We therefore develop a simple benchmark model of a social planner that may help to explain the emphasis by policy makers on surpluses at the current juncture and test its empirical implication.

### A1.1 A simple benchmark model

Long-term sustainability assessments, as those produced by the European Commission, typically contain a time horizon up to 2050, so that the planning horizon in our model should not be infinite. We capture this element by including two periods. During the first period, expenditure pressures are not yet materialising, while during the second period target expenditure increases due to the effects of ageing. We use the basic set-up of the model from Von Hagen and Harden (1994) and Milesi-Ferretti (2003) and add the element of future increases in public expenditure due to the costs of ageing.

In the two-period model, the government minimises a convex loss function that is increasing in the level of taxation  $T$  and in deviations of spending  $G$  from its desired level  $G^*$ . In order to limit the model to the essential features, it is assumed that the government does not discount the future so that the real interest rate equals zero. The crucial variable here is  $\alpha$  that reflects the increase in target expenditure in the second period (e.g. due to an increase in the number of pensioners and in health expenditure). The case where  $\alpha > 1$  reflects increasing expenditure in the second period:

$$L(FA) = \frac{1}{2}(G_1 - G^*)^2 + \frac{1}{2}T_1^2 + \frac{1}{2}(G_2 - \alpha G^*)^2 + \frac{1}{2}T_2^2 \quad (1)$$

The government minimises this loss function subject to the budget constraint  $G_1 + G_2 = T_1 + T_2$ . Furthermore, it is assumed that the government wants to smooth taxes, so that  $T_1 = T_2 = \left(\frac{G_1 + G_2}{2}\right)$ . Substituting this expression into the loss function gives:

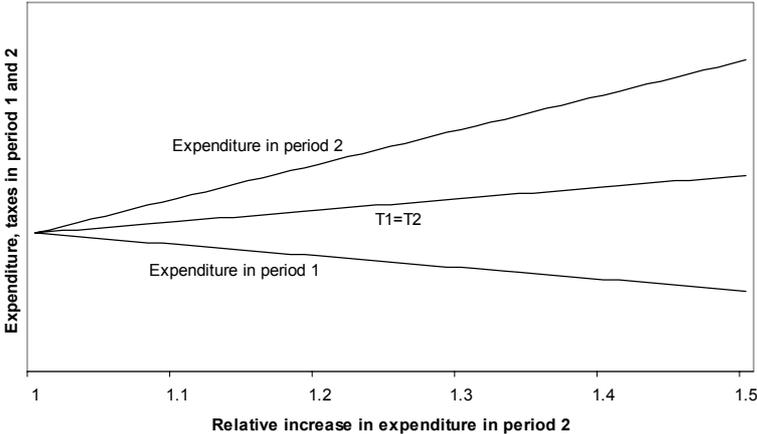
$$L(FA) = \frac{1}{2}(G_1 - G^*)^2 + \frac{1}{2}(G_2 - \alpha G^*)^2 + \left(\frac{G_1 + G_2}{2}\right)^2 \quad (2)$$

Minimising with respect to  $G_1$  and  $G_2$  and simultaneously setting the derivatives to zero gives the solutions for  $G_1$ ,  $G_2$  and  $T$ :

$$G_1 = \left(\frac{3-\alpha}{4}\right)G^*; G_2 = \left(\frac{3\alpha-1}{4}\right)G^*; T = \left(\frac{1+\alpha}{4}\right)G^*. \tag{3}$$

The main implication of the model is shown in Figure 2 that plots expenditure and taxation in both periods as a function of  $\alpha$ . If  $\alpha=1$  (i.e. target expenditure in period 1 equals target expenditure in period 2), the government runs a balanced budget in both periods. Higher future expenditure pressures ( $\alpha>1$ ), on the other hand, imply a higher budgetary surplus in period 1 (as measured by the difference between expenditure in period 1 and the constant level of taxation), a higher deficit in period 2, and a higher overall level of taxation in both periods.

**Figure 2. Expenditure and taxes as a function of future expenditures**



**A1.2 Evidence for EU countries**

The implication of this normative model is that surpluses should be higher in countries with stronger future expenditure pressures from ageing populations. This hypothesis can be tested for EU countries by using data on expenditure pressures from (Economic Policy Committee, 2001) for the period 2000-2005.

Results on the basis of standard t-tests and nonparametric ranksum tests are reported in Table 6, while using different indicators of surpluses (i.e. the nominal balance, the primary

balance and the cyclically-adjusted balance).<sup>20,21</sup> Results show that average expenditure pressures are actually *lower* for countries and periods where surpluses were recorded, but the difference is not statistically significant. In order to account for differences in initial positions between countries, such as debt levels and budgetary strategies, Figure 3 also shows the correlation between Required Primary Surpluses as calculated by European Commission (2004, 2005) as part of its sustainability assessments and actual primary surpluses. The Figure confirms that there is no correlation between the perceived need to run surpluses in different countries and the occurrence of surpluses in actual policies. Hence, there are no indications that, by itself, increasing awareness on the perceived need to move towards surpluses can explain why some EU countries have moved towards budgetary surpluses while others have not.<sup>22</sup>

**Table 6 Are future spending pressures higher for surplus countries?**

Variables	Nominal balance (% GDP)			Cyclically-adjusted nominal balance (%GDP)			Primary balance (%GDP)					
	Mean, (n=number of observations) Surplus (2)	Deficit (1)	t-test for (1)=(2) (p-value)	Rank-sum test for (1)=(2) (p-value)	Mean, (n=number of observations) Surplus (2)	Deficit (1)	t-test for (1)=(2) (p-value)	Rank-sum test for (1)=(2) (p-value)	Mean, (n=number of observations) Surplus (2)	Deficit (1)	t-test for (1)=(2) (p-value)	Rank-sum test for (1)=(2) (p-value)
Future increase in ageing-rel. exp. (2000-2005)	4.5% GDP (n=19)	5.3% GDP (n=55)	0.65	0.60	4.5% GDP (n=25)	5.3% GDP (n=56)	0.16	0.76	5.1% GDP (n=56)	5.1% GDP (n=24)	0.95	0.56

Source: see annex 2

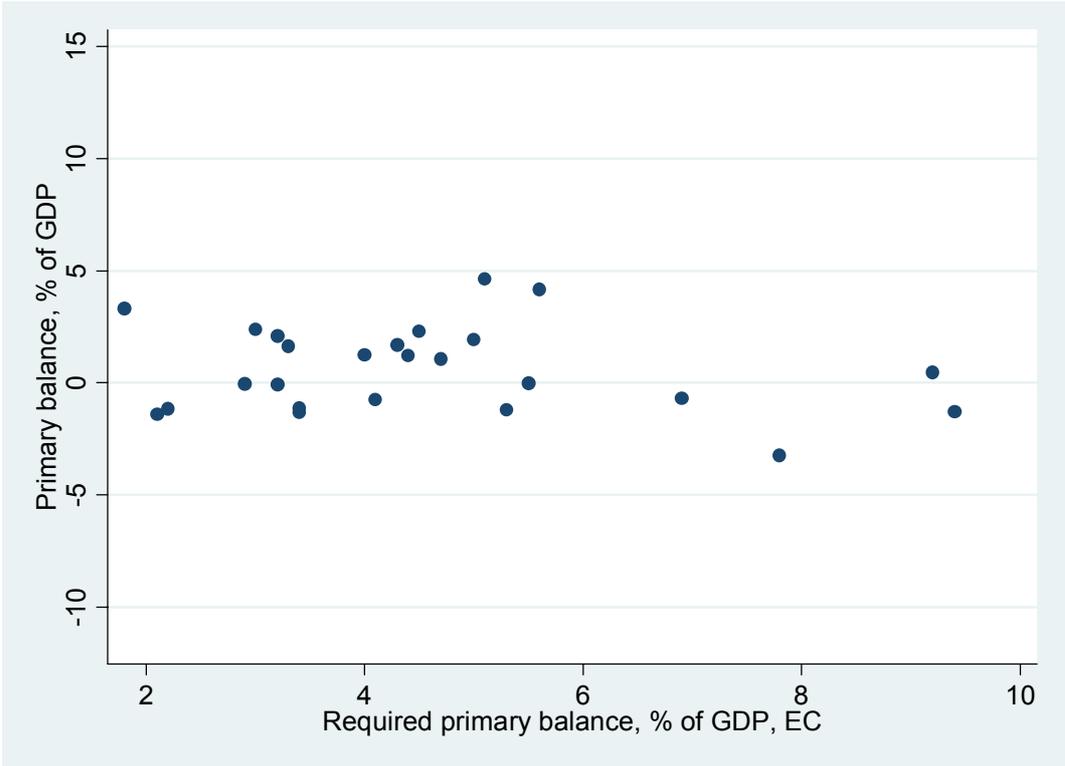
Notes: data restricted to last decade.

20 Standard tests rejected the assumption of normally disturbed variables; therefore results from the t-tests are complemented with results from nonparametric ranksum tests.

21 Ranksum tests the hypothesis that two independent samples (i.e., unmatched data) are from populations with the same distribution using the Wilcoxon rank-sum test, which is also known as the Mann-Whitney two-sample statistic.

22 In addition, we also included indicators of future expenditure pressures and required primary surpluses in the fiscal reaction functions as presented in Section 4.2. Results confirm that the impact is not statistically significant.

**Figure 3 Required Primary Balance (EC) and actual Primary Balance**



Source: Required Primary Balance is taken from European Commission (2004a) and (2005); Primary balance: OECD Economic Outlook. Note: data are for 2004 and 2005.

**Annex 2. Data sources**

Data on budgetary and economic variables are taken from the OECD Economic Outlook database. Our sample covers the years 1970 until 2005 and includes the following countries: Australia (AUS), Austria (AUT), Belgium (BEL), Canada (CAN), Switzerland (CHE), Germany (GER), Denmark (DNK), Spain (ESP), Finland (FIN), France (FRA), United Kingdom (GBR), Greece (GRC), Ireland (IRL), Iceland (ISL), Italy (ITA), Japan (JPN), Netherlands (NLD), Norway (NOR), New Zealand (NZL), Portugal (PRT), Sweden (SWE), United States (USA).

Institutional variables are from a range of sources as indicated in Table 7. As can be seen, data availability is limited for the institutional variables, especially concerning the variation over time. As a consequence, these variables could not be included in panel regressions over longer periods.

**Table 7 Political and institutional variables: data availability and sources**

Variable	Do data vary both across countries and over years?	Data availability	Source
NSM: Number of spending ministers	Yes	All countries in sample, 1970-2003, but shorter period for ESP (1977-2003), GRC (1975-2003), ISL (1980-2003) and PRT (1977-2003)	Mierau et al. (2006), except for ISL and CHE: 1980-1998, own calculations based on Woldendorp et al. (2000) and 1999-2004: own calculations based on various editions of Yearbook of European Journal of Political Research. Data for
GOVCHAN: Number of government changes per year	Yes	All countries in sample 1970-2003, but shorter period for ESP (1977-2003), GRC (1974-2003) and PRT (1976-2003)	Armingeon et al (2005)
ICG: Cabinet composition (Schmidt-Index): (1) hegemony of rightwing parties (gov_left=0), (2) dominance of rightwing (and centre) parties (gov_left<33.3), (3) patt between left and right (33.3<gov_left<66.6), (4) dominance of socialdemocratic and other left parties (gov_left>66.6), (5) hegemony of socialdemocratic and other left parties (gov_left=100).	Yes	All countries in sample 1970-2003, but shorter period for ESP (1977-2003), GRC (1974-2003) and PRT (1976-2003)	Armingeon et al. (2005)
ELECT: Dummy; 1 if elections in SECOND half of year t OR FIRST half of t+1.	Yes	All countries in sample 1970-2003	Own calculations based on Armingeon et al. (2005)
YRCURNT: Years left in current term (only full years are counted. Thus, a "0" is scored in an election year, and n-1 in the year after an election, where n=length of term).	Yes	All countries in sample, 1975-2004, but shorter period for ESP (1978-2004), FIN (1976-2004), ITA (1976-2004) and PRT (1976-2004)	Beck et al. (2001)
CORRCONTR: Control of corruption, measuring the exercise of public power for private gain.	Yes	All countries in sample, 1996-2004	Kaufman et al. (2005)
EXPRULE: Index measuring the strength of the design of the expenditure rule.	No time variability	Data available for GER, DNK, FIN, FRA, GBR, GRC, NLD and SWE, 1998-2005(	Deroose et al. (2006)
TRANSPAL: composite index based on OECD survey.	No time variability	All countries in sample except ESP, GRC and PRT. Data for year 1999; assumed coverage is 1997-2001.	Alt and Lassen (2006)
TRANSPH: index number for EU Countries	Time variability consists of two observations (1991 and 2001)	Data available for AUT, BEL, GER, DNK, ESP, FIN, FRA, GBR, GRC, IRL, ITA, NLD, PRT, SWE. Assumed coverage is 1980-2004	Von Hagen (1992) and Hallerberg et al. (2001)

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

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## Abstract

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

JEL Classification: H11, H61, H62

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

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## 1. Introduction

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

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

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

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

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

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

## **2. Fiscal governance: Types and choices**

### *2.1. Types of fiscal governance*

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

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

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

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

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

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

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

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

## *2.2. Political determinants of the type of fiscal governance*

The existence of two institutional approaches, delegation and contracts, raises the question which one is more appropriate to address the externality problem of the budget process in a given country. Hallerberg and von Hagen (1999) argue that each approach is suitable for a particular type of government. Delegation is the proper approach for single-party governments, while contracts is the proper approach for coalition governments. In this paper, we extend their argument and focus on the ideological distance and level of political competition among the parties that formulate the budget in government and pass it in parliament. We assume that ideological distance and political competition is zero or small between members of the same party. Between parties, both of these measures can be small or large. This leads to the following proposition: delegation is the proper approach for governments where the ideological distance and political competition among budget decision-makers is small. Contracts is most appropriate when either distance or political competition is large.

A first reason for our classification concerns under what circumstances political parties will agree to delegate effective power to a finance minister. Such a minister necessarily comes from one of the coalition parties, and vesting him with special authorities raises concerns among the other parties about a fair treatment of their spending preferences in the budget process. These concerns are likely to increase with increasing ideological dispersion of the government and

increasing competition among the parties in coalition for votes. Furthermore, enforcement of the finance minister's budget proposal under the delegation approach ultimately depends on the ability of the head of the executive to remove recalcitrant spending ministers from office. This power may exist in single-party governments, where the hierarchy in cabinet conforms to the hierarchy of party power structures. It may also exist in coalitions of closely aligned partners that cannot continue in power without each other, such as the coalitions common in Germany and France and, for an extended period of time, in Austria. But this power does not usually exist in multi-party coalition governments where alternative coalitions are possible and the right to nominate candidates for (and remove them from) specific posts belongs to individual coalition parties.

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

The preceding discussion focuses on decision-making within cabinet and implicitly assumes that passage of the budget is then more or less automatic through parliament. While this may be reasonable for majority governments in West European parliamentary democracies, there have been several minority governments in these countries as well. Can the analysis be extended to minority cases? The question to ask is, what is the ideological distance among parties needed to pass the annual budget, and will those parties likely compete for votes in future elections? In practice, the distance is often large, but even more crucially almost by definition the parties will be competing with one another for votes in the next elections. and This indicates that fiscal contracts are most appropriate provide the needed centralization of the budget process. The only difference with the majority case is that the "contract" is agreed to

between one or more opposition parties and the government rather than among only the coalition partners, as is done today in Denmark and in Sweden.

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

Party constellations in parliament and government that affect the choice of fiscal governance are, in turn, closely linked to the electoral system. One important feature of electoral systems is the number of parties that win seats in parliament. If there are few parties, there is a higher chance that one party can win an absolute majority, and an absolute majority is a virtual certainty in two-party systems. Several studies indicate that the number of parties in a given system is strongly and positively correlated with the number of representatives elected from each electoral district, known as district magnitude (Duverger 1954, Taagepera and Shugart 1989, 1993). Electoral systems with low district magnitudes distribute seats less proportionally than those with large district magnitudes, and lower proportionality usually favours larger parties. Plurality systems, which elect only one representative per district, encourage two-party systems, and they are consequently most likely to have one-party majority governments. Proportional representation (PR) electoral systems have more variation in their district magnitudes, though the magnitudes are always larger than those found in plurality systems. PR systems tend to result in more parties in parliament and multiparty majority or either one-party or multi-party minority governments. Other factors that affect the number of parties represented in parliament include minimum-vote thresholds requiring to gain a certain percentage of the national vote for a party to win any legislative seats, the method used to apportion seats, and whether or not a second allocation of seats is used to reduce disparities at the district level.

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

political cleavages in the party system, become more important. Belgium and Italy (before 1996) have the maximum average number of parties in government in our sample with 4.5 and 4.2, respectively.

Our second indicator, the change in coalition of ruling parties as a share of the total number of new governments, is an indicator of the competitiveness of the electoral and government formation process. There are different reasons for the termination of governments, elections being the most important one. However, the government formation process may not be very competitive if there are clearly established party blocks and parties continue in power for decades. Conversely, coalition governments may frequently reshuffle and the government formation process may be relatively uncertain ex-ante. The data indicate that there is not a perfect relationship between the number of parties in government and the competitiveness of the government formation process. For example, Belgium has a large number of parties in government and a relatively competitive process. By comparison, governing coalitions in Italy are large, but also fairly stable during the 1980s to the mid-1990s. In Ireland, there are a small number of parties in government, but these change rather frequently after the end of a term or the breakdown of a coalition. The fifth column then shows the ideological range of a governing coalition. This and the previous indicators are taken from Tsebelis' dataset on veto players.<sup>3</sup> The ideological indicator captures the classic left-right dimension.

The sixth column presents a proxy for political competition among parties that reach government. Nadenichek Golder (2005) provides data on the frequency with which pre-electoral pacts are common among political parties running for office. The idea is that, if there are regular pacts among parties, political competition is low between them (although it remains high, of course, with their opponents). In Germany, for example, there were electoral pacts in 13 of the 14 elections held in the post-war period through 1998. This meant that a voter generally knew which government would form if the parties making the pact won the election. This also means that the parties in government have a stake in having the whole government succeed in fiscal matters. It is easier in this case to delegate powers to a strong finance minister. In contrast, in a country like Finland pre-electoral pacts are rare events. The shape of a coalition is first discernable after an election. Parties have every incentive to differentiate themselves from one another to voters. Delegating powers to a strong finance minister is not in the interest of the coalition partners.

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<sup>3</sup> See Table A1 in the appendix for details.

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

To follow the patterns of ideological distance over time, Graph 1 presents the scores by country over the twenty-year period, and we use this information and the information on party competition to make predictions about the appropriate form of fiscal governance. One observes three sets of cases based on the relative stability of the scores. Following closely the aggregate results, the first category includes states with stable ideological distance. Germany and the United Kingdom have zero or almost zero the entire time while Greece and Spain have with distance usually at zero with a short interruption.<sup>4</sup> Germany and Spain always have pre-electoral pacts, so the shape of future governments is generally clear. France is a somewhat tougher call; it has a small average score but also periods where the scores are notably above zero. Given the emergence of two clear ideological blocks that face one another in elections, however, which is indicated with the prevalence of pre-electoral pacts, France belongs in the same category. Similarly, other countries have stable distances that generally score around .2 or above that remain above this threshold or that bounce only once below it (Belgium, Denmark, Finland, Luxembourg, Netherlands).<sup>5</sup> These are all “high” ideological distance states. The second group are countries seem to predict one type of governance in a given, defined period but another type of governance in the remaining period. Italy has a clear break from 1996 on, with a distance at zero, while it has a fairly large ideological spread in the first period. The country is therefore coded a small ideological distance country from 1997 onwards. Similarly, Portugal begins the period with a score near zero, but the score increases in the mid-1990s. It has again dropped to zero after the 2005 elections (not shown on this particular graph). Given that one of the reasons for the higher score was a minority government that missed majority status by just one vote, it seems reasonable the country continue to be coded small for the

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

entire period. Austria has a large distance through 2000, then a small distance. It is coded accordingly. The final set of countries has scores that bounce around. Ireland move down and up and down, with some stability at the end. It has a large score through 1997 and a small score thereafter. Correspondingly, it is coded a small distance state from 1998 onwards. For Sweden, the only period with the distance at zero is at the very beginning. It is therefore considered a large distance state. Once these scores are computed, they suggest clear predictions about the most effective form of fiscal governance over the entire period—delegation-type fiscal rules are most appropriate for small score states while contract-type fiscal rules are most appropriate for large score states.

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

##### *4.1. Methodology and data*

In this section, we operationalise and describe the two elements contributing to the centralisation of budgetary institutions. The first is the degree of delegation in budgetary procedures prevailing in the EU member states, while the second is the stringency of fiscal targets, which captures the medium-term oriented budgetary targets characterising the contracts approach. Table 2 lists several institutional features that capture the degree of delegation in the budget process. Delegation in the budget formulation stage is stronger the more encompassing the budgetary constraint set at the beginning of the process, the more agenda-setting power is given to the minister of finance in the budgetary planning, the broader the scope of the budget norms the minister can set for budget negotiations, and the more centralised the structure of negotiations. The budget negotiations in parliament are the more constrained the less scope is given to amendments, the higher the costs of a failure to pass the budget imposing discipline on legislators, and the less room for log-rolling is given by the voting procedure. The degree of flexibility or control during the budget execution is determined by the authority of the minister of finance to block expenditures, the existence of cash limits, the need for an disbursement approval from the minister of finance or a controller, the scope of budgetary transfers, the institutional barriers to changes of the budget law during the implementation phase and the strictness of carry-over regulations.

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

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

We collected data on these fiscal institutions in EU member states in three rounds of expert surveys conducted in 1991, 2001 and 2004.<sup>6</sup> The detailed results of the earlier surveys are published in von Hagen (1992) and Hallerberg et al. (2001). The surveys in 2001 and 2004 were deliberately designed to provide an update of the earlier information and to explore the characteristics of additional institutional items in EU member states. We sent the surveys to several experts in each country belonging to the ministry of finance, the parliament and the central bank. We complemented these data with documentary analysis and in-depth interviews in member country seats of government.<sup>7</sup> Based on these sources, we have comparative evidence on the 19 institutional items specified in Table 2 from 1985 onwards.

To make the data usable for quantitative analysis, we operationalise and code fiscal rules according to their stringency and also budgetary processes according to the degree of delegation. Each institutional item ranges from 0 to 4.<sup>8</sup> The coding scheme and the scores of individual institutions are provided in earlier publications and a web annex to this paper.

Since our theory predicts that individual institutions of the budgeting process interact and that their choice is not random across countries, we aggregate the individual scores to an index of delegation inherent in the budgeting process and an index for the stringency of fiscal rules. For this purpose, we use the simple average of scores belonging to the multi-annual targets (see Table 2), rescaled to a range between 0 and 1, as our rules index. For the degree of delegation in the budget process, we normalise the aggregate sum of institutional items characterising the different stages (budget negotiations (*BN*), budget approval (*BA*) and budget implementation (*BI*)) and then add up the indices of the three stages using equal weights  $w$  of 1/12 to an aggregate score:

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

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

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

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

Thus the aggregate index again ranges from 0 to 1. Adding up institutional items assumes that the individual institutional elements are substitutes. In contrast, a multiplicative combination of the items would capture a complementary relationship. The ranking of aggregate institutional indices is rather robust to variations in the weighting of institutional scores or the aggregation mode<sup>9</sup>, which allows us to conduct our analysis with a single delegation index for the budgetary procedures. The index for fiscal targets is the simple average of the individual scores of the institutional characteristics (refer to Table 2).

#### *4.2. Institutional changes in the 1990s*

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

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

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

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

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

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

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

Overall, the stringency of budget rules has increased and the fragmentation of budgetary procedures diminished. The main development that can be detected for EU member states in

this respect is that several countries, which previously had rather fragmented budgetary processes, now have raised the degree of delegation inherent in the budget process. This is the direction of institutional reform that our analytical framework would suggest regarding the appropriate form of governance in these countries.

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

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

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

### *5.1. Econometric model*

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

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

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

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

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

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

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

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

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

*H1: More delegation in the budget process contributes to lower growth of public debt in states with small ideological distance and low political competition but not in states with high ideological distance and high political competition among coalition partners.*

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

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

*H2: More stringent fiscal targets reduce the growth of public debt in states with large ideological distance and high political competition but not in states with low ideological distance and low political competition.*

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

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

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

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

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

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

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

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<sup>15</sup> The command is `xtpcse` in Stata 9.2.

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

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

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

## 5.2. *Empirical results*

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

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

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

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

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

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

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

## 6. Summary

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

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

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

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

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

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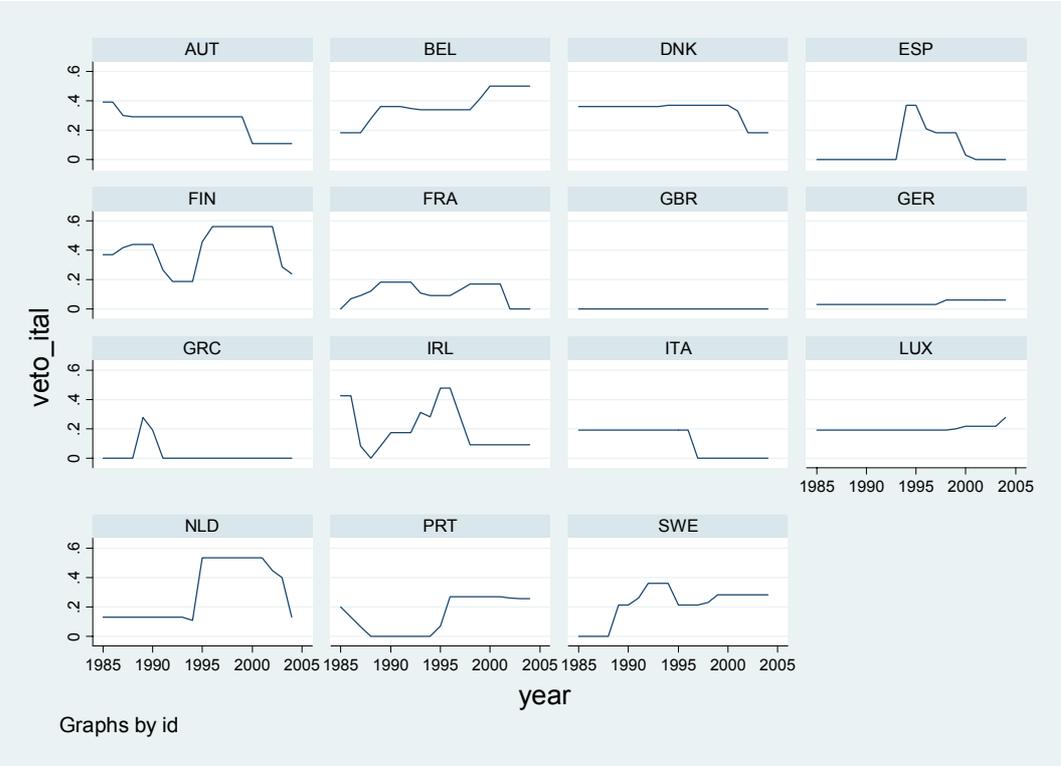
## Annex – Tables and Graphs

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

	Electoral System	District Magnitude	Average No of Parties	Change in Coalition or Ruling Party	Mean Ideological Range	Ideological Range Small or Large	Frequency of Pre-Electoral Pacts	Predicted Form of Governance
Austria	2-tier PR	20/91	1.9	37.5	0.26	L 84-99, S 00-	0.71	C 84-99, D 00-
Belgium	PR	23	4.5	63.6	0.36	L	0.59	C
Denmark	2-tier PR	7/175	2.5	60.0	0.34	L	0.33	C
Finland	PR	13	3.9	66.7	0.41	L	0.14	C
France	Plurality	1	1.6	53.8	0.11	S	0.71	D
Germany	2-tier PR	1/603	1.9	30.0	0.04	S	0.93	D
United Kingdom	Plurality	1	1.0	20.0	0.00	S		D
Greece	reinforced PR	6	1.0	42.8	0.02	S	0.14	D
Ireland	STV	4	1.8	77.8	0.20	L 85-97, S 98-	0.50	C 85-97, D 98-
Italy	2-tier PR	19/625	4.2	23.5	0.13	L 85-96, S 97-	0.31	C 85-96, D 97-
Luxembourg	PR	14	2.0	40.0	0.20	L	0.33	C
Netherlands	PR	150	2.4	71.4	0.30	L	0.38	C
Portugal	PR	12	1.7	18.2	0.14	S	0.78	D
Spain	PR	6	1.0	28.6	0.07	S	1.00	D
Sweden	2-tier PR	11/350	1.5	40.0	0.22	L	0.41	C

Note: Data for electoral systems and district magnitude are taken from Hallerberg and von Hagen (1999). The data were updated where necessary. Other data are own calculations based on data provided by Georges Tsebelis (see Table A1 for details). A two-tiered electoral system is one where an upper level of seats is used to fill in the results at a lower level to make the overall distribution of seats more proportional; in Denmark, for example, there are seven seats per electoral district on average but there are 175 seats used to fill in the results so that the proportion of seats a party wins matches more closely the proportion of votes it receives. In all 2 tier systems, the district magnitude lists first the number of seats per district at the lower level then the number of seats in the upper level. The average number of parties in government and changes in the coalition or ruling party include data until 1995 for Italy and exclude three short-term caretaker governments in Greece (1989-90). The mean ideological range is computed for the years 1985 to 2004 to match the years in the empirical results below. They are calculated according to Tsebelis (2002) and normalized to be on a scale between 0 and 1. A score of 0 means that there are no ideological differences among the party(ies) in government. Abbreviations in the last column indicate whether the ideological scores are considered Small or Large based on the average ideological range and on the overall pattern displayed in Graph 1. The data on the frequency of electoral pacts is for the period 1945-98, and it comes from Nadenichek Golder (2005).

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

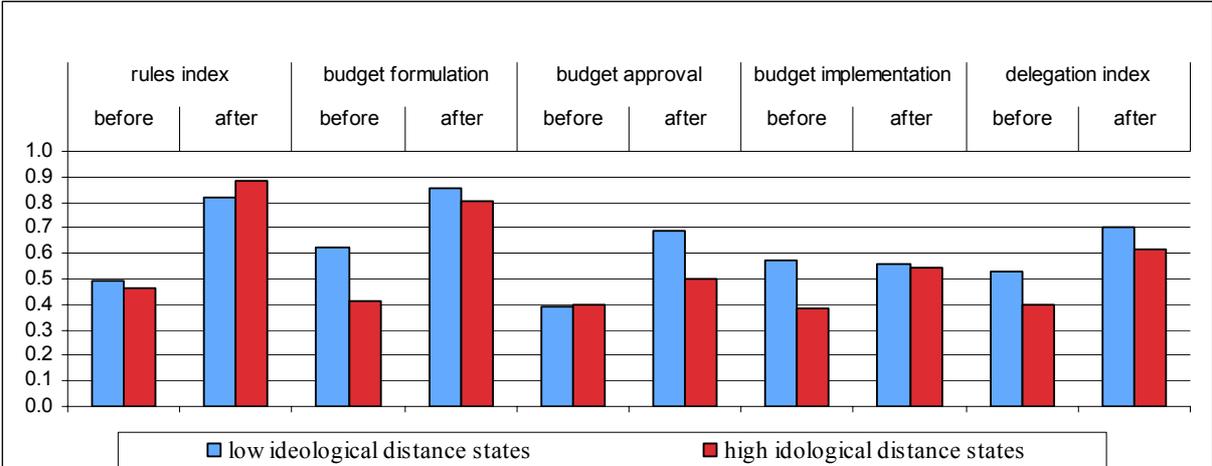


Source: Own computation based on <http://www.polisci.ucla.edu/tsebelis/> and updated through 2004. The y axis has values for the standardised veto player distance, which range theoretically from 0 to 1.

**Table 2: Institutional Items**

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

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



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

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

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

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

**Table 4: The Impact of Budgetary Institutions on Public Debt**

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

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

**Table 5: The Impact of Budgetary Institutions on Public Debt**

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

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

## Annex

**Table A1: Variables – Definitions and Data Sources**

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

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

Note:  $\Delta$  is the first difference operator.

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## Annex:

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

#### Annex I. Specification Issues

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

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

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

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

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

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

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

## Annex II. Institutional Data – Coding Scheme and Scores

**Table A1: Coding Scheme for Budgetary Institutions**

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

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

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

Note: Figures represent scores according to the coding scheme presented in Table A2. Values in brackets indicate that institutions were modified after 2001. Abbreviations indicate the following items in the years 1991 and 2001 respectively: Gen\_Con (general constraint), Ag\_Set (agenda setting of minister of finance), B\_Norm (budget norms), Str\_Neg (structure of negotiations)

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

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

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

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

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

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

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

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

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

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

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

# **National Fiscal Governance and the Stability and Growth Pact: Are ‘delegation’ states at a disadvantage?**

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## **ABSTRACT**

Political institutionalism suggests that countries that tend to elect single party majorities or ideologically similar coalitions prefer to delegate authority over the government budget to a strong Finance Minister. In contrast, countries that tend to elect ideologically diverse coalitions usually choose commitment devices that bind the parties in power to a prudent course of fiscal action. A recurring argument in the political institutionalist literature is that delegation states have been less compliant with the Stability and Growth Pact (SGP) in recent years compared with commitment states because the former are less accustomed than the latter to the rules-based approach to fiscal governance underpinning Economic and Monetary Union.

This paper recognises the important contribution of political institutionalism to the political-economy literature but takes issue with its critique of the SGP on three counts. Firstly, not all delegation states have posted excessive deficits in recent years and both commitment and delegation states have failed to comply fully with the medium-term rules of the SGP. Secondly, not all delegation states have a well-formed system of delegation in place, which suggests that the source of fiscal profligacy in some of these cases may have been national rather than European in origin. Thirdly, delegation states are increasingly turning to numerical fiscal rules in their pursuit of budgetary discipline.

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## 1. INTRODUCTION

A recurring theme in contemporary studies of fiscal policy is that institutions matter. The point of departure for this analysis is the empirical observation that sustained increases in government budget deficits and public debt in OECD countries during the 1970s cannot be fully explained by traditional tax smoothing models, which assume that the government varies its borrowing over the business cycle to keep expected tax rates constant (see Barro, 1979). One strand of analysis – which is variously known as political economy or political economics – seeks to explain this puzzle with reference to political and institutional factors (Persson and Tabellini, 2000). Early research in this vein focused on the strategic use of fiscal policy and the impact of partisan politics on budgetary decisions (Nordhaus, 1975; and Hibbs, 1977). Later research focused on the link between electoral systems and government borrowing (Alesina and Tabellini, 1990; Persson and Svensson, 1989) and on the institutional determinants of fiscal policy (von Hagen, 1992; von Hagen and Harden, 1994).

A recent series of studies by Annett (2006), Hallerberg (2004), Hallerberg and von Hagen (1999), Hallerberg, Strauch and von Hagen (2001) and the IMF (2004) – which can be grouped under the heading of political institutionalism – posits a strong link between fiscal discipline and the underlying electoral regime. In an electoral regime that tends to produce single-party governments or coalition governments between ideologically similar parties, the optimal system of fiscal governance, it is argued, is an institutionally strong Finance Minister who can restrain the expenditure demands of his or her fellow Ministers. In an electoral system that favours ideologically diverse coalitions, however, it is more difficult to delegate power to a strong Finance Minister as this would give disproportionate control over the public finances to one party in the coalition. In view of this fact, the optimal fiscal regime for this electoral system is, according to political institutionalism, a commitment device that binds coalition members to a programme of fiscal discipline for the government's term of office. A

controversial corollary of political institutionalism is that delegation states are at a disadvantage *vis-à-vis* the Stability and Growth Pact (SGP) (Hallerberg, 2004; IMF, 2004; Annett, 2006). The crux of this argument is two-fold. Firstly, commitment states have, it is claimed, a better track record than delegation states when it comes to compliance with the SGP. Secondly, this difference is partly due, it is suggested, to the fact that commitment states are more accustomed than their delegation counterparts to the rules-based approach to fiscal discipline that underpins the SGP.

This paper views political institutionalism as a significant contribution to the political economy of budgetary policy, but takes issue with its interpretation of the SGP. The remainder of the paper is divided into six main sections. Section 2 sets out the political institutionalist critique of the SGP in greater detail. Section 3 examines the compliance of commitment and delegation states with the SGP over the period 1997-2005. Section 4 looks at the institutional strength of Finance Ministers in delegation states and considers the importance of national vetoes. Section 5 reviews recent evidence about the growing use of numerical fiscal rules in delegation states. Section 6 considers the policy implications of this rejoinder to political institutionalism. Section 7 concludes.

## **2. THE POLITICAL INSTITUTIONALIST CRITIQUE OF THE SGP**

The central theoretical claim of political institutionalism is that countries choosing a system of fiscal governance that is well-suited to their electoral regime will, *ceteris paribus*, achieve a more prudent fiscal policy over the long term. The empirical evidence in support of this proposition is persuasive. In econometric studies of fiscal policy making in European Union (EU) Member States over the period 1981-1994, Hallerberg and von Hagen (1999) find evidence that delegation and commitment devices have a negative and statistically significant impact on the gross debt burden when compared with fiefdom – a situation in which individual Ministers formulate their budgetary demands in isolation from one another. The

authors also find that a strong Finance Minister is more likely to exert fiscal discipline in a regime that tends to elect single party majority governments rather than ideologically diverse coalitions. Linking this econometric analysis to a series of carefully constructed case-studies, Hallerberg (2004) finds that delegation and commitment states had a positive and statistically significant impact on fiscal discipline in EU Member States over the period 1980-1997.

Although this body of evidence supports the existence of a link between fiscal governance and the electoral regime it does not offer an explicit justification of why delegation states should be less suited than commitment states to the SGP. This particular claim is supported by two recurring arguments in the political institutionalist literature.

The first argument is based on the empirical observation that delegation states have been less compliant with the SGP than their commitment counterparts (Hallerberg, 2004:34; Annett, 2006:15). France and Germany, which posted excessive budget deficits in 2003, have relied on a delegation approach to fiscal policy throughout the last three decades, while Italy and Greece, which posted excessive budget deficits in 2004, have pursued delegation since 1996 and 1997 respectively. Portugal, which breached the SGP in 2002, is the one euro-area member that failed to consistently implement either a delegation or a commitment approach to delegation. This leaves the Netherlands, which posted an excessive budget deficit in 2004, as the sole commitment state that has breached the SGP since 1999.

The second argument in support of the political institutionalist critique of the SGP relates delegation states' lack of fiscal discipline to the fact that EMU's budgetary rules work 'in the spirit of the commitment approach' (IMF 2004:92).<sup>1</sup> Annett (2006:15) makes this point succinctly, when he argues that 'with its emphasis on multi-annual targets and a regular review procedure, the SGP fits snugly with the numerical contracts approach associated with

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<sup>1</sup> Annett (2006) explores other explanations for the dual outcome in euro area fiscal policy, including macroeconomic volatility and country size.

commitment states, but not so well with countries relying on domestic governance institutions'. For Hallerberg (2004:194), there are strong complementarities between the rules-based approach of the SGP and the commitment approach to national fiscal governance.<sup>2</sup> In the first instance, the SGP can help to reinforce the commitment of coalition partners to fiscal discipline. Furthermore, the domestic institutions that commitment states frequently employ to monitor compliance with the coalition partners' fiscal contract can help to enforce the implementation of the SGP. For delegation states, in contrast, a rules-based approach to fiscal discipline can, according to Hallerberg (2004:194), do little to compensate for an institutionally weak Finance Minister and may actually do more harm than good if it curtails his or her budgetary discretion in the face of economic shocks.

Annett (2006) puts the political institutionalist critique of the SGP to the test with a panel data analysis of budgetary policy in EU Member States over the period 1980-2004. In the first instance, his results find little evidence of a link between changes in the cyclically-adjusted primary balance and fiscal governance. The main exception here is that the budgetary performance of commitment states is superior to that of fiefdom over the period as a whole. When the sample is split between the pre- and post-SGP periods, however, it emerges that delegation is beneficial for fiscal discipline before the SGP was signed but not thereafter. This compares with the case of commitment which does better than fiefdom in both periods but to a greater extent after the SGP was signed. On this basis, Annett (2006:19) concludes that the SGP appears to be more effective under commitment approaches to fiscal governance.

### **3. A CLOSER LOOK AT DELEGATION STATES' FISCAL TRACK RECORD**

Having set out the political institutionalist critique of the SGP, this paper explores its validity from a broad, political-economy perspective. This section takes a closer look at the track

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<sup>2</sup> In more recent work, Hallerberg, von Hagen and Strauch (2004) have begun to revisit this particular

record of euro-area commitment and delegation states *vis-à-vis* the Stability and Growth Pact. The first step in this exercise is to look at the link between approaches to fiscal governance and electoral regimes.<sup>3</sup> Focusing on 2004, the latest year for which survey data on the ideological preferences of political parties is available, Table 1 classifies Member States according to their approach to fiscal governance, lists the parties that shared power and measures the ideological space between government members on budgetary issues.

The classification of fiscal governance in Table 1 is based on Hallerberg (2004). Austria and Spain are included as delegation states by virtue of measures taken at the time of the euro's launch to strengthen the institutional strength of their respective Finance Ministers. Portugal is the odd man out as it is the only Member State that has failed to make a clear choice between commitment and delegation since the launch of the euro. The classification of ideological preferences is based on Benoit and Laver (2006) who present the most up-to-date and comprehensive elite survey on parties and policies. On the issue of fiscal policy, Benoit and Laver (2006) ask respondents to give a minimum score of 1 to parties that favour tax increases to pay for greater government services and a maximum score of 20 for parties that favour reduced government services to cut taxes. Ideological space is measured as the difference between the most ideologically distinct parties in government.

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argument, noting that numerical fiscal rules may have a role to play in delegation states. See Section 5 of the present paper for a discussion of the authors' key findings.

<sup>3</sup> The focus here is on euro-area members rather than the EU-25 on the grounds that the SGP places more stringent conditions on Member States that share the single currency.

**Table 1: Fiscal regimes and ideological space in euro-area members, 2004\***

<b>Member States</b>	<b>Fiscal Governance</b>	<b>Government</b>	<b>Taxes vs. Spending**</b>
<b>France</b>	Delegation	<i>Union pour un Mouvement Populaire (UMP)</i>	0.0
<b>Greece</b>	Delegation	<i>Nea Dimokratia (ND)</i>	0.0
<b>Spain</b>	Delegation	<i>Spanish Socialist Workers' Party (PSOE)</i>	0.0
<b>Austria</b>	Delegation	<i>Austrian People's Party (ÖVP)</i> <i>Freedom Party of Austria (FPÖ)</i>	0.8
<b>Germany</b>	Delegation	<i>Social Democratic Party of Germany (SPD)</i> <i>Green Party (GRÜ)</i>	1.7
<b>Portugal</b>	Mixed	<i>Social Democratic Party (PSD)</i> <i>People's Party (CDS/PP)</i>	2.0
<b>Ireland</b>	Commitment	<i>Fianna Fáil (FF)</i> <i>Progressive Democrats (PD)</i>	3.6
<b>Finland</b>	Commitment	<i>Suomen Keskusta (KESK)</i> <i>Suomen Sosialidemokraattinen Puolue (SDP)</i> <i>Svenska Folkepartiet i Finland (SFP)</i>	4.5
<b>Luxembourg</b>	Commitment	<i>Christian Social People's Party (CSV)</i> <i>Luxembourg Socialist Workers' Party (LSAP)</i>	5.3
<b>Netherlands</b>	Commitment	<i>Christen Democratisch Appel (CDA)</i> <i>Volkspartij voor Vrijheid en Democratie (VVD)</i> <i>Democraten 66 (D66)</i>	6.8
<b>Italy</b>	Delegation	<i>Forza Italia (FI)</i> <i>Alleanza Nazionale (AN)</i> <i>Lega Nord (LN)</i>	7.4
<b>Belgium</b>	Commitment	<i>Flemish Liberal Party (VLD)</i> <i>Reformist Movement (MR)</i> <i>Francophone Socialist Party (PS)</i> <i>Social Progressive Alternative/SPIRIT (SPSp)</i>	11.4

*Note:* Election data taken from European Journal of Political Research, Vol. 44 (2005).

\*\* Data refer to end of year.

\* Index of ideological space on taxes vs. spending is taken from Benoit and Laver (2006). As intra-party preferences are not measured, an ideological space of zero is assigned to single party majority governments.

Table 1 supports the central tenet of political institutionalism. Member States with a low score, indicating single party majority or ideologically similar coalitions, tend to favour a delegation approach to fiscal governance while those with a high score, indicating ideologically diverse coalitions, tend to prefer a commitment approach. The main outlier here is Italy, which has followed a delegation approach to fiscal governance since 1996 in spite of the relatively large ideological space between its coalition partners. In the Berlusconi Administration, which held office in 2004, this ideological space was highest between Forza Italia which, according to Benoit and Laver (2006), strongly favoured tax cuts and the

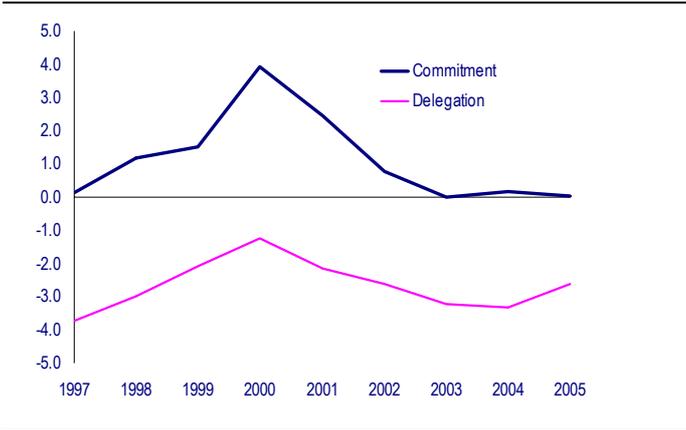
Alleanza Nazionale whose preferences for tax cuts and expenditure increases were judged to be roughly balanced.

The case of Portugal is not surprising from a political institutionalist perspective. Although the ideological space between the then ruling Social Democratic Party (PSD) and People's Party (CDS/PP) was small, the country's history of minority (or delicately balanced) governments has frustrated attempts to pursue a delegation approach to fiscal governance. A recent example of such frustration came in September 1999 when the Ministries of Economics and Finance were brought together under the control of Minister Joaquim Pina Moura in an attempt to promote greater fiscal discipline (Braga de Macedo, 2002:12). Yet, as Hallerberg (2004:185) records, when fuel prices rose sharply in 2000 this created a paradoxical situation in which '[a]s Economy Minister, he [Moura] was expected to uphold his party's pledge to subsidize fuel prices, while as Finance Minister he was to hold down spending'. The experiment lasted less than a year, after which time the separate status of the Ministries was restored.

The second step in this exercise is to compare the fiscal performance of commitment and delegation states during the period 1997-2005. From a short-term perspective, aggregate trends support the hypothesis that delegation states were less compliant with the SGP than their commitment counterparts. Graph 1 shows that net government lending in commitment states was clearly balanced or in surplus during the first eight years of the SGP while delegation states posted rising budget deficits of close to 3% of GDP at the beginning or end of the period. At a disaggregate level, however, a somewhat different story emerges. Graphs 2 and 3 show that there are two important exceptions to the political institutionalist critique of the SGP. The first, which was noted in the preceding section, is that the Netherlands, which is in many ways the archetypal commitment state (Hallerberg, 2004), experienced a sharp increase in government borrowing following the 2001 slowdown. The second exception,

which political institutionalism tends to pay less attention to, is that two delegation states, Austria and Spain, posted budget deficits that have been within the limits of the SGP since the launch of the euro.

Graph 1: Net lending (% of GDP) 1997-2005

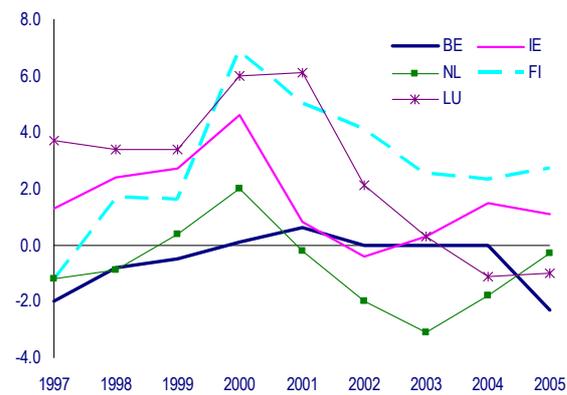


Source: AMECO Database.

Note: Delegation states exclude Austria and Spain between 1997 and 1999

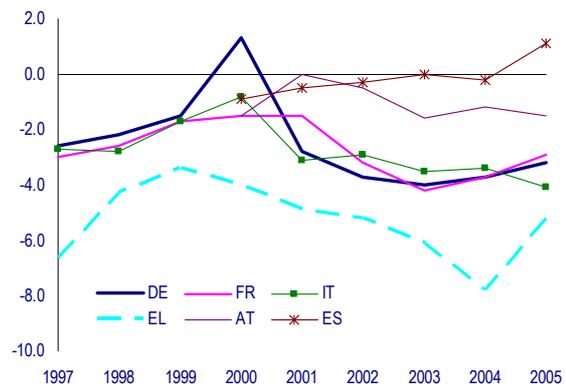
From a medium-term perspective, the performance gap between commitment and delegation states since 1997 narrows further. Graphs 4 and 5 compare the annual fiscal stance (measured by the change in the cyclically-adjusted primary balance) for delegation and commitment states with annual cyclical conditions (measured by the output gap) over the period 1997-2005. Two salient facts emerge from these data. The first is that, in delegation states, a pro-cyclical fiscal loosening of the fiscal stance in 2001 and 2002 sowed the seeds for the excessive deficits that followed in the remainder of this period. The second is that is that commitment states experienced a pronounced pro-cyclical loosening of the fiscal stance in 1999 and again in 2001 and 2002.

**Graph 2: Net lending in commitment states (% of GDP) 1997-2005**



*Source:* AMECO Database

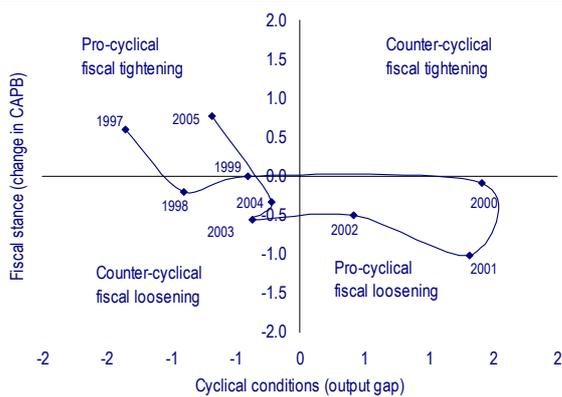
**Graph 3: Net lending in delegation states (% of GDP) 1997-2005**



*Source:* AMECO Database

*Note:* Delegation states exclude Austria and Spain between 1997 and 1999

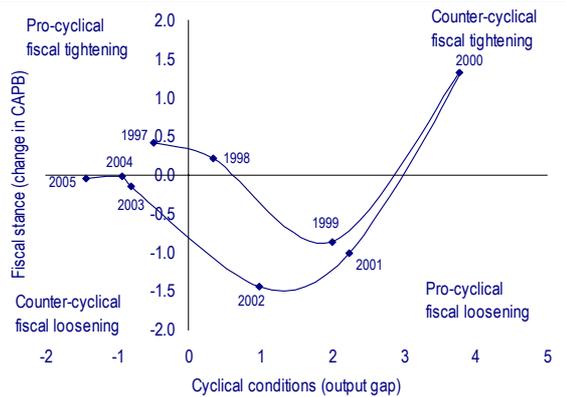
**Graph 4: Fiscal stance and cyclical conditions in delegation states, 1997-2005**



*Source:* AMECO Database.

*Note:* Cyclical adjustment based on potential output. Delegation states exclude Austria and Spain between 1997 and 1999.

**Graph 5: Fiscal stance and cyclical conditions in commitment states, 1997-2005**



*Source:* AMECO Database.

*Note:* Cyclical adjustment based on potential output.

In summary, the evidence presented in this section supports political institutionalism's hypothesis about the link between electoral regimes and fiscal governance but questions its claim that delegation states have been more profligate than their commitment counterparts in recent years. Although, breaches of the SGP's 3% of GDP threshold for government borrowing were higher among delegation states, there is a danger of overgeneralization. Firstly, the cases of Austria and Spain demonstrate that not all delegation states posted, or came close to posting, excessive budget deficits during this period. Secondly, from a medium-

term perspective, fiscal discipline was clearly lacking in both delegation and commitment states, as evidenced by the pro-cyclical fiscal loosening which occurred in both groups of Member States at different times during this period.

#### **4. HOW STRONG ARE FINANCE MINISTERS IN DELEGATION STATES?**

If, as the political institutionalist critique of the SGP suggests, EMU's budgetary rules were a direct causal factor behind excessive deficits in euro-area delegation states, then the conditions for fiscal discipline in these Member States should have been in place to begin with. This section examines this hypothesis by examining whether Finance Ministers in the five euro-area delegation states have, *ceteris paribus*, a tight grip over the implementation and formation stages of the government budget.

Hallerberg, Strauch, and von Hagen (2001) design two useful indices for this purpose. The first index states that a Finance Minister's strength in the formulation stages of a budget will depend on his or her ability to resist the expenditure demands of fellow Ministers. A powerful Finance Minister, they argue, will (i) negotiate bilaterally with resort Ministers, (ii) ensure that resort Ministers cannot ask for Cabinet decisions on their budget bids, (iii) negotiate bilaterally with spending Ministers, (iv) have special budgetary powers *vis-à-vis* spending Ministers, (v) act as agenda-setter in Cabinet, (vi) act as a veto player over budgetary issues in Cabinet, (vii) have the right of approval over changes in budget targets set in previous years for ministries, (viii) not give the Cabinet the right to resolve disputes with spending Ministers; and (ix) not be overruled with respect to budgetary matters by the full Cabinet. The second index states that a Finance Minister will be strong in the implementation stages of the budget if he or she can take steps to enforce the original budgetary agreement. A powerful Finance Minister, they argue, (i) can block expenditures during the budgetary year, (ii) must approve the disbursement of funds; (iii) can impose cash limits on particular areas of expenditure, and

(iv) must approve transfers of financial resources between budgetary chapters.

**Table 2: Index of strength of Finance Ministers in the formulation stages of the annual budget**

	Austria	Italy	France	Greece	Spain	Germany
Budgetary negotiations take place bilaterally between Finance Minister and resort Minister	Yes	Yes	Yes	Yes	Yes	Not exclusively
Individual Ministers cannot ask for Cabinet discussion on their budget bids	Yes	Yes	No	No	Yes	No
Negotiations between the Finance Minister and the spending Minister take place bilaterally	Yes	Yes	Yes	Yes	Yes	Yes
Finance Minister has special powers <i>vis-à-vis</i> spending Ministers	Yes	Yes	Yes	Yes	Yes	Yes
Finance Ministers is agenda setter for budget in Cabinet	Yes	Yes	Yes	Yes	Yes	No
Finance Minister has veto power in Cabinet over budget	Yes	Yes	Yes	Yes	No	Yes
Finance Minister must approve all changes to budgetary targets set in previous years for ministries	Yes	Yes	Yes	Yes	No	No
Full Cabinet does not resolve disputes between Finance Ministers and spending Ministers	No	No	Yes	Yes	Yes	Yes
The full Cabinet cannot overrule a decision of the Finance Minister	Yes	No	No	No	No	No
Finance Minister Budgetary Formulation Index	8	8	7	6	6	4.5

*Source:* Hallerberg, Strauch and von Hagen (2001: 65-66).

The indices, which are recreated in Tables 2 and 3 for delegation Member States and for the euro area as a whole, assign a score of 1 for each of the attributes of a powerful Finance Minister. The results suggest that there is variation in the strength of Finance Ministers at both the formation and implementation stages of the budget. As Table 2 indicates, Italy and Austria receive a maximum score of 8, France scores 6 while Greece and Spain both score 6. Germany, in contrast, ranks well below the other delegation Member States, receiving a score of 4.5 because individual Ministers can take their budget bids to Cabinet and the Finance Minister can be overruled with respect to budgetary matters in the Cabinet. Table 3 shows a

similar picture *vis-à-vis* the implementation stage of the budget. Austria and France lead the pack, with a maximum score of 4, while Italy lags just 1 point behind. Germany receives a score of 2, because its Finance Ministers has neither the power of approval over the disbursement of funds nor a veto over inter-chapter budgetary transfers.

**Table 3: Index of strength of Finance Ministers in the implementation stages of the annual budget**

	Austria	France	Greece	Italy	Germany	Spain
Finance Minister can block expenditure during the year	Yes	Yes	Yes	Yes	Yes	No
Finance Minister approves disbursement of funds	Yes	Yes	Yes	Yes	No	No
Finance Minister can impose cash limits	Yes	Yes	Yes	Yes	Yes	Yes
Transfers between budget chapters require Finance Minister's approval	Yes	Yes	Yes	No	No	Yes
Finance Minister Budgetary Implementation Index	4	4	4	3	2	2

*Source:* Hallerberg, Strauch and von Hagen (2001: 72-73).

It follows from these data that the SGP is unlikely to have been a direct cause of excessive government borrowing in Germany since from a political institutionalist perspective the conditions for fiscal discipline in this delegation state were not in place to begin with. Hallerberg (2004) tacitly accepts this point when he describes Germany as having a system of ‘checked delegation’ due to the large number of veto players in the policy process. As Zohlnhöfer (1999:148) succinctly puts it, ‘the co-operative federalism with its necessity of joint-decision making, the Bundesrat as a powerful quasi-second Chamber, the electoral system compelling parties to build coalition governments, the fragmentation of the policy-making process with the importance of ministries, the Constitutional Court with its broad influence on public policy and the independence of the Bundesbank – they all tend to limit the

leeway for reform’.

The obstacles to economic reform in Germany are well-documented. In an influential study, Scharpf (1987) noted that the Schmidt administration was frustrated in the mid-1970s in its efforts to implement counter-cyclical fiscal policies by, *inter alia*, the fiscal supremacy of the Länder, opposition from the liberal coalition partners, and the dominance of opposition parties in the Bundesrat.<sup>4</sup> Similarly, Zohlnhöfer (1999:156) attributes the failure of the Kohl administration to implement ‘far-reaching reforms’ to the fact that the coalition ‘lacked programmatic cohesion and a common understanding of what ought to be changed in the relationship between the states and the market’.

A more recent example of how national veto points can impede the pursuit of budgetary discipline in Germany occurred in February 1999 when the Schröder lost control of the Bundesrat after the Land election in Hesse in February 1999. In budgetary terms this was significant because Article 105(3) of the Basic Law states that ‘[f]ederal laws relating to taxes the revenue from which accrues wholly or in part to the Länder or to municipalities (associations of municipalities) shall require the consent of the Bundesrat’. In effect, this meant that the opposition Christian Democrats had a veto over revenue decisions in Germany during the first four years of EMU (Hallerberg, 2004:89). The deleterious impact of this veto on public finances became apparent when, in an effort to win the support of the business lobby and several key Länder, the Schröder administration’s draft tax reforms in 1999 were revised to include a reduction in the overall tax burden, rather than (as had originally been envisaged) a mere redistribution of the existing burden (Margerum Harlen, 2002:71). Moreover, when it came to efforts at budgetary consolidation, the loss of the Bundesrat shifted emphasis from the revenue- to the expenditure-side of the budget. As von Hagen and Strauch (2001:28) note, this proved to be problematic because of the fact that the Finance

Minister's power to cut expenditure was restrained by rapid increases in predetermined federal spending on social insurance, interest repayments and wage expenditure.

If the large number of veto players in Germany's polity contributed towards a system of checked delegation, then so too, it appears, did the accession of the German Democratic Republic to the Federal Republic of Germany in 1990. For von Hagen and Strauch (2001:29-31) German unification led to a two-fold erosion in the power of the *Bundesminister der Finanzen*.<sup>5</sup> Firstly, the use of special 'off-budget' funds to finance unification meant that a significant share of government expenditure was subject to neither the usual checks and balances of parliamentary scrutiny nor the supervision of the Finance Minister (Heipertz and Verdun 2004). As von Hagen, Hughes-Hallett and Strauch (2001:49) record, 'while the federal government's debt rose by a mere 3% of GDP from 1989 to 1997, the combined debt of off-budget entities amounted to twelve percent of GDP in 1997, half the size of federal government debt'. Secondly, the lead role of the Chancellor's Office in the negotiations preceding German unification undermined the Finance Minister's authority over budgetary matters. As von Hagen and Strauch (2001:31) note, when it came to decisions relating to public guarantees for private debts of firms from the new Länder, for example, the talks were chaired by the Chancellor's Office and the Finance Ministry was largely excluded.<sup>6</sup> Although it remains a moot point as to whether the Finance Minister would have taken a more hawkish attitude towards the costs of unification – it appears in retrospect that such costs were widely underestimated (Sinn, 2000) – the involvement of the Chancellor's Office in budgetary affairs

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<sup>4</sup> Cited in Zohlnhöfer (1999:149).

<sup>5</sup> Von Hagen and Strauch (2001) date the decline in the authority of the German Finance Minister from the resignation of Alex Möller (1971) and Karl Schiller (1972) because of their objection to plans by the Chancellor, Willi Brandt, to pursue expansionary fiscal policies.

<sup>6</sup> von Hagen and Strauch (2001:31) criticise the increased 'ad hocery' of budgetary measures under the Kohl administration, which introduced seven supplementary budgets between 1990 and 1997.

set a dangerous precedent by loosening Minister's grip on public finance (von Hagen and Strauch, 2001).<sup>7</sup>

In summary, this section has suggested that Germany is something of an awkward case for the political institutionalist critique of the SGP. On the one hand, the existence of a large number of veto points in German economic policy is consistent with the political institutionalist hypothesis that a fragmented budgetary process is a potential impediment to budgetary discipline. On the other hand, the apparent importance of these national veto points weakens political institutionalism's claim that the SGP undermined the conditions for budgetary discipline in Germany during the early years of EMU.

## **5. ARE DELEGATION STATES UNSUITED TO NUMERICAL FISCAL RULES?**

As discussed in Section 2, a recurring argument in the political institutionalist critique of the SGP is that delegation states, by virtue of their reliance on institutionally strong Finance Ministers, are unaccustomed to numerical fiscal rules. This section questions the empirical validity of this claim in the light of recent research findings on fiscal governance in the EU.

The most recent research in the political-institutionalist vein finds that numerical fiscal rules may have more of a role to play in delegation states than first envisaged. In a study of fiscal policy-making in EU Member States over the period 1985 to 2001, Hallerberg, von Hagen and Strauch (2004) find that both greater centralisation in the budgetary process and binding

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<sup>7</sup> At the time of unification the OECD (1991:62), for example, judged German fiscal policy to have been 'in a relatively strong position to meet the financial requirements of unification'. Although criticisms of the Kohl administration's budgeting of unification were central to the Social Democrat election manifesto in 1990, this stance proved to be an unpopular move. (Marsh, 1990).

fiscal rules have a negative and statistically significant effect on government debt in EU delegation states. This result, the authors admit, represents a departure from early research in the political institutionalist tradition, which found little evidence that fiscal rules were employed in a systematic manner outside commitment states. Although their empirical analysis offers no conclusive evidence for the reasons behind this result, Hallerberg, von Hagen and Strauch (2004) postulate that stringent fiscal rules could be of potential importance in delegation states in so far as they help to dampen expenditure demands in parts of government which are not controlled by the budgetary process and because of potential complementarities between a strong Finance Ministry and well-designed budgetary rules.<sup>8</sup>

**Table 4: A summary of numerical fiscal rules in delegation states**

Country	Type of rule	Overall description of the rule
Austria	BBR	Deficits targets for the Federal Government and regional (Länders) and local governments contained in a National Stability Pact (NSP) within a multi-annual budgetary setting (four years)
	ER	For Federal Government and RG (Länders) expenditure cannot grow by more than 1%
Germany	DR	Raising credits by the communes requires authorisation by the supervisory agencies and must only be used to finance investments - numerical limits and ceilings
	BBR	LG have to present a balanced budget ('administrative' and capital accounts)
	BBR	Public borrowing is only allowed if credit amount does not exceeds public investment (golden rule). Exception can be justified only for stabilization purposes
	BBR	The credit volume must not exceed the investment volume (golden rule) except for dealing with adverse macroeconomic developments.
Spain	BBR	In 'normal' economic conditions the general government and its sub-sector must show a balanced budget or a surplus. This is embedded in a medium-term fiscal framework (3 years) consistent with the Stability Programme
	DR	As a general rule, each regional government must register the same indebtedness (nominal terms) at the beginning and at the end of each year (starting in 2003)
	DR	Restrictions on possible loans
	DR	LG must register a balanced budget or a surplus. Total LG debt cannot exceed 110% of current revenues and must register a positive saving.
France	ER	The rule defines the targeted increase of State sector expenditure in real terms

<sup>8</sup> See the contribution of Hallerberg, von Hagen and Strauch to the present volume for a further treatment of this issue.

	BBR	Local authorities are subject to a golden rule; voted budgets must be in balance; ex post deficits cannot exceed 5% of current revenues (10% for small municipalities)
	RR	Government has to define ex ante how possible revenue surpluses (compared to plans) will be allocated
	ER	Every year, the Parliament votes on the national ceiling for health expenditure
<b>Italy</b>	ER	Internal Stability Pact provides local entities with measures to limit expenditure. Expenditure evolution depends on kind of entities (regions, municipalities, provinces) and year to which it refers to.
	BBR	Budget balance rule for regional governments, which regulates access to State financing
	BBR	Golden rule for local governments
	ER	The rule establishes an expenditure ceiling for pharmaceutical products equal to 16% of the financing level for the National Health Service contributed by the State

*Source: Commission services*

Further evidence on the use of numerical fiscal rules in delegation states is provided by a recent survey of budgetary practices by DG Economic and Financial Affairs of the European Commission (see European Commission, 2006). This survey, which was based on a detailed questionnaire completed by national administrations in the 25 EU Member States, covers a total of sixty numerical fiscal rules at the general, central, regional and local government level over the period 1990-2005. Several quasi-rules were excluded from this analysis, such as temporary expenditure freezes by governments, rules concerning the budgetary procedure and ill-defined budgetary targets.

Table 4 summarises the numerical fiscal rules that were in place in 2005 in euro-area delegation states. Although this information does not, by itself, tell us about the effectiveness of numerical fiscal rules, it does show that, contrary to the political institutionalist critique of the SGP, delegation states are, with the exception of Greece, no strangers to the use of expenditure, balanced budget and debt rules at various levels of government. The experience of fiscal policy-making in Spain, in particular, demonstrates the willingness of some delegation states to embrace numerical fiscal rules. Spain, as was noted earlier, is a relative newcomer to delegation, having taken steps in the late 1990s to strengthen the position of its

Finance Minister *vis-à-vis* other cabinet members as part of its efforts to meet the convergence criteria for EMU membership (Hallerberg, 2004:188). From a political institutionalist perspective, such measures should have been broadly sufficient to ensure the conditions for budgetary discipline in Spain were in place. Nevertheless, the Spanish government chose to go further by adopting an ambitious set of numerical fiscal rules under the General Law on Budgetary Stability (Law 18/2001) and the Organic Law (Law 5/2001).

The centrepiece of Spain's fiscal rules, which came into effect in 2003, is that all branches of the general government should aim for a position of budgetary balance or surplus on an annual basis. These rules also apply to Autonomous Communities, which as a result of the trend towards decentralisation, account for nearly half of the total expenditure of the general government. Under the General Law on Budgetary Stability, the central government sets a budgetary target for the autonomous regions as a whole, which is then disaggregated by the Fiscal and Financial Policy Council. In principle, an autonomous region can be permitted to run a deficit but on condition that it outlines a three-year budgetary adjustment path for returning to balance.

The implementation of Spain's fiscal rules is monitored by the public audit office, the General Intervention of the State. In the event that the aggregate budget deficit breaches the EU Stability and Growth Pact, any financial penalties will be passed on to the culpable government sub-sectors. A degree of flexibility is ensured by means of a contingency fund of up to 2% of total non-financial expenditure to be used to cover government expenditure in the event of unforeseen economic circumstances. In the event of revenue windfall or an expenditure shortfall, the additional resources will be channelled towards debt reduction or, in certain circumstances, the pension reserve.

In July 2005, the Spanish government proposed a number of modifications to its fiscal rules. Under the terms of this proposal, a distinction will be made between social security and other categories of the central government budget (Kingdom of Spain, 2006). The former will be required to balance long-term revenues and expenditures taking into account medium- and long-term economic and demographic projections. The latter will aim for budget balance over the economic cycle. A general government deficit of 1% of GDP will be permitted during periods of slow growth, while there will be an obligation to run budget surpluses imposed during periods of fast growth. The proposed changes to the Law on Budgetary Stability also give greater leeway for government borrowing by the central government, autonomous communities and certain local administrations for investment in, *inter alia*, R&D and innovation. Such borrowing must not add more than 0.5% of GDP to the general government deficit.

Spain's fiscal rules have been criticised in some quarters for failing, in their original form, to give due regard to the economic cycle and for giving homogenous budgetary targets to the Autonomous Communities (see DG Economic and Financial Affairs, 2005). These concerns over effectiveness notwithstanding, the fact that Spain, a recent convert to the delegation approach to fiscal governance, has adopted an ambitious set of numerical fiscal rules in its efforts to comply with the SGP is important. The experience of Spain, along with the widespread use of fiscal rules in other euro-area delegations states, calls into question the recurring argument in the political institutionalist critique of the SGP that such rules are alien to Member States that rely on institutionally strong Finance Ministers as a source of budgetary discipline.

## 6. POLICY IMPLICATIONS

The political institutionalist critique of the SGP presents a rather stark choice for achieving a better institutional fit between delegation and EMU's budgetary rules.<sup>9</sup> The first option is to make the SGP less binding, for example, by reducing the emphasis of numerical fiscal rules. This would, it is implied, prevent the SGP from impinging on the institutional strength of Finance Ministers in delegation states. The second option is to change the electoral system so as to reduce the tendency to elect single party majority government or ideologically similar coalitions. This, it is implied, would make these countries better suited to the commitment approach to fiscal governance and hence to the constraints of the SGP.

Neither of these choices is attractive. Making the SGP less binding, as Annett (2006) recognises, may allow for greater fiscal discretion in delegation states but it could undermine the conditions for budgetary discipline in commitment states. This is because a looser SGP is less likely to reinforce the fiscal contract between ideologically diverse coalition partners. Promoting electoral reform, on the other hand, is a disproportionate step. It is difficult to envisage radical constitutional reform in Austria, France, Germany, Greece, Italy and Spain for the sake of compliance with EMU's budgetary rules.

The rejoinder to the political institutionalist critique of the SGP is more sanguine about the possibility of achieving a better institutional fit between EMU's budgetary rules and the delegation approach to fiscal governance. In the first place, it rejects the need for a widespread reform of electoral systems in delegation states. The budgetary discipline achieved by Austria and Spain shows that Member States which elect majority governments

or ideologically similar coalition governments can be compliant with the SGP. From a political economy perspective, the only euro-area member where the issue of electoral reform crops up is Portugal, where, as we have seen, the pursuit of budgetary discipline in general and attempts to strengthen the institutional position of the Finance Minister in particular have been frustrated by the tendency to elect minority or delicately-balanced governments.

The analysis presented in this paper points towards a two-step approach to strengthening domestic budgetary institutions in delegation states with a view to enhancing their capacity to achieve budgetary discipline and, hence, comply with the SGP. The first step is for delegation states need to delegate properly. The political institutionalist critique of the SGP takes this point for granted, but the survey evidence reviewed in this paper suggests that Germany's Finance Minister is in a relatively weak institutional position. This position could have been rectified in the early years of EMU by, among other things, giving the German Finance Minister greater power to negotiate bilaterally with other Ministers and a stronger veto over budgetary decisions in cabinet.<sup>10</sup> The second step is for delegations states to embed the goals of the SGP firmly in numerical fiscal rules. The evidence reviewed in Section 5 shows that, contrary to the political institutionalist critique of the SGP, delegation states are currently employing a range of expenditure, balanced budget and debt rules. As the question of effectiveness is not tackled here, further analysis is required to understand the optimal design and effectiveness of such rules in a system of fiscal governance that relies on an institutionally strong Finance Minister.

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<sup>9</sup> This paper abstracts from the issue of peer pressure and its effectiveness in commitment and delegation states, something which the IMF (2004) devotes considerable attention to. For a further discussion peer pressure and its limits see Tabellini and Wyplosz (2006).

<sup>10</sup> This situation is complicated the “Grand Coalition” which took office in Germany in November 2005. With an ideological space of 5.1 on tax and expenditure issues (Benoit and Laver (2006), it is doubtful whether the CDR/CSU and SPD can be considered as ideologically-similar coalition partners. For this reason, von Hagen and Hallerberg (2005) argue that the pursuit of fiscal discipline in Germany at this time would be better served by the agreement of a fiscal contract between the coalition partners rather than attempts to delegate authority over the budgetary process to a strong Finance Minister. Whether this means that Germany should now be reclassified as a commitment state is a matter for further discussion.

The SGP is, according to political institutionalism, a poor substitute for deficient national budgetary institutions. The revisions to the SGP, which were agreed by the ECOFIN Council in March 2005, go some way towards addressing this criticism. Henceforth, Ministers agreed, '[n]ational institutions could play a more prominent role in budgetary surveillance to strengthen national ownership, enhance enforcement through national public opinion and complement the economic and policy analysis at EU level'. To this end, it agreed that there was scope for discussing the implementation of national budgetary rules in the context of the stability and convergence programmes (European Council, 2005).

The link between the effectiveness of national budgetary institutions and ownership in the revised SGP is a curious one. On one level, the term ownership recalls the importance attached to this term by the International Monetary Fund (IMF). For Khan and Sharma (2001:14) ownership over

IMF programmes means that 'decisions...are likely to be made quickly and in support of the program, which makes it more likely that the program will succeed' as well as making 'it easier to generate domestic political support for the program, since it is likely to be seen, at least in part, as an indigenous product, rather than a foreign imposition'. On another level, the emphasis in the revised SGP on the effectiveness of national budgetary institutions is closer to the IMF's understanding of conditionality which refers to, among other things, the pre-conditions on 'domestic governance and the institutional framework of economic policy-making' for continued access to IMF financing (Woods and Narlikar, 2001:569). This conceptual blurring in the revised SGP leaves open an important question: will the surveillance of national budgetary institutions remain under the heading of ownership, thus leaving the design of fiscal rules largely in the hands of Member States, or will it evolve in the direction of conditionality, thus giving the EU a greater (and perhaps more controversial) say in how Member States go about complying with the SGP?

## 7. CONCLUSION

In summary, this paper has acknowledged the important contribution of political institutionalism to our understanding of the link between electoral regimes and different approaches to fiscal governance. However, it has taken issue with a recurring argument in the political institutionalist literature which suggests that delegation states, which rely on strong Finance Ministers with a considerable degree of discretion over the government budget, are ill-suited to the rules-based approach of the SGP.

This paper has pointed towards three weaknesses in this line of argument. Firstly, political institutionalism tends to overstate delegation states' poor track record *vis-à-vis* the SGP. The fiscal discipline shown by Austria and Spain in recent years implies that not all delegation states breached the SGP while the pro-cyclical fiscal loosening experienced by commitment and delegation states alike shows that non-compliance with the medium-term aspects of the SGP was widespread. Secondly, political institutionalism tends to downplay the national sources of fiscal indiscipline which existed in some delegation states. EMU's budgetary rules are unlikely to have directly undermined the conditions for fiscal discipline in Germany, as the large number of veto players which exist in relation to its fiscal policy suggests that such conditions were not in place to begin with. Thirdly, political institutionalism's claim that delegation states are unfamiliar with numerical fiscal rules is at odds with the emerging evidence. A case in point is Spain, which, in addition to strengthening the institutional position of its Finance Minister in 2000, has adopted an ambitious set of numerical fiscal rules covering all tiers of government.

Political institutionalism leaves few options open to delegation states for enhancing their capacity to comply with the SGP other than weakening EMU's budgetary rules or undertaking electoral reforms that will facilitate a conversion to the commitment approach to fiscal

governance. This paper has suggested that a more piecemeal solution may be available. The fiscal case for electoral reform is weak, except in Member States which tend to produce minority governments with a loose grip on public finances. A more important avenue of reform is to ensure that national systems of fiscal governance in delegation states are aligned with the goals of the SGP.

As a first step in strengthening national systems of fiscal governance, it may be necessary for some delegation states to enact measures to tighten the grip of their Finance Ministers over the formation and implementation stages of the budget. As a second step, there is growing evidence that numerical fiscal rules have a role to play in Member States that nonetheless rely on institutionally strong Finance Ministers to promote budgetary discipline. Under the revised SGP, the EU will continue to monitor whether Member States are complying with EMU's budgetary objectives. An open question is whether the EU will play a more active role over time in monitoring how national systems of fiscal governance affect Member States' capacity to comply with the SGP.

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# **Rainy Day Funds: Can They Make a Difference in Europe?**

Fabrizio Balassone, Daniele Franco and Stefania Zotteri\*

## **Abstract**

*Rainy Day Funds (RDFs) have an important role in the USA. They allow States – which usually have rules requiring a balanced budget for current revenue and spending – to limit procyclical fiscal policies. This paper examines the possible role of RDFs in the European fiscal framework. The analysis suggests that RDFs would not fundamentally alter the incentive problems at the root of the difficulties in the implementation of the Stability and Growth Pact. Moreover, RDFs are not an option for countries with high deficits. However, for low-deficit countries, RDFs can lessen the rigidity of the 3 per cent threshold in bad times. RDFs could be introduced on a voluntary basis at the national level and could contribute to make the rules more country-specific. The introduction of RDFs would require a change in the definition of the “Maastricht deficit”: deposits and withdrawals should be considered respectively as budget expense and revenue. In this way, the balances held in RDFs could be spent in bad times without an increase in the deficit. To ensure that RDFs are not used opportunistically, deposits should only be made out of budget surpluses and circumstances allowing withdrawals should be specified ex ante.*

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## 1. Introduction

The long debate on European Union (EU) fiscal rules has highlighted their weak points, including the lack of strong incentives for fiscal discipline in good times and the related possibility that in bad times countries have to choose between implementing procyclical policies and trespassing the 3-percent-of-GDP deficit threshold. The experience of US States with Rainy Day Funds (RDFs) has suggested that they may be fruitfully introduced also in Europe.<sup>1</sup>

Almost all States in the USA have legal provisions mandating that the budget should be balanced on a yearly basis. Although different from European fiscal rules, this balanced-budget requirement has similar implications. In good times it will be relatively easy to comply with the rule as revenue will be abundant. However, keeping a balanced budget through a downturn will entail procyclical tax increases and/or expenditure cuts, unless significant surpluses are run in the upturn. To deal with this problem, starting mainly from the late seventies, US States have been adopting RDFs.<sup>2</sup> The idea is rather intuitive and appealing: money is saved and accumulated into the fund in good times, whereas money is withdrawn and spent in bad times. This can allow the State to stick to the balanced-budget requirement while avoiding increasing taxes and/or decreasing expenditures in bad times.

This paper addresses the following questions: can RDFs tackle the incentive problem at the heart of the Stability and Growth Pact (SGP) difficulties? Can RDFs make the European framework more flexible? What changes would be required in the EU framework to make RDFs an effective instrument?

The analysis suggests that RDFs would not fundamentally alter the incentive problems of the SGP. Moreover, RDFs are not an option for countries with high deficits (even in good times, there would be no surplus to be saved). However, for low-deficit countries, RDFs can alleviate the rigidity of the 3 per cent threshold in bad times. RDFs could be introduced on a voluntary basis at the national level and could contribute to make the rules more country-specific. The introduction of RDFs would require a change in the definition of the “Maastricht deficit”: deposits and withdrawals should be considered respectively as budget expense and revenue. In this way, the balances held in RDFs could be spent in bad times without an increase in the deficit. To ensure that RDFs are not used opportunistically, deposits should only be made out of budget surpluses and circumstances allowing withdrawals should be specified *ex ante*.

The paper is organized as follows. Section 2 compares the US and the European set-ups highlighting similarities and differences. Section 3 reviews the available evidence on US

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<sup>1</sup> Buti *et al.* (2003) suggested the introduction of RDFs in the EU. They noted that, while the possibility to establish RDFs would not tackle at the root the incentive problem that governments have in good times, the flexibility that they would provide would allow a tightening of sanctioning procedures for countries exceeding the 3 per cent limit. Sapir *et al.* (2003) noted that a voluntary system of RDFs could improve the incentives to secure surpluses in good times while increasing the room for manoeuvre in bad times. They concluded that the advantages of this step should be assessed against the cost of revision of national accounting rules.

<sup>2</sup> In the US the main rationale for introducing RDFs lies more with the need to avoid discontinuities in tax and spending programs, than with the macroeconomic consequences of fiscal policy. The cyclicity of fiscal policy at the State level is not really a big issue in the US. Indeed, the fiscal impulse will be determined by the federal government which is not bound by any fiscal rule and can undo the State’s fiscal stance.

States fiscal performance to see whether and under what conditions RDFs significantly improve fiscal performance. Section 4 discusses the possibility to introduce RDFs in the European framework and what can be expected from such an innovation. Section 5 concludes and indicates issues for future research.

## 2. Fiscal rules in the USA and the EU: similarities and differences

The European fiscal framework was developed gradually. The Maastricht Treaty (1992) set the fiscal criteria to be met by EU member states in order to join the European monetary union (EMU). According to the Treaty, member states have to avoid “excessive deficits”, defined as situations where: (a) government deficit exceeds 3 per cent of GDP (unless the extra deficit is exceptional, temporary and small), or (b) government debt is higher than 60 per cent of GDP and is not declining at a satisfactory pace. These same criteria were intended to regulate the fiscal behaviour of member states after they joined EMU.<sup>3</sup>

The SGP (1997 and 2005) complemented the Treaty with a view to reconcile permanent restraint on deficit and debt levels with margins for fiscal stabilization. More specifically, the Pact introduced the new objective of a medium-term budgetary position close-to-balance-or-in-surplus (CTB), where medium-term can be interpreted as the length of the economic cycle and the CTB objective as a target in cyclically adjusted terms (net of the effect of temporary measures).

The CTB medium-term target is intended to provide margins for stabilization policy during “normal” cyclical fluctuations (changes in the output gap) without breaching the 3 per cent deficit threshold (fig. 1). Additional room for manoeuvre in the face of other unfavourable events is provided by specific provisions governing the possibility to trespass the 3 per cent deficit threshold. The excess over 3 per cent must in any case be exceptional, small and temporary.<sup>4</sup>

In the USA, almost all States have a balanced-budget requirement.<sup>5</sup> Though some deficit financing is allowed, this is subject to strict limits. Therefore many States also have an RDF as a means to avoid tax increases and/or spending cuts in bad times while complying with the balanced-budget requirement. RDFs are seen as a means to avoid abrupt changes in tax and spending policy rather than as a means to allow active fiscal stabilization.<sup>6</sup> The

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<sup>3</sup> The development of and rationale for these rules are discussed, e.g., in Buti and Sapir, 1998; Brunila *et al.*, 2002; Buti and Franco, 2005.

<sup>4</sup> The recent revision of the SGP increased its flexibility but did not affect the trust of the fiscal framework. With the revision, CTB medium-term targets vary across countries depending on debt level and potential growth and the set of circumstances allowing the nominal deficit to exceed 3 per cent of GDP has been enriched.

<sup>5</sup> Even if most US States share many features concerning fiscal policy, there is a high degree of heterogeneity in the way the fiscal framework is actually implemented. In particular, the specifications of the balanced-budget requirement vary significantly across States. Some have a simple *ex ante* provision (i.e. a budget proposal cannot be approved unless it foresees a balance between revenue and expense). Others have an *ex post* requirement, whereby any revenue shortfall or spending overrun with respect to the approved budget cannot be fully financed through borrowing and must be compensated by tax increases and/or spending cuts. See Laubach (2005). In this paper, when we refer to the US States in general, we actually refer to the most common fiscal features.

<sup>6</sup> See Knight and Levinson (1999) and McGranahan (1999).

idea is simple: money is set aside into the fund in good times and it is withdrawn in bad times.

The typical state budget is made up of a general fund, which is financed through taxes and fees and pays out current expenditure, a capital fund, which is financed through debt and motor fuel taxes and pays out infrastructure investments and an RDF. The balanced-budget requirement usually refers to the general fund and the corresponding balance is measured including transfers to/from the RDF.

This set-up resembles the European one: net of operations with the RDF, the general fund will run surpluses in good times and deficit in bad times, resulting close to balance (recall that some deficit financing is allowed) on average across good and bad times (fig. 2).

However, there are three important differences. First, contrary to what happens under European provisions, the US balanced-budget requirement does not apply to capital spending, so that it ultimately implements a “golden rule over the cycle”,<sup>7</sup> closer to the fiscal rules adopted in the UK.<sup>8</sup> Second, the maximum deficit allowed in bad times is not fixed *ex ante* (as with the 3 per cent ceiling in the Maastricht Treaty), but depends on the resources accumulated in good times. Third, the surpluses obtained in good times must be saved in the RDF and cannot be used otherwise, while in the European framework surpluses can either be used to reduce outstanding debt or to acquire financial assets.<sup>9</sup>

Fig. 1 - EMU Fiscal Rules: a Stylized Representation

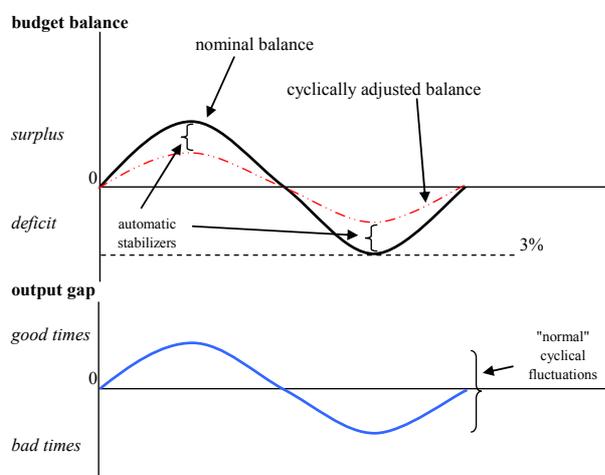
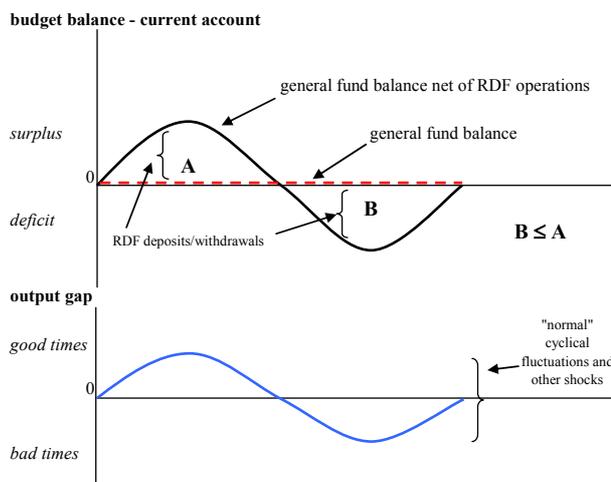


Fig. 2 - Balanced-Budget Requirement and Rainy Day Funds in the USA



It should also be noted that the definition of good and bad times is not the same in the two set-ups. In the US context, the definition of the type of shocks (bad times) against which RDFs are meant to provide shelter is not unequivocal. In particular, a broad and a strict definition can be distinguished (Hou, 2005). According to the former, bad times are those

<sup>7</sup> Specific provisions regulate deficit financing of the capital fund in US States.

<sup>8</sup> The Code for Fiscal Stability (HM Treasury, 1998) defines a fiscal framework based on two rules: (a) the “golden rule” mandating that the public sector current balance be non-negative on average over the economic cycle; and (b) the “sustainable investment rule” requiring that the ratio of net public sector debt to GDP be kept at a stable and prudent level (currently set at 40 per cent).

<sup>9</sup> Indeed, because of the limit applying to gross debt, in the European framework there is an incentive for high-debt countries not to accumulate financial assets.

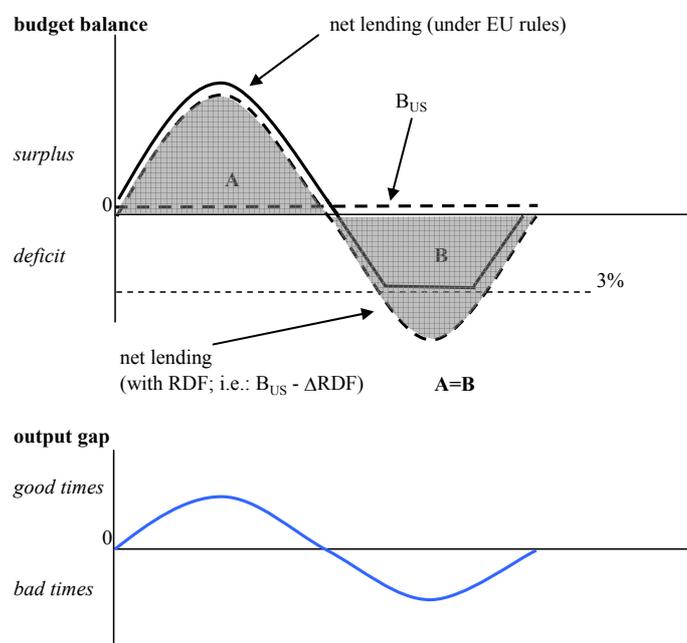
when a gap between revenue and expenditure opens either because of the adverse cyclical conditions or because of any unexpected adverse shock. The stricter definition limits bad times to the presence of adverse cyclical conditions. The SGP provision identifies as exceptional both unusual events outside the control of the Member State and severe economic downturns.

In the European framework the budget deficit/surplus is defined according to the rules set out in the national accounts (ESA95).<sup>10</sup> net lending/borrowing ( $NL$ ) is the balance of non-financial transactions ( $NL=R-G$ , with  $R$  indicating revenue and  $G$  expenditure) on an accrual basis, whose counterpart – on the financing side – is the change in the government net financial asset position ( $\Delta NA=\Delta A-\Delta L$ , with  $\Delta A$  indicating the change in financial assets and  $\Delta L$  the change in financial liabilities). According to the Maastricht Treaty, net borrowing should never exceed 3 per cent of GDP:

$$(1) \quad NL = R - G = \Delta A - \Delta L = \Delta NA \geq -3\%$$

In this framework, deposits to/withdrawals from an RDF ( $\Delta RDF$ ) would be included among changes in financial assets ( $\Delta A=\Delta RDF+\Delta OA$ ; where  $OA$  stays for “other financial assets”). Changes in the balance of the RDF, like any other change in financial assets do not affect the deficit level, but the composition of its financing. If there is a deficit ( $R<G$ ) and the government reduces its holding of financial assets (including the balance of the RDF) to finance such deficit ( $\Delta A<0$ ), then the need to issue further debt ( $\Delta L$ ) will correspondingly be reduced, but the difference between  $R$  and  $G$  will not be altered.

Fig. 3 - Budgetary margins in bad times:  
RDF vs. the 3 per cent threshold



<sup>10</sup> See Eurostat (1995) and (2000).

The US balanced-budget requirement applies to a different balance, which we may denote as  $B_{US}$  and characterize as:<sup>11</sup>

$$(2) \quad B_{US} = R - G - \Delta RDF = \Delta OA - \Delta L = 0$$

Comparing (1) – from which  $R-G=NL$  – and (2) – from which  $R-G-\Delta RDF=0$  – we see that  $\Delta RDF=NL$ . This highlights the similarity between the US framework and the European one, but also points to one of the important differences we mentioned before: while in the latter there is an *ex ante* limit to net borrowing (the 3 per cent of GDP threshold), in the former net borrowing is only constrained by the extent of savings set aside in the RDF (fig. 3).

The requirement that  $B_{US}$  be always balanced implies that RDFs cannot be financed by issuing bonds. This is important to avoid a ratchet effect in gross (and net) financial liabilities.

Figure 4 compares the dynamics of budget balances (both  $NL$  and  $B_{US}$ ), RDF balances and financial liabilities (gross and net) under two different regimes: one in which deposits into the RDF can only be made out of surpluses and another in which additional deposits can be financed by issuing bonds.

Under the first regime (see the solid lines in Figure 4), net lending and net borrowing balance out over the business cycle (top panel) and  $B_{US}$  is always balanced (second panel). The balance held in the RDF grows during good times and is spent in the subsequent downturns (third panel). Gross debt is constant at its initial level (fourth panel) and net debt falls during upturns (as assets are accumulated) to return to its initial level during downturns (fifth panel).

Now suppose that additional deposits into the RDF, bond-financed, are allowed (see the dotted lines in Figure 4), so that the balance held in the RDF at the end of the upturn exceeds cumulated surpluses (third panel). Compared to the other regime, this will have no bearing on net lending as  $R-G$  is unchanged (top panel), but  $B_{US}$  will record a deficit as deposits into the RDF exceed  $R-G$  (second panel). At the same time, gross debt will rise as new bonds are issued (fourth panel), while the path of net debt will be unaffected as new bonds are offset by deposits into the RDF (fifth panel). With the onset of the downturn, if net borrowing is allowed to rise up to the level of the RDF, it will exceed net lending obtained in the upturn (top panel), even though  $B_{US}$  is balanced as  $R-G=\Delta RDF$  (second panel). Since no new bonds are issued, gross debt will remain at the level reached at the end of the upturn (fourth panel), but net debt will rise above its original level (fifth panel) as the bonds issued in the upturn are no longer offset by the balance held in the RDF (third panel). As this pattern repeats over time, both gross and net financial liabilities keep growing.

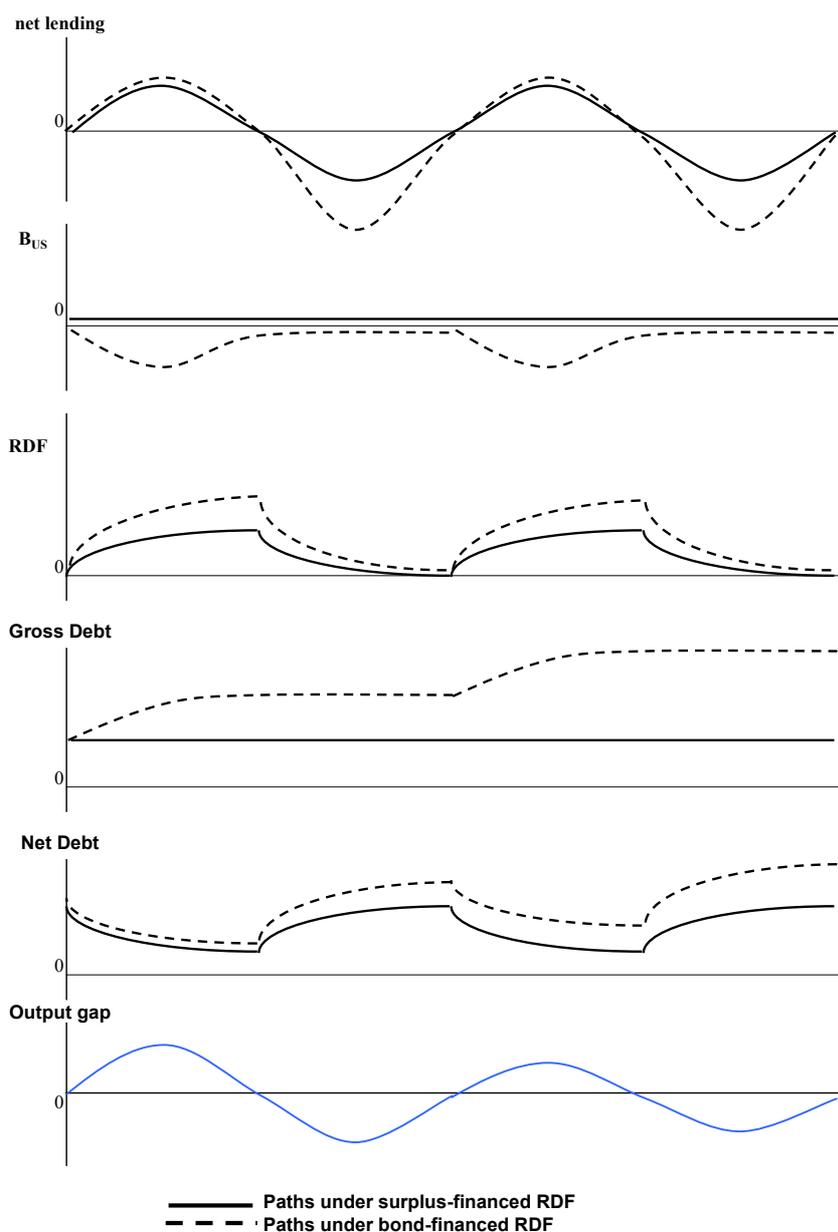
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<sup>11</sup> This is a simplification for the sake of comparability. The US balanced-budget requirement leaves the overall deficit (and its financing) undetermined. It is more precisely defined as:

$$B_{US} = R_c - G_c - \Delta RDF = 0$$

Where  $R_c$  and  $G_c$  indicate current revenue and expenditure, respectively.

Fig. 4 - Bond financing of RDF and debt dynamics



### 3. RDFs and the cyclicality of fiscal policy

In the US framework, before the introduction of RDFs, nothing prevented governments from accumulating resources in the general fund. Indeed, almost all States allow surpluses to be carried over from one year to the next (McGranahan, 1999).<sup>12</sup> Yet they were not doing so and the introduction of RDFs was justified as a means to achieve a higher degree of fiscal responsibility in good times.

But how? Indeed, if the structure of the RDF is similar to that of the general fund – i.e. the funds are deposited and withdrawn at the legislature’s discretion – an RDF would not have

<sup>12</sup> Nearly all balanced-budget rules are written in stock terms rather than in flow terms (Wagner, 2003; Wagner and Sobel, 2006).

any actual effect on the ability of the State to cope with bad times: it would simply play part of the general fund role.

The criteria according to which funds are deposited into and withdrawn from RDFs vary significantly across States and in some cases they are fully discretionary (Appendix 1).<sup>13</sup> Typically, three mechanisms are used: (a) residual determination of RDF deposits/withdrawals based on general fund year-end surpluses/deficits; (b) determination by legislative appropriations; and (c) determination through a mathematical formula.<sup>14</sup> More than one mechanism can be used at the same time.<sup>15</sup>

Residual determination of deposits/withdrawals and determination by legislative appropriation make an RDF little different from the general fund and can be considered “weak rules”. Reference to a mathematical formula, on the contrary, reduces discretion and can be seen as a “strong rule”. In principle, only RDFs based on strong rules can ensure time consistency of policies and allow a State to be better equipped for the next downturn. Much as with the SGP, the issue lies with the credibility/enforceability of the provisions.

The empirical evidence on the impact of RDFs on the fiscal behaviour of US States over the cycle is mixed. The majority of States appears to fail accumulating sufficient reserves during good times, resulting in procyclical policy in downturns to comply with balanced-budget rules.<sup>16</sup>

Tests which do not differentiate between weak and strong rules tend to suggest that the introduction of RDFs made little difference in fiscal behaviour (e.g. Wagner, 2003). Highlighting differences in provisions accompanying RDFs, other studies have found that the fiscal performance of States with RDFs based on strong rules tends to be better than average (Sobel and Holcombe, 1996; Wagner and Elder, 2005; Wagner, 2004).

Results from a panel analysis over 1984-97 by Knight and Levinson (1999) suggest that total balances are: (a) better in States with RDFs than in States without RDFs; and (b) better in States whose RDFs have strict deposit and withdrawal rules (and no maximum size) than in States whose RDFs are run on the basis of legislative discretion. However, Wagner (2003) subsequently showed that the analysis in Knight and Levinson (1999) did not take into account non-stationarity of variables and once this is properly treated, found no evidence that the presence of an RDF has an impact on total government balances. Nevertheless, Wagner (2003) does find evidence that total balances are better when withdrawals from an RDF are regulated by supermajority rules.<sup>17</sup>

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<sup>13</sup> In some States, RDFs balances cannot exceed a predetermined threshold.

<sup>14</sup> In a few cases deposits to the RDF are tied to specific revenue. This is the case of the oil taxes and of other mineral taxes in Alaska and Texas. Such cases are often not included in empirical analyses of US RDFs since they are regarded as exceptions. Indeed, funds tied to nonrenewable resources face very specific problems. Government revenue stemming from the exploitation of non-renewable resources differs from other revenue as it partly represents a depletion of assets. Secondly, using non-renewable resources raises important intergenerational issues (see Davis *et al.*, 2003).

<sup>15</sup> For example, this is the case of Kentucky Budget Reserve Trust Fund, i.e. the Kentucky’s RDF, which can be replenished by the allocation of any end-of-year surplus as well as by direct appropriation.

<sup>16</sup> See, for instance, Sobel and Holcombe (1996), Levinson (1998) and Lav and Berube (1999).

<sup>17</sup> Moreover, Wagner (2004) also finds that States experience a reduction in bond yields after the introduction of an RDF and RDFs with different types of deposit and withdrawal rules affect borrowing costs differently (States with strict-rule RDFs obtain the largest reduction in yields). This suggests that the markets perceive RDFs as tools to enhance fiscal soundness by improving the States’ ability to manage a fiscal crisis.

Another set of studies focuses on the behaviour of expenditure over the cycle and finds more evidence in support of a positive role of RDFs. Hou (2005) finds that own-source expenditures (i.e. those that are not financed by transfers from other government tiers) are least affected by adverse cyclical conditions in States with fiscal reserves in RDFs. Wagner and Elder (2005) find a significant reduction in the volatility of expenditure in those States with a strict-rule RDF.<sup>18</sup>

The difficulties in implementing “good” cyclical policies and the diversity of outcomes under similar fiscal rules are not an exclusive prerogative of the US. In Europe, the average sensitivity of government budgets to the output gap over the cycle appears to be lower than one would expect on the basis of automatic stabilizers alone and there is evidence that this reflects significant asymmetries across positive and negative cyclical phases. Specifically, discretionary policy tends to act procyclically in good times – thus offsetting the automatic stabilizers – and to be neutral in bad times.<sup>19</sup> In general, there is little evidence that the introduction of fiscal rules, either with the Maastricht Treaty in 1992, or with the SGP in 1997, has affected the cyclical policy.

We estimated a simple fiscal reaction function for each of the original members of the euro area (excluding Luxemburg and Germany)<sup>20</sup> to assess the cyclical performance of fiscal policy in these countries.<sup>21</sup>

Results confirm a low average cyclical sensitivity of the budget and a certain degree of asymmetry. Moreover, they confirm significant differences across countries. The cyclical sensitivity of the budget is not statistically different from zero in Belgium, France, Italy and the Netherlands, suggesting that procyclical fiscal policy systematically offsets the effects of automatic stabilizers. In Ireland, Portugal and Spain the cyclical policy of the budget is found to be asymmetric: a countercyclical response to negative output gaps is accompanied by a procyclical or neutral response to positive output gaps. Only in Austria and Finland does the reaction of the budget appear to be consistently countercyclical across good and bad times (see Appendix 2 for details).

In France, Portugal and Italy the unsatisfactory cyclical performance of the budget is accompanied by inadequate progress towards achieving the objective of a budgetary position close to balance or in surplus. On the other hand, in Austria and Finland not only did the budget react appropriately to cyclical conditions, but progress towards a close to balance position was steady.

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<sup>18</sup> Gonzales and Paqueo (2003) obtain similar findings and show that the reduction in volatility mainly affects social spending.

<sup>19</sup> See, for instance, Buti, Franco and Ongena (1998), European Commission (2001), von Hagen (2002), Balassone and Francese (2004) and IMF (2004 and 2006). While most of the evidence comes from panel studies, Balassone (2005) analyzes cyclical asymmetry in fiscal policy in a single country study of Sweden.

<sup>20</sup> The exclusion of Germany reflects technical difficulties related to the structural break due to the reunification. Results on a dataset truncated in 1990 suggest that fiscal policy was cyclically well-behaved in pre-unification Germany. Estimation of the reaction function over the subsequent 1990-2004 period provides no statistically significant result.

<sup>21</sup> We plan to run a similar exercise on US states in a subsequent version of the paper.

**Fig. 5 – Heterogeneity of budgetary outcomes in the euro area: net borrowing and cyclically-adjusted net borrowing**

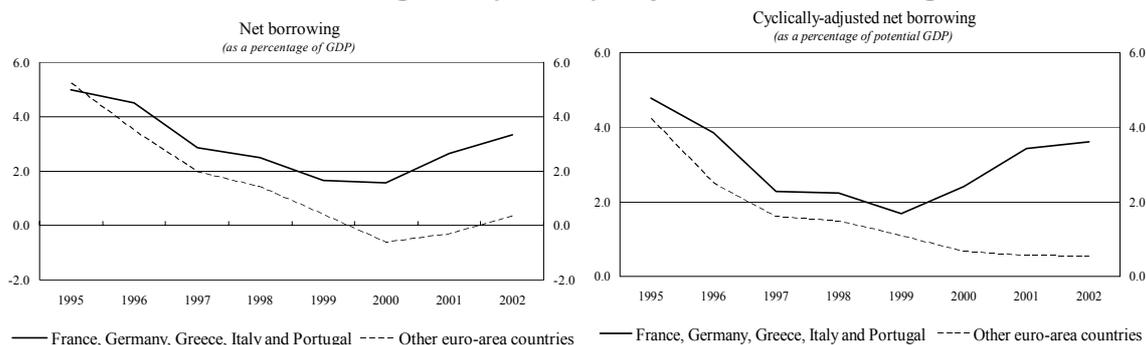


Figure 5 shows the degree of heterogeneity of budgetary outcomes in the euro area over 1995-2002. In 1995 the average net borrowing of France, Germany, Greece, Italy and Portugal (countries which were later to breach the 3 per cent deficit threshold) was much the same as that of the other euro-area countries, at about 5 per cent of GDP. In 2000, while the rest of the euro area scored a surplus, France, Germany, Greece, Italy and Portugal recorded an average deficit of 1.6 per cent of GDP. The opening of the gap was largely due to differences in policies. All countries improved their cyclically-adjusted balance until 1999. Thereafter, while the other countries kept progressing towards a CTB position, France, Germany, Italy, Portugal and Greece loosened their budgets by about 2 percentage points, to reach a cyclically adjusted deficit of about 4 per cent of GDP in 2001-02.

#### 4. Can RDF make a difference in Europe?

The US experience shows that RDFs per se do not fundamentally alter the incentive problems underlying procyclical policies. It also shows that rule-based RDFs can help to reconcile soundness and flexibility. But in this case, much as with the SGP and with fiscal rules in general, issues of commitment, credibility and enforceability arise.

Nevertheless, the analysis in Section 2 suggests that there is one aspect in which RDFs could improve upon the current European framework. With RDFs the room for manoeuvre in bad times depends directly on surpluses accumulated in good times. In principle, this could allow more flexibility compared to the predetermined 3 per cent deficit ceiling of the Maastricht Treaty and would represent a further move towards a country-specific framework, away from the much criticized “one-size-fits-all” approach characterizing the original EU fiscal framework.

This Section considers if and how European countries can take advantage of the opportunity offered by RDFs within the framework defined by the Maastricht Treaty and the SGP. The following issues are examined: (a) Should RDFs be introduced at the European or at the national level? (b) How should the EU accounting and monitoring framework be modified to accommodate RDFs? (c) What restrictions should apply to deposits and (d) withdrawals, in order to avoid the opportunistic exploitation of RDFs? (e) Which countries could actually benefit from the RDFs?

*RDFs: a national institution.* – The reform of the SGP in 2005 aimed at increasing the flexibility of fiscal policy in EU countries. One-size-fits-all rules were not considered an

optimal solution, in particular with respect to the preventive arm of the Pact. Indeed the European Council has been calling for improvements in national fiscal frameworks, as a complement to the SGP reform.

In this environment the introduction of a new centralized and rule-based instrument is unlikely to find much support. Moreover, there is no reason to maintain that all countries should pursue an increase in the room for manoeuvre in bad times compared to what is allowed under current provisions. Therefore, RDFs should more appropriately be national tools.

*Changes to the EU accounting/monitoring framework to accommodate RDFs.* – As noted above, under ESA95 deposits to and withdrawals from an RDF would be recorded as changes in financial assets which do not affect the deficit level, but the composition of its financing.

Without a change in the definition of the “Maastricht deficit”, which is based on ESA accounting rules, national authorities would have little incentive to introduce RDFs. With respect to EMU fiscal rules, the only benefit of accumulating assets in good times would be the possibility to avoid increasing gross debt in bad times as RDFs balances could be used to finance the deficit instead. However, there would be no change with respect to the maximum allowed deficit (the 3 per cent ceiling).

A revised interpretation of ESA accounting rules could allow withdrawals from an RDF in bad times to be considered as additional revenue and thus reduce the deficit. This change may entail a revision of the EDP Protocol of the Treaty (European Commission, 2006).<sup>22</sup>

A number of monitoring/regulatory issues would arise. To minimize monitoring costs and hazards, there should be only one RDF per member state. Detailed reporting concerning level, changes and investment out of RDFs balances should be provided. In particular, this reporting could be included in the bi-annual Notifications of fiscal data which member states currently provide to European authorities. To ensure that RDF balances represent genuine savings and that they are readily available in bad times, they should only be invested in liquid, low-risk assets. For instance, financial assets which may be problematic to dispose of, such as shares of publicly owned companies not included in general government, should not qualify for RDF investment. Eligibility for the exemption could be granted only to bonds with a certain minimal rating, possibly those which can be used as collateral for monetary policy operations, and to other low risk financial assets. Adequate governance provisions and a transparent investment strategy should be set in place before a fund qualifies as an RDF under the EU fiscal framework.

*Restrictions on deposits: no debt financing.* – As shown in Section 2, if bond-financed deposits into the RDF are allowed, gross debt will rise as new bonds are issued and remain constant when resources are drawn from the RDF. This pattern can repeat over time with gross and net financial liabilities gradually expanding. To avoid this ratchet effect on debt dynamics, RDFs should be exclusively financed out of surpluses.

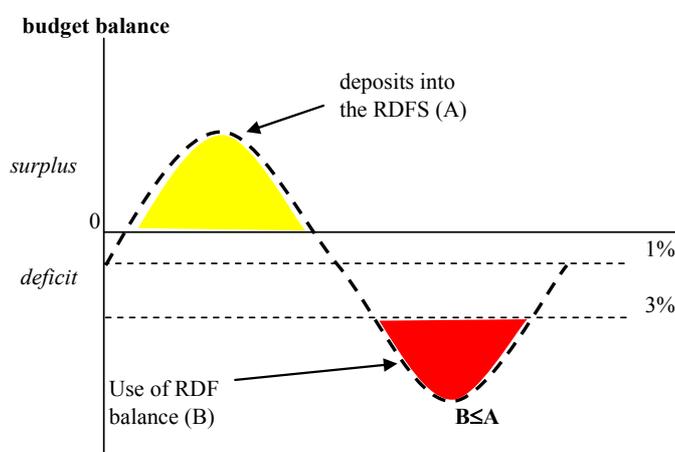
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<sup>22</sup> Sapir *et al.* (2003) suggest that this change is worthwhile only if a critical number of governments are ready to introduce the RDFs. However, this consideration may unnecessarily restrict the minority of countries willing to create RDFs or in need of the extra flexibility that they may provide. Furthermore, once the provision is in place, other countries may be induced to follow.

Therefore, RDFs are not an option for countries with relatively high deficits. However, countries running a cyclically-adjusted deficit of 1 per cent of GDP (the medium-term objective indicated in the revised SGP for low debt/high potential growth countries) would be in a position to transfer resources to their RDF in good times (fig. 6).

*Restrictions on withdrawals.* – The conditions under which withdrawals from the RDFs are to be considered as budget revenue have to be decided *ex ante*. Member states should evidently not be allowed to use RDF balances for running a high deficit in good times. Restricting the use of RDF balances to significant downturns would prevent RDFs from contributing to unnecessary expansionary procyclical policies. However, if RDFs are to allow extra margins with respect to current provisions, such conditions should obviously be less restrictive than those already allowing the deficit to trespass the 3 per cent threshold.

Fig. 6 - RDF and cyclically adjusted deficits



In this respect, the recent reform of the SGP has somewhat reduced the added value that RDFs could offer in the European framework. The original SGP only allowed deficits in excess of 3 per cent under negative GDP growth rates of at least -2.0 per cent (-0.75 per cent in case of an abrupt slowdown or an accumulated loss of output relative to past trends). The new SGP allows deficits larger than 3 per cent whenever the rate of growth of GDP is negative (or there is an accumulated loss of output during a protracted period of very low annual GDP growth relative to potential). Nevertheless, there could still be situations which fall outside the new provisions and yet require additional budgetary flexibility (e.g. a short period of very low growth). Moreover, the SGP reform did not alter the requirement that the deficit should stay close to 3 per cent.

The introduction of additional numerical rules as means to regulate withdrawals from RDFs would be problematic. First, one should keep in mind the problems concerning the assessment of good and bad times in practice. Second, additional numerical provisions would counter the objective of increasing flexibility at the national level. The solution can be found in the 'double-key' procedural approach suggested by Sapir *et al.* (2003), according to which the decision to draw on the fund should require the approval of both the Member State and the Council (the latter based on a recommendation by the Commission). This procedure could also discipline the size of withdrawals. Basically, the Council should veto a gross misuse of RDF balances with negative externalities on the area.

*Which countries would have benefited from RDFs?* – Overall, the fifteen countries which were EU members in 1992 – the year of the Treaty of Maastricht – recorded 50 surpluses and 115 deficits over the period 1995-2005 (Table 1). The surpluses were recorded by nine

countries: Belgium, Ireland, Luxembourg, the Netherlands, Finland, Denmark, Spain, Sweden and the UK. If these countries had accumulated those surpluses in an RDF, they would now hold reserves ranging between Belgium's 0.5 per cent of GDP and Luxembourg's 28.5 per cent. Finland would have reserves close to those of Luxembourg (26.8 per cent of GDP). Ireland, Denmark and Sweden would have RDF's with balances well above 10 per cent of GDP. The Netherlands and the UK would hold balances of 1.7 and 3.6 per cent of GDP, respectively. The potential benefits from an RDF are larger for volatile economies, where the 3 per cent threshold is more likely to be binding in bad times (Table 2).

**Table 1 - UE15 countries net borrowing over the period 1995-2005<sup>(1)</sup>**  
(as a percentage of GDP)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Italy	7.4	7.0	2.7	2.8	1.7	2.0	3.1	2.9	3.5	3.4	4.1
France	5.5	4.1	3.0	2.6	1.7	1.5	1.6	3.2	4.2	3.7	2.9
Germany	3.2	3.3	2.6	2.2	1.5	1.1	2.8	3.7	4.0	3.7	3.2
UK	5.7	4.1	2.1	-0.1	-1.1	-1.6	-0.9	1.7	3.3	3.2	3.3
Spain	6.5	4.8	3.3	3.1	1.3	0.9	0.5	0.3	0.0	0.2	-1.1
Belgium	4.4	3.8	2.0	0.8	0.5	-0.1	-0.4	0.0	0.0	0.0	2.3
Denmark	2.0	1.1	-0.4	-1.0	-2.2	-3.2	-2.2	-1.2	-1.1	-2.7	-4.9
Greece	10.2	7.4	6.6	4.3	3.4	4.0	5.4	5.2	6.1	7.8	5.2
Ireland	2.0	0.0	-1.3	-2.4	-2.7	-4.6	-0.8	0.6	-0.3	-1.5	-1.1
Luxembourg	-2.4	-1.2	-3.7	-3.4	-3.4	-6.0	-6.1	-2.1	-0.3	1.1	1.0
Netherlands	4.3	1.9	1.2	0.9	-0.4	-1.3	0.2	2.0	3.1	1.8	0.3
Portugal	5.2	4.5	3.4	3.0	2.7	3.2	4.3	2.9	2.9	3.2	6.0
Austria	5.6	3.9	1.7	2.3	2.2	1.9	0.0	0.5	1.6	1.2	1.5
Finland	6.2	3.5	1.2	-1.7	-1.6	-6.9	-5.0	-4.1	-2.5	-2.3	-2.7
Sweden	7.0	2.7	0.9	-1.8	-2.5	-5.0	-2.6	0.2	-0.1	-1.8	-3.0

(1) A minus sign indicates a surplus. Data do not include UMTS proceeds.

**Table 2 - Cumulated surpluses, average gross debt and real GDP volatility in EU15 countries**

	Cumulated surpluses 1995-2005 (1)	Average gross debt 1995-2005 (1)	Real GDP volatility 1960-2005 (2)
Italy	0.0	111.5	2.4
France	0.0	59.3	1.8
Germany (3)	0.0	61.0	2.2 - 1.1
UK	3.6	43.7	1.8
Spain	1.1	56.8	2.7
Belgium	0.5	110.2	2.0
Denmark	18.8	54.0	2.3
Greece	0.0	110.7	4.2
Ireland	14.6	46.7	2.9
Luxembourg	28.5	6.9	3.3
Netherlands	1.7	59.8	1.9
Portugal	0.0	56.3	3.2
Austria	0.0	65.4	1.9
Finland	26.8	47.1	2.9
Sweden	14.9	59.7	2.0

(1) As a percentage of GDP. – (2) Standard deviation. – (3) The first data for real GDP volatility refers to the pre-unification period; the second data for real GDP volatility refers to the post-unification period.

This evidence shows that RDFs could already have a significant number of users. If most countries were to reach their medium-term objectives (which should not exceed a 1 per cent of GDP deficit) the number of potential users of RDFs would be even larger. The size of balances that could be accumulated by some countries confirms the need for guidelines governing withdrawals.

## 5. Conclusions

RDFs are not a magic wand. They do not tackle at the root the incentive problem that governments have in good times. They are of no use for countries which are permanently in a deficit position. However, they can improve the room for manoeuvre for virtuous countries.

To seize the benefits of RDFs in the European context, the definition of “Maastricht deficit” should be appropriately modified. Accompanying provisions should be carefully devised to avoid that RDFs become a means to circumvent fiscal rules. A crucial issue is the restrictions on deposits: only surpluses should be acceptable.

The extra flexibility provided by RDFs would allow a tighter implementation of the procedure for countries exceeding the 3 per cent limit.

RDFs would only be a viable instrument for countries which are close to the medium-term target of close to balance. The benefits of RDFs would be higher, the higher the volatility of GDP.

The paper has not discussed the possibility of using RDFs at the subnational level (Balassone *et al.*, 2004). Given the current definition of “Maastricht deficit”, the availability of liquid balances in subnational RDFs could complicate compliance with European fiscal rules: an unexpected withdrawal from RDFs by subnational governments could push the general government deficit above the 3 per cent threshold. This may explain why RDFs are not that popular in Europe. The issue could be reopened by the change in the definition of Maastricht deficit needed for the viability of national RDFs, since it would be difficult to apply different rules to subnational RDFs.

The development of local RDFs could contribute to limiting procyclical policies and help subnational governments to respect national budgetary rules (such as domestic stability pacts). Nevertheless, there would be problematic implications. The existence of many RDFs within a single country would burden monitoring at the EU level. Since a general government deficit is consistent with surpluses among subnational governments, the possibility arises that the principle according to which RDFs should only be financed out of general government surpluses is violated. Moreover, the regulation of withdrawals would become more difficult as several cycles would become relevant, not just the national one.

These considerations point to the need for further work concerning the introduction of RDFs and the related changes in the EU fiscal framework.

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**APPENDIX 1 – US States’ stabilization funds: main features<sup>(1)</sup>**

<b>US State</b>	<b>Name of the fund</b>	<b>Deposit Method</b>	<b>Withdrawal Method</b>	<b>Limit<sup>(2)</sup></b>	<b>First year in place</b>	<b>First year with a positive balance</b>
Alaska	Constitutional Budget Reserve Fund	Mineral litigation settlements	Legislative appropriation	No limit	1990	1992
Arizona	Budget Stabilization Fund	Formula	Formula	5 per cent	1991	1994
California	Special Fund for Economic Uncertainties	Year-end surplus	Budget deficit	No limit	1976	1977
Connecticut	Budget Reserve Fund	Year-end surplus	Budget deficit	5 per cent	1979	1981
Delaware	Budget Reserve Account	Year-end surplus	Budget deficit	5 per cent	1977	1979
Florida	Budget Stabilization Fund	Year-end surplus	Budget deficit	20 per cent	1959	1965
Georgia	Revenue Shortfall Reserve	Year-end surplus	Legislative appropriation	No limit	1976	1976
Hawaii	Emergency and Budget Reserve Fund	Legislative appropriation	Legislative appropriation	No limit	2000	-
Idaho	Budget Stabilization Fund	Legislative appropriation	Legislative appropriation	No limit	1984	1984
Illinois	-	Year-end surplus	Legislative appropriation	4 per cent	2000	-
Indiana	Countercyclical Revenue and Economic Stabilization Fund	Formula	Formula	7 per cent	1982	1985
Iowa	Economic Emergency Fund	Legislative appropriation	Legislative appropriation	5 per cent	1992	1993
Kentucky	Budget Reserve Trust Fund Account	Year-end surplus	Budget deficit	5 per cent	1983	1987
Louisiana	Revenue Stabilization and Mineral Trust Fund	Year-end surplus	Budget deficit	No limit	1966	1967
Maine	Maine Rainy Day Fund	Year-end surplus	Legislative appropriation	4 per cent	1985	1985
Maryland	Revenue Stabilization Fund	Formula	Legislative appropriation	No limit	1985	1987
Massachusetts	Commonwealth Stabilization Fund	Year-end surplus	Budget deficit	5 per cent	1985	1987
Michigan	Countercyclical Budget and Economic Stabilization Fund	Formula	Formula	25 per cent	1977	1978
Minnesota	Budget Reserve Account	Year-end surplus	Budget deficit	5 per cent	1984	1996
Mississippi	Working Cash-Stabilization reserve Fund	Year-end surplus	Budget deficit	7.5 per cent	1982	1983
Missouri	Budget Stabilization Fund	Legislative appropriation	Budget deficit	5 per cent	1992	1992
Nebraska	Cash Reserve Fund	Year-end surplus	Budget deficit	No limit	1983	1984

Nevada	Fund to Stabilize the Operation of the State Government	Formula	Budget deficit	8 per cent	1991	1994
New Hampshire	Revenue Stabilization Reserve Account	Year-end surplus	Budget deficit	5 per cent	1987	1987
New Jersey	Surplus Reserve Fund	Year-end surplus	Budget deficit	5 per cent	1990	1993
New York	Tax Stabilization Reserve Fund	Year-end surplus	Budget deficit	2 per cent	1946	1946
North Carolina	Savings Reserve Account	Year-end surplus	Legislative appropriation	5 per cent	1991	1991
North Dakota	Budget Stabilization Fund	Year-end surplus	Formula	No limit	1987	1990
Ohio	Budget Stabilization Fund	Year-end surplus	Legislative appropriation	4 per cent	1981	1981
Oklahoma	Constitutional Reserve Fund	Year-end surplus	Budget deficit	10 per cent	1985	1988
Pennsylvania	Tax Stabilization Reserve Fund	Year-end surplus	Budget deficit	3 per cent	1985	1986
Rhode Island	Budget Reserve and Cash Stabilization Account	Year-end surplus	Budget deficit	3 per cent	1985	1985
South Carolina	General Reserve Fund	Year-end surplus	Budget deficit	5 per cent	1978	1978
South Dakota	Budget Reserve Fund	Year-end surplus	Budget deficit	5 per cent	1991	1992
Tennessee	Reserves for Revenue Fluctuations	Formula	Budget deficit	5 per cent	1972	1972
Texas	Economic Stabilization Fund	Year-end surplus	Budget deficit	10 per cent	1988	1990
Utah	Budget Reserve Account	Year-end surplus	Budget deficit	8 per cent	1986	1987
Vermont	General Fund Budget Stabilization Reserve	Year-end surplus	Budget deficit	5 per cent	1987	1988
Virginia	Revenue Stabilization Fund	Formula	Formula	10 per cent	1992	1993
Washington	Emergency Reserve Fund	Year-end surplus	Legislative appropriation	5 per cent	1981	1989
West Virginia	Revenue Shortfall Reserve Fund	Year-end surplus	Budget deficit	5 per cent	1994	1995
Wyoming	Budget Reserve Account	Year-end surplus	Legislative appropriation	No limit	1982	1983

**Sources:** Hou (1998; 2005), Eckl (1995); Wagner and Elder (2005); Kentucky State Budget Director (2001); Zaharadnick (2005).

(1) States without an RDF (according to any of the two definitions reported in Sections 2) are not reported in this table. More specifically, Alabama, Arkansas, Colorado, Kansas, Montana, Oregon do not have an RDF. In particular, Alabama introduced a fund similar to a budget stabilization fund in 1988 (Education Trust Fund Proration Account). Nevertheless, this fund is only supposed to be used to supplement educational expenditure and therefore this is not a rainy day fund according to our definitions. Note that the National Conference of State legislatures and the National Association of State Budget Officers do consider this fund an RDF. Moreover, since 1982 Colorado has a fund (required Fund Balance). Nevertheless, it is a non-accumulating Fund and therefore it is not an RDF. – (2) As a percentage of general fund expenditure.

## APPENDIX 2 – The cyclicity of fiscal policy in the euro area

We specify the fiscal authorities' reaction function in a way which is rather standard in the literature. The budget balance is regressed against its lagged value, the level of public debt and a measure of the cyclical conditions (see, for instance, Bohn, 1998; Ballabriga and Martinez-Mongay, 2002; and Gali and Perotti, 2003). Concerning the latter, we take into account separately good and bad times as measured by positive and negative output gaps (see, for instance, Balassone and Francese, 2004). The estimating equation therefore is:

$$(3) \quad d_t = \beta_0 + \beta_1 d_{t-1} + \beta_2 b_{t-1} + \beta_3 \omega_t^p + \beta_4 \omega_t^n + \varepsilon_t$$

where  $d$  is the budget deficit as a share of GDP,  $b$  is the debt-to-GDP ratio and  $\omega^p$  and  $\omega^n$  indicate, respectively, positive and negative output gaps. We also introduce dummy variables to test for structural breaks. Specifically, we consider 1993, the year after the Treaty of Maastricht, and 1998, the first year of the euro area and the year following the introduction of the Stability and Growth Pact, as possible breaks for European countries.

The results are reported in the following table. The panel regression highlights how the average cyclical sensitivity of the budget is lower than one would expect from the operation of automatic stabilizers alone.<sup>23</sup> Moreover, there is a large (though not statistically significant) difference between the coefficient for positive output gaps (-0.03) and the coefficient for negative output gaps (-0.34) confirming some asymmetry in the conduct of fiscal policy between good and bad times.

Concerning single country equations, we tested for cyclical asymmetry in fiscal policy by controlling the statistical significance of differences between coefficients for positive and negative output gaps (where the difference was not significant we estimate a single coefficient). As a rule, we only kept an explanatory variable in the regression when its coefficient is significantly different from zero.

Results confirm that for most countries, the cyclical performance of fiscal policy is not satisfactory. The cyclical sensitivity of the budget is not statistically different from zero in Belgium, France, Italy and the Netherlands, suggesting that procyclical fiscal policy systematically offsets the effects of automatic stabilizers.<sup>24</sup> In Ireland, Portugal and Spain the cyclicity of the budget is asymmetric: a countercyclical response to negative output gaps is accompanied by a procyclical or neutral response to positive output gaps. Only in Austria and Finland is the reaction of the budget consistently countercyclical across good and bad times.

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<sup>23</sup> The average automatic semi-elasticity of the budget to the output gap is estimated at 0.5 (see, e.g., Bouthevillain *et al.*, 2001).

<sup>24</sup> Italy is a borderline case: the point estimates of the coefficients for positive and negative output gaps have opposite signs (+1.0 and -0.5, respectively) are both significantly different from zero (though only at the 10 and 5 per cent significance level, respectively). However, their difference falls just short of significance at the 10 per cent level.

**The cyclicity of fiscal policy in the euro area**  
(dependent variable:  $d_t$ )

	panel	BE	FRA	ITA	NL	IRL	PT	SPA	AU	FIN
Constant	<b>1.58***</b> (4.28)	<b>2.08**</b> (2.60)	<b>0.98**</b> (2.13)	<b>6.60***</b> (3.92)	<b>1.39**</b> (2.69)	<b>6.96**</b> (2.17)	<b>8.39***</b> (5.20)	-0.06 (0.17)	<b>1.75***</b> (2.92)	<b>0.79*</b> (1.75)
$d_{t-1}$	<b>0.82***</b> (19.46)	<b>0.77***</b> (8.55)	<b>0.70***</b> (4.69)	<b>0.84***</b> (12.09)	<b>0.62***</b> (4.61)	<b>0.69***</b> (3.80)	0.17 (1.19)	<b>0.79***</b> (9.58)	<b>0.43**</b> (2.48)	<b>0.66***</b> (6.38)
$b_{t-1}$	<b>-0.02***</b> (2.66)			<b>-0.06***</b> (4.11)		<b>-0.06**</b> (2.23)	<b>-0.09***</b> (3.75)			
$\omega_t^p$	-0.04 (0.31)					0.17 (0.57)	<b>0.49**</b> (2.24)	0.25 (1.42)		
$\omega_t^n$	<b>-0.34***</b> (2.95)					<b>-1.13**</b> (2.32)	<b>-0.81***</b> (3.77)	<b>-0.63**</b> (2.62)		
$\omega_t$		-0.16 (0.65)	-0.04 (0.24)	0.28 (1.24)	-0.28 (1.48)				<b>-0.29*</b> (1.98)	<b>-0.48***</b> (3.38)
d93	<b>-0.48*</b> (1.83)	<b>-0.22***</b> (2.80)			<b>-0.91*</b> (1.83)	<b>-5.07**</b> (2.25)				
d98							<b>-1.43*</b> (1.90)		<b>-1.01*</b> (1.92)	
Adj. R2	0.85	0.86	0.57	0.92	0.64	0.88	0.69	0.84	0.54	0.75
obs.	249	34	25	24	35	19	27	34	28	29

Method of estimation: OLS (fixed effects, heteroskedasticity robust SE for the panel regression). T-statistics in brackets.  
\*, \*\*, \*\*\* indicate significance at 10, 5, and 1 percent level. Period of analysis varies across countries (maximum span is 1970-2004).

# **Beyond the SGP**

## **Features and effects of EU national-level fiscal rules**

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### **Abstract**

The paper provides a comprehensive overview of the numerical fiscal rules in force in the 25 countries of the European Union, examines the reasons for the growing appetite for such rules, and assesses whether they have an influence on budgetary developments. The analysis is based on a new dataset constructed from questionnaires submitted to experts in finance ministries of EU countries which report a large amount of information on the numerical fiscal rules in force in the EU countries over the 1990-2005 period. The paper shows that the number of fiscal rules in force in the EU countries has increased in the past decades. The introduction of the Maastricht Treaty and of the SGP seem to have been catalysts for the introduction of fiscal rules. The analysis, based on the estimation of augmented fiscal reaction functions, confirms the existence of a relation between numerical fiscal rules and budgetary developments. The results show that some dimensions matter particularly for the capacity of fiscal rules to influence fiscal policy. Notably, the share of government finances covered by rules and the presence of strong enforcement mechanisms seem to be particularly relevant. The analysis also shows that there is a link between the design of numerical fiscal rules and the stabilisation function of fiscal policy. These findings confirm that while numerical fiscal rules can be useful devices to ensure better policies, careful attention should be devoted to the way they are designed.

JEL classification: E62, H50, H62.

Keywords: numerical fiscal rules, Stability and Growth Pact, cyclical stabilisation

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## 1. Introduction

Post-war economic history provides evidence that fiscal authorities in industrialised countries may be prone to a “deficit-bias”, which shows up in large and persistent deficits and growing public debts (e.g., Roubini and Sachs (1989)). The behaviour of fiscal policy also appears to be often pro-cyclical, including in good times, in spite of the large agreement that a neutral or counter-cyclical stance would be preferable (e.g., IMF (2004), European Commission (2006)).

There is growing agreement that the sources of the deficit bias and the “pro-cyclical bias” is rooted in “political economy” factors, i.e., in the system of incentives and rewards that shape the behaviour of fiscal authorities (see, e.g., Persson and Tabellini (2000), and Drazen (2000)). Governments, being unsure to be re-elected, are inherently short-sighted and do not fully take into account the longer term implications of deficits. Groups in the society that benefit from a particular type of government spending do not fully internalise the costs of this expenditure, since the financing is generally spread among a wide set of contributors through taxation. This “common pool problem” is at the source of overspending and the accumulation of deficits and debt over time. As pressures for higher spending become stronger in good times, political economy factors can also explain why fiscal authorities often behave pro-cyclically.

Policies aimed at tackling the deficit bias at the source need to redress the structure of incentives of fiscal policy-makers. Broadly speaking, such policies would concern reforms in political institutions or, less radically, measures aimed at improving “fiscal governance”, i.e., the overall system of arrangements, procedures, institutions that underlie fiscal policy making. Most of the measures that have been devised in practice to improve fiscal governance concern one or more of the following elements. First, the *procedural rules* laid down in law or constitution that govern the elaboration and implementation of the annual budget law and fix the respective powers of the various actors taking part in the budget process. The main objective of reforming budgetary procedures is to reduce the extent of the common pool problem. Second, *numerical fiscal rules* which fix targets and ceilings for fiscal aggregates or set benchmarks for the conduct of fiscal policy. The purpose in this case is to replace the discretion of fiscal authorities prone to deficit bias with ex-ante rules. Third, *independent fiscal institutions (Fiscal Councils)* other than government and Parliament that play a role on the conduct of fiscal policy by providing inputs or recommendations on fiscal policy issues.

The underlying idea is to delegate specific tasks of fiscal policy-making to independent bodies which are less likely to be affected by distorted incentives (see e.g. IMF (2005)).

This paper focuses on the features and the effectiveness of numerical fiscal rules in EU countries. While abundant literature exists on the role of budgetary procedures in advanced economies, and especially EU countries, in fostering budgetary outcomes ((e.g., Poterba and Von Hagen (1999)), there is proportionately less analysis devoted to numerical fiscal rules proper.<sup>1</sup> In the EU case, much of the debate and the existing analyses have focused on the EU fiscal framework, i.e., the numerical fiscal rules set at the EU level with the Maastricht Treaty and the Stability and Growth Pact. However, much less attention has been devoted to numerical fiscal rules set at national level (see, e.g., Von Hagen et al. (2006) among the few papers on the EU case), despite the growing reliance by EU countries on numerical fiscal rules at national level and the agreement among EU governments, expressed inter-alia in the March 2005 ECOFIN Council report on the reform of the SGP, that an appropriate national-level fiscal governance is a key complement for a proper functioning of the EU fiscal framework. Another reason why further analysis on numerical fiscal rules seems deserved is that there is less than full agreement on their effects. A well-known debate regards the possible trade-off between fiscal discipline and fiscal stabilisation that may arise from the operation of fiscal rules. However, the discussion is still open on the capacity of numerical fiscal rules to effectively affect budgetary results. Doubts have especially been raised on the effectiveness of fiscal rules in absence of a strong political commitment or if not complemented by domestic budgetary institutions ensuring appropriate monitoring and enforcement (e.g., Wyplosz (2005), Von Hagen et al. (2006)).

The aim of this paper is threefold. First, to provide a comprehensive overview of the numerical fiscal rules in force in the European Union since the beginning of the nineties. Second, to analyse the underlying reasons for the growing appetite for such rules. Third, to assess whether national-level numerical fiscal rules have an influence on budgetary developments, both from the viewpoint of the fiscal discipline and of fiscal stabilisation. More specifically, we aim at addressing the following three sets of questions:

- (i) What are the features of the numerical fiscal rules currently in force in the EU countries? Are there common characteristics to rules applied to different levels of

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<sup>1</sup> A number of recent studies have discussed the potential benefits of various forms of independent fiscal institutions (often named “Fiscal Councils”). See e.g., Eichengreen et al. (1999), Wyplosz (2005), Wren-Lewis (2002), Jonung and Larch (2004).

government or to different types of countries (big vs. small, contract vs. delegation, etc)?

- (ii) What macro-economic, budgetary, institutional and political factors have triggered the introduction of national-level numerical fiscal rules?
- (iii) Is there empirical evidence that national numerical fiscal rules at national level have an influence on the level of deficits? Do numerical fiscal rules have implications for the cyclical stance of fiscal policy? What characteristics of fiscal rules are important for their impact on fiscal discipline and for the stabilisation function of fiscal policy?

Compared with existing analyses, we aim to make a step forward in several respects. First, we have constructed a database on national-level numerical fiscal rules in EU countries by means of questionnaires addressed to fiscal experts in EU Finance Ministries which permit to analyse a wide range of features of a large set of different types of fiscal rules. All numerical rules conforming to the definition in Kopits and Symanski (1998) were considered: "a permanent constraint on fiscal policy, expressed in terms of a summary indicator of fiscal performance". Information was collected both on numerical fiscal rules enshrined in the constitution or law and those based on political commitment or agreement between different general governments.<sup>2</sup> The database contains information of the design of the rules, their function, statutory basis, monitoring procedures, enforcement mechanisms, media visibility. The information collected is more updated and takes into account more recent developments compared with existing analyses. Moreover, since information is collected on a consistent basis over the whole 1990-2005 period, it permits to analyse not only the distribution across countries but also the evolution over time.

Second, we make some progress in the construction of synthetic indicators of fiscal rules. We construct distinctive indicators for the overall system of numerical fiscal rules and for expenditure rules only. We construct indicators that permit to capture the intensity in the use of fiscal rules, based on what share of government finances is covered by rules. Moreover, we

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<sup>2</sup> If enshrined in constitution or law and having strict monitoring and enforcement mechanisms, such rules can impose binding constraints on the conduct of fiscal policy, and thereby may directly contribute to fiscal discipline. The influence of numerical fiscal rules based on political commitments or informal agreements between different tiers of general government is more indirect: by providing benchmarks against which fiscal policy it can be assessed, such rules raise reputation cost for the conduct of unsound policies.

construct indicators taking into account a number of qualitative features of the rules that are likely to matter for their ability to affect budgetary outcomes (which concern their statutory basis, their monitoring and enforcement procedures and their visibility in the media).

A number of messages emerge from the analysis. The number of fiscal rules in force has increased continuously over the last 15 years. This trend has been observed in all sub-sectors of general government. The introduction of the Maastricht Treaty and of the Stability and Growth Pact seem to have been powerful catalysts for the introduction of these rules. The presumption that the introduction of fiscal rules would follow major crisis, recessions and / or marked deteriorations in government finances is not confirmed by the analysis. The analysis also shows that "contract countries" rely more on numerical fiscal rules than delegation states and that the existence of an independent Fiscal Council seems to favour the development of numerical fiscal rules.

Regarding the impact of rules on budgetary outcomes, there is robust evidence that a more extensive use of numerical rules and rules with a more effective design are related contribute to reduce the size of deficits. The analysis shows that an increase in the share of government finances covered by numerical fiscal rules leads, *ceteris paribus*, to lower deficits. It also appears that an increase in the coverage of government finances by expenditure rules leads to a reduction in the primary expenditure-to-GDP ratio. The analysis also suggests that the characteristics of fiscal rules matter for their influence on budgetary outcomes. Some dimensions matter particularly for the capacity of fiscal rules to influence fiscal policy, notably the presence of a strong enforcement mechanism. Finally, the analysis supports the view that the nature and design of numerical fiscal rules may have an impact on the cyclical behaviour of fiscal policy. The elements of fiscal rules that are commonly perceived as relevant in terms of their impact on the stabilisation function of fiscal policy seem to indeed to be associated with a different response of fiscal authorities to the cycle.

The paper is organised as follows. The second section provides a selected survey of the literature. The third section describes the dataset, provides a descriptive analysis of the numerical fiscal rules in force in the EU countries, and discusses the factors that may have triggered the introduction of fiscal rules. In the fourth and fifth section, we investigate the existence of a link between numerical fiscal rules and budgetary outcomes (discipline, stabilisation). The concluding remarks follow.

## 2. Literature review

### 2.1. The deficit bias: theory

Several different explanations have been put forward for the deficit bias. Most of them, most rigorously grounded in economic theory and empirically tested with strongest success, can be reconducted to two main lines of reasoning: governments' short-sightedness and the so-called "common pool problem".<sup>3</sup>

The main tenet of the explanation for the deficit bias based on governments' short-sightedness is as follows: since governments are not sure of being re-elected, they have a tendency to overlook the long-term consequences of budgetary imbalances. Persson and Svensson (1989) and Alesina and Tabellini (1990) have demonstrated that the inherent short-sightedness of governments associated with uncertain elections lead to deficits in excess of optimal outcomes and that the deficit bias is further exacerbated by a strategic element whereby incumbent governments may have an incentive to "tie the hands" of forthcoming governments by creating high deficits. It has also been demonstrated that incumbents may have an incentive to attempt to affect electoral outcomes via fiscal policy, which in turn creates "electoral cycles" and may provide an additional explanation for the deficit bias (e.g., Rogoff (1990)).

The second main set of explanations is related with the so-called "common pool problem". Since the financing of a specific type of expenditure is often shared among a wide range of agents, interest groups that benefit from given categories of public spending have a tendency to free-ride on others' contributions. This creates a bias towards overspending and the accumulation of deficits. Weingast et al. (1981) provide one of the first formal arguments for the common pool problem. Velasco (1999) demonstrates in a dynamic model that the common problem would, over time, lead to the occurrence of large and protracted deficits and the accumulation of debt.

It has been demonstrated that the common pool problem is expected to be stronger in fragmented and heterogeneous government coalitions. Von Hagen and Hallerberg (1999)

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<sup>3</sup> An alternative explanation that needs to be mentioned is lack of time consistency of fiscal policy (see, e.g., Persson et al. (1987)). In analogy with arguments originally put forward for monetary policy, promises of fiscal rigour by fiscal authorities may lack credibility. If this is the case, agents anticipate high inflation in their wage and price demands, inducing in turn fiscal authorities to run expansionary policies

show that the members of a given government coalition have an interest to keep taxes low on their own constituencies, which could result into a higher deficit the most numerous the enacted targeted tax cuts and allowances. Persson et al. (2005) provide an analogous argument regarding spending: each member of the coalition will support initiatives to increase spending on items favouring their own constituencies. Again, the more numerous the number of different groups represented by the government, the more likely is overspending and deficit bias. Alesina and Drazen (1991) demonstrate that the persistence of large deficits could be due to inefficient political equilibria where coalition members fail to agree on a consolidation package. The implication of the Alesina and Drazen (1991) model is that the higher the degree of heterogeneity of government coalitions, the higher the likelihood that consolidations are delayed. Accordingly, fragmented governments may lead to deficit bias due to a mechanism other than the common pool problem but leading to the same predictions. Finally, Tornell and Lane (1999) have shown that pressures for increased spending resulting from the common pool problem may become stronger when resources are more abundant (i.e., in “good times”), since the marginal gain from lobbying becomes stronger in this phases of the cycle. The resulting outcome is a tendency to run pro-cyclical fiscal policies in good times.

## **2.2. The deficit bias: empirical evidence**

Some papers have provided evidence in support of the explanation for the deficit bias based on governments’ short-sightedness. Grilli et al. (1991) put in relation deficits and measures for the duration of governments across a panel of industrial countries and find that deficits are strongly related with the frequency of changes in the executive. Moderate evidence in favour of the explanation of the deficit bias based on governments’ short time horizon is found in Lambertini (1996) in a study focused on the US. Petterson (1999) finds instead strong evidence in favour of the hypothesis across a large panel of Swedish municipalities. Overall, there is some evidence in favour of the explanation of the deficit bias based on short-sightedness, even if there may be difficulties with the implementation of the empirical tests and with the interpretation of results (see, e.g., Persson and Tabellini (2000)).

The common pool problem explanation for the deficit bias has received relatively strong support from empirical evidence. Three strands of empirical literature addressing the common pool problem can be identified. First, analyses putting in relation measures of government

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to offset the output effect of supply-driven inflation. Such arguments provide a general rationale to the deficit bias and the use of fiscal rules. However, they are hardly empirically testable.

fragmentation with budgetary outcomes. Second, studies linking political institutions to fiscal variables. Third, the large and growing body of literature analysing the relation between budgetary procedures and fiscal outcomes.

#### *Political fragmentation and budgetary outcomes*

Poterba (1994) and Besley and Case (2004) analyse the US case and conclude that political fragmentation is associated with higher spending across US states. Roubini and Sachs (1989) analyse a panel of industrial countries and find that more fragmented governments tend to run larger deficits. Perotti and Kontopoulos (2002) find that government expenditure and debt are positively related across OECD countries with the number of members of government coalitions and with the number of spending ministries. In a recent comprehensive study, Fabrizio and Mody (2006) show that fragmented government coalitions are associated with larger deficits in a sample of Eastern European countries.

#### *Political institutions and budgetary outcomes*

To some extent the composition of governments, their degree of fragmentation and heterogeneity are the result of more fundamental institutional determinants, above all the electoral system. Proportional systems are expected to lead to more fragmented coalitions. Moreover, the size of the common pool problem could also be related to the way the institutional relations between the executive and the legislative are organized. The strength of check and balances are expected to be stronger in presidential rather than in parliamentary systems, thus leading to a less strong common pool problem (see, e.g., Persson (2002)). Some empirical analyses have provided support to the common pool hypothesis by putting in relation budgetary outcomes with electoral regimes. Grilli et al. (1991) find a relation between the size of deficits and proportional electoral systems across a panel of industrial countries. Persson (2002) finds that government spending tends to be higher in countries with proportional elections and with a parliamentary system across a large sample of industrial and emerging countries.

#### *Fiscal governance and budgetary outcomes*

A large body of empirical literature has tackled the empirical analysis of the common problem by focusing on the impact of the procedures, arrangements and rules that surround fiscal policy making. The idea is that the common pool problem can be reduced in the presence of an appropriate system of fiscal governance. Hallerberg and von Hagen (1999) identify two

broad approaches through which the common pool can be mitigated via fiscal governance. The first, *delegation* approach consists of designing institutions for fiscal policy in such a way to delegate strong powers to the finance ministry or to the prime minister. Such an approach permits to concentrate fiscal policy making in the hands of few actors and thereby to internalize the effects of spending and financing decisions on the budget. The second, *contract* approach consists of defining arrangements and procedures that ensure an agreement among spending ministries and other spending authorities (e.g., local authorities) on the total budget which is consistent with ex-ante defined objectives. In this case, the common pool problem is addressed by means of an ex-ante contract among the various parties that participate to fiscal policy making. These two models of fiscal governance are not mutually exclusive; mixed cases are possible. The models of fiscal governance followed in practice are likely to depend on a series of more fundamental political and institutional factors. While the delegation approach is expected to be suited for countries characterised by single party governments or small homogenous coalitions, a contract approach would be more likely to prevail in countries where fragmented governments are the norm.

The papers that have analysed whether fiscal governance helps to mitigate the common pool problem generally make use of *synthetic indicators of fiscal governance*. This permits to put in relation country-level fiscal variables with variables measuring the degree to which fiscal governance permits to “centralise the budget” (i.e., to solve the common pool problem) which are also defined at country level. Table 1 provides a synthesis of the main features of a series of such indexes that have been proposed so far in the literature.

Von Hagen (1992) builds for EU countries a Structural Index that captures the degree of centralisation of the budget process, the characteristics of the Parliamentary process, and the flexibility of budgetary execution. He finds that fiscal discipline is enhanced by budget procedures in which the finance minister has a strong dominance over spending ministers, the amendment power of the parliament is limited and there is little flexibility with respect to the execution of the budget law. De Haan et al. (1999), on the basis of a similar methodology applied to a subset of EU countries, conclude instead that while budget institutions affect fiscal policy outcomes, the effect is in general relatively quite small. Hallerberg et al. (2001) further develop the methodology devised in Von Hagen (1992) and build different indexes, measuring the connectedness between stability programmes and budgetary procedures, the powers of the Finance Minister in the formulation stage of the budget, those of the Parliament during the approval of the budget and the role of the Finance Ministry in the implementation

stage. They find that the impact of fiscal rules on budgetary outcomes differ depending on the overall strategy chosen by the countries to centralise the budget. In contract countries the presence of multi-annual budgetary frameworks, especially if connected with Stability and Convergence Programmes, seem to have a significant impact on fiscal results. In delegation countries, budgetary outcomes appear to be affected mostly by the powers of the Finance Minister in the approval and in the implementation stage of the budget.

Gleich (2003) builds indicators measuring the quality of budgetary procedures of 10 Eastern and Central EU countries. His indicators capture the role of procedures at various stages of the preparation of the budget (preparation stage, legislative stage, and implementation stage). Gleich (2003) assigns higher rankings to countries in which institutions are conducive to coordination and cooperation in decision making and that should thus promote fiscal discipline and finds that the institutional design of the budget process in these countries appears to have an impact on fiscal performance. Yläoutinen (2004) follows an approach similar to Hallerberg et al. (2001) to build fiscal governance indices for Central and Eastern European countries and shows that most of these countries rely predominantly on the commitment approach and that have strengthened their fiscal governance in recent times, mainly by establishing multi-annual frameworks.

Von Hagen (2005) builds a Fiscal Rule Index summarising information pertaining to numerical fiscal rules, and an Index of Budgeting Institutions, measuring the extent to which other arrangements and practices permit to centralise the budget process.<sup>4</sup> The analysis considers both EU countries and Japan and concludes that numerical fiscal rules have disciplinary effects provided they are designed in an effective way and are combined with a design of the budget process that enables the government to commit to the rule. Hallerberg, et al. (2006, 2004) focus on the interaction between fiscal rules and budgeting processes at national level and conclude that fiscal rules are more effective in contract countries than in delegation countries. Annett (2006), shows that the Stability and Growth Pact has been more effective in improving budgetary outcomes in EU countries relying on a contract approach to fiscal governance.

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<sup>4</sup> The Von Hagen (2005) Fiscal Rule Index takes into account a number of features, including the time horizon covered by the rule, the degree of commitment to the rule, whether the fiscal targets are anchored in a coalition agreement, the connection between the Budget and Stability and Convergence Programmes, the existence of clear rules dealing with shocks to expenditures and the strength of Finance Minister to enforce budget law.

### 3. National-level fiscal rules in Europe

#### 3.1. The data

In this section, we provide here basic information on the sample used in the following analysis. Information on fiscal rules in EU countries was collected by means of a survey conducted by the European Commission in 2006 in the context of the Working Group on the Quality of Public Finances (WGQPF) attached to the Economic Policy Committee (EPC). Questionnaires were filled out directly by fiscal policy experts in EU capitals. In contrast with existing studies which generally focus on the effect of certain types of fiscal rules applied to the central and, more rarely, the general government sector, our database is more comprehensive in several respects. It includes information on all types of numerical fiscal rules irrespective of the *fiscal aggregate* concerned (budget balance rules, debt rules, expenditure rules, ...), of the *legal status* (rules enshrined in law or constitution, rules based on political commitment, ...), of the *sub-sector of general government* to which they apply (local governments, state governments, central government, social security). The database contains information on all rules in place throughout the whole 1990-2005 period. This allows considering the dynamic dimension in the analysis of the relation between numerical fiscal rules and budgetary outcomes. We received information for all 25 EU countries. Among them, 22 have at least numerical fiscal rule; only Malta, Cyprus and Greece do not have numerical fiscal rules according to the definition used in our analysis.

The following information is available for each rule: (i) the general characteristics of the rule; this covers the type of rule, the precise definition of the targeted variable, the government sectors covered by the rule, whether some types of expenditure are excluded from the coverage of the rule, the time frame, statutory basis, monitoring and enforcement procedures of the rule; (ii) the motivations for the introduction of the rule; (iii) the relevant dates for the conception and entering into force of the rule and the main changes in the period under review; (iv) finally, the database includes (subjective) information related to the perception of the track record in terms of compliance and of the reasons for possible non-compliance with the rule. It also contains questions related to the perception on whether the rule has contributed to fiscal discipline and whether non compliance generally triggered a public debate.

### **3.2. Stylised facts**

This section provides a number of stylised facts regarding the numerical fiscal rules in force in the EU countries since 1990. The number of rules in force in the EU countries has grown continuously over the past fifteen years (see Chart 1). In the early nineties, most numerical fiscal rules were applied at local or regional levels of government. This reflected the willingness of higher levels of government to impose constraints on local entities and the need to ensure sufficient coordination among general government tiers. Such rules continued to develop throughout the whole period covered by the survey and exist today in almost all EU countries. In parallel, the number of numerical fiscal rules applying to the central government sector has increased considerably, reflecting especially an increased reliance on expenditure rules. A relatively recent feature has been the introduction of numerical fiscal rules in the social security sector and rules covering the whole of the general government sector. These developments may be a response to the need to redirect expenditure across sub-sectors of general government, to tackle the increasing spending pressures in the social security sector, or to the introduction of the EU fiscal rules, which impose requirements for the general government deficit and debt.

The analysis of the questionnaires shows that there is a great deal of variety in the design of numerical fiscal rules as regards the type of rule and the definition of the target (see Table 2). About one third of the numerical rules currently in force in EU countries are budget balance rules, about one quarter are rules imposing restrictions on borrowing and debt, and about another quarter are expenditure rules (see also Chart 2). Most budget balance and debt rules are applied to regional and local governments (see Chart 3). In contrast, expenditure rules are more frequent in the central government and social security sub-sectors. Only few budget balance rules, all of them applying to the general and central government level, are defined in cyclically-adjusted terms. About two thirds of expenditure rules define ceilings for levels or growth rates in nominal terms, the remaining third being defined in real terms. More than half of revenue rules currently in force in the EU countries establish pre-defined principles for the allocation of higher-than-expected revenues (Table 2).

Some characteristics of the rules vary markedly depending on the level of government to which they apply. Rules applied to regional and local governments rely preponderantly on annual schemes, while most of those concerning the general government and central government sectors have a time horizon that goes beyond the yearly budgetary cycle and are

integrated into a multi-annual fiscal framework (see chart 4). This could be related to the fact that the stabilisation function of fiscal policy takes mainly place at central and general government level, so that there is a stronger need for fiscal rules at higher levels of government that are consistent with stabilisation objectives.

The large majority of numerical fiscal rules defined at sub-national levels of governments are enshrined in law or in constitution, while rules concerning central government and the whole of the general government sector tend to be more based on political agreements (internal stability pacts or other forms of political agreement or commitment). Likewise, a majority of rules applying to local and regional governments sectors foresee either automatic correction mechanisms or the obligation for the authority responsible to adopt measures in case of non compliance with the rule (see Charts 5 and 6). In contrast, most rules concerning the central government sub-sector do not include ex-ante defined actions in case of non-respect. The explanation could be that enforcement of rules applying to a wide range of actors (state and local fiscal authorities) requires stronger statutory body and tight procedures. Moreover, it appears from the replies to the questionnaire that the rules applying to central and general government level draw much more public opinion and media interest than other rules, which can be expected to contribute to the enforcement of the rule through higher reputation costs in case of non-compliance (see Chart 7).

The questionnaire on fiscal rules included explicit questions on the perception of whether each of the rules in place would entail a pro-cyclical bias in the conduct of fiscal policy. The replies (see Chart 8) indicate in the majority of cases that the respect of the rule may imply the conduct of pro cyclical fiscal policy in the case of budget balance and debt rules, while expenditure rules are generally not perceived as leading to pro-cyclical outcomes. Regarding revenue rules, the majority is judged not to entail a pro-cyclical bias, which is consistent with the fact that more than half of them deal with the allocation of higher-than-expected tax revenues.

### **3.3. Synthetic indicators of numerical fiscal rules**

The main objectives of this paper are to understand the reasons for the growing recourse to numerical fiscal rules and to assess whether such rules have an influence on budgetary developments. To this purpose, it is necessary to construct synthetic indicators summarising, for a given country and in a given year: (i) the degree of intensity in the use of numerical

rules; (ii) the potential effectiveness of such rules based on their characteristics. The construction of these indicators requires dealing with several issues.

First, account needs to be taken of the fact that different type of rules may concur to the same objective of improving budget balances and may be present in the same country, in the same year. This implies that a *weighting scheme* is needed to *aggregate multiple coexisting rules* in a synthetic indicator.

Second, the analysis needs to take into account that the vast majority of numerical fiscal rules apply only to a *fraction of the general government sector*. However, most fiscal time series of interest for our analysis are available only for the general government level. It would be meaningless to link budgetary outcomes defined at general government level with rules applying at general government sub-sectors. A solution could be to take into account in the construction of a synthetic indicator that individual fiscal rules may cover different sectors of the general government in such a way to differentiate between a rule applying, say, to municipalities from a rule defining numerical ceilings for the whole of the general government sector.

Third, it must be taken into account that the effectiveness of fiscal rules may also depend on a number of *qualitative features* (see, e.g., Inman (1996) for a discussion). A first relevant characteristic of a fiscal rule is its *statutory basis*, i.e., whether the rule is enshrined in the constitution or in law or it is simply the fruit of a political agreement. The nature of the *body in charge of monitoring* the rule is another important element. When the respect of the rule is monitored by an independent body the probability that fiscal variables are adjusted to ensure compliance with the rule can be expected to be higher. The *nature of the enforcement mechanisms* also matters. In particular, the existence of sanctions mechanisms in case of non-respect of the rule, which can be enacted by an independent authority, can be expected to foster compliance. Finally, it should be considered that those rules that are neither enshrined in law or constitution nor regularly monitored and for which no enforcement mechanisms is defined may nonetheless contribute to budgetary outcomes if characterised by a high degree of *media visibility*.

We built synthetic indicators for the overall set of numerical fiscal rules and for the subset of expenditure rules only. The methodology is inspired from that in existing literature (see e.g. Deroose, Moulin and Wierds (2005)). Considering that almost all numerical fiscal rules are designed to contribute to the reduction of general government deficits, our intention is to

relate the synthetic indicators for the overall set of fiscal rules with general government balances. Similarly, we intend to put in relation the synthetic indicators for expenditure rules with data on government expenditure. We did not construct a synthetic indicator for revenue rules only, the reasons being the relative low number of such rules in the sample and the variety of the purposes pursued by such rules (see Table 2).

Both for the overall set of rules and for expenditure rules only we build two synthetic indicators. The first is aimed at measuring the degree of intensity in the use of numerical rules, the second aims at capturing also the characteristics of fiscal rules which may influence their capacity to influence budgetary outcomes. We call these two indexes, respectively, *Fiscal Rule Coverage Index* and *Fiscal Rule Index*. When the indexes only consider expenditure rules we name them *Expenditure Rule Coverage Index* and *Expenditure Rule Index*. We provide in the following a brief description of the criteria followed for the construction of the Fiscal Rule Coverage Index and of the Fiscal Rule Index. Analogous criteria apply to the Expenditure Rule Coverage Index and to the Expenditure Rule Index. The Annex provides a detailed description followed for the description of the synthetic indicators.

The Fiscal Rule Coverage Index summarises the information on the fraction of general government finances that is covered by numerical fiscal rules. In absence of a strong a priori regarding which types of rules have a greater influence on fiscal outcomes, all types of rules are treated in the same way (they are given the same weight). An issue arises in case more than one rule applies to the same sub-sector of the general government. In such a case, it is likely that some rules are redundant. However, fully ignoring the fact that multiple rules are present may imply disregarding the impact of some of them. For this reason we adopt the “rule-of-thumb” assumption that when multiple rules coexist on the same government sub-sector, those rules with the 'weaker' features (e.g. rules with no legal basis, no clear monitoring and enforcement procedures, low media visibility) are given weight equal to  $\frac{1}{2}$ .

The Fiscal Rule Index takes into account not only the information on the share of government finances covered by numerical fiscal rules but also the qualitative features of fiscal rules that matter for their effectiveness. To this aim, for each rule we calculated a composite Index of Strength aimed at capturing its potential effectiveness, on the basis of scores assigned to the five qualitative features mentioned before (the statutory base of the rule; whether there is an independent monitoring; the nature of the institution responsible for the enforcement of the

rule; the existence of pre-defined enforcement mechanisms; and the media visibility of the rule).

In addition, we calculated a *Fiscal Rule Cyclical Index* with the aim of providing synthetic information on the likely impact on the stabilisation function of fiscal policy arising from the system of fiscal rules operating in a given country in a given year. This index takes into account the share of government finances covered by fiscal rules and the properties of each fiscal rule with respect to macroeconomic stabilisation. Scores were attributed to each rule, the higher value corresponding to an a-priori larger stabilisation function of the rule.

All indexes are calculated for the period 1990-2005, so that they permit to track the changes in the design or in the perimeter covered by the rules throughout the period. All indexes are normalised in such a way to have zero mean and unit variance.

### **3.4. Which countries rely more on numerical fiscal rules?**

In this section, we examine whether some specific groups of countries show more or less reliance on numerical fiscal rules. To assess the reliance on fiscal rules, we focus on three types of indicators: (i) the number of fiscal rules in place in the countries; (ii) the share of government finances covered by the fiscal rules in place as measured with our *fiscal rule coverage index*; and (iii) the *fiscal rule index* that takes into account both the share of government finances covered by fiscal rules and the characteristics of these rules.

We first examine whether "big" and "small" countries show a different pattern with respect to numerical fiscal rules. Prima-facie evidence indicates that the size of the country does not seem to be a relevant dimension for the reliance on fiscal rules. When splitting the sample in two groups of countries (Germany, Italy, the UK, France, Spain and Poland on one side; other countries on the other side), it appears that large countries have on average more rules than others (3.8 rules in 'big' countries, 2.7 in 'small' countries). However, as shown in Chart 9, the Fiscal Rule Index exhibits a comparable evolution in the two groups of countries.

In a second step, we look at numerical fiscal rules in "high-deficit" countries and "low-deficit" countries (i.e., to countries with an average deficit during the 1999-2005 period which is, respectively, above and below 3 per cent of GDP). It turns out that the number of fiscal rules in force is significantly higher in countries with low deficits (3 rules on average in low deficit countries, as against 2 rules in the higher deficit countries). The stronger reliance on

numerical fiscal rules in low deficit countries is even clearer when looking at developments in the Fiscal Rule Index. This index is always significantly higher in these countries over the period 1990-2005 (see charts 10 and 11). The difference is mainly related to the fact that low deficits countries have a larger share of government finances covered by fiscal rules. Interestingly, the average 'strength' of fiscal rules in force seems to be equivalent in the two groups of countries. A similar conclusion is reached when splitting the sample alternatively, e.g., between countries with average deficits over the period above and below the median deficit across the whole sample (Chart 11).

"Delegation" and "contract countries" present on average a similar number of numerical fiscal rules. There are however a number of differences in the distribution of the fiscal rules in force. Countries following the contract approach hinge more on numerical fiscal rules applied at the general government, central government, and social security level. Conversely, delegation countries have a higher number of fiscal rules implemented at regional and local level (see chart 12). This distribution seems consistent with the fact that the larger political dispersion of governments in contracts countries is likely to promote fiscal rules ("contracts") at general government or central level. Stronger reliance of fiscal rules at higher levels of government in contract countries translates into a higher value of the Fiscal Rule Index in this group of countries throughout the whole sample period. Looking at the time-profile of the Fiscal Rule Index it stands out that, while the increase of the index has been particularly rapid in contract countries following the adoption of the Maastricht Treaty, an acceleration of the index in delegation countries is observed following the adoption of the SGP (see Chart 13).

### **3.5. What triggers the introduction of fiscal rules?**

What motivations and circumstances lead countries to introduce numerical fiscal rules? There could be many factors that may affect the willingness of countries to rely on numerical rules to facilitate the achievement of budgetary objectives. The fiscal situation of the country, its growth performance, the existing framework for fiscal governance and the overall political and institutional setting, both at a national and at a super-national level, are likely to play a role. In order to measure the impact of these different set of factors, we carried out a simple multivariate regression exercise. This would help to interpret the prima-facie evidence presented in the previous section.

The dependent variables are our aggregate indexes for fiscal rules, alternatively the Fiscal Rule Coverage Index, the Fiscal Rules Index, the Expenditure Rule Coverage Index, or the Expenditure Rule Index. Regarding the explanatory variables, we used fiscal data (budget balance, total government expenditure, debt ratio) and data on output gap from the AMECO European Commission DG ECFIN database. The explanatory variables capturing fiscal governance are a dummy capturing the existence of a Fiscal Council during the period covered in the sample (information obtained from the Commission survey on fiscal institutions – see European Commission (2006)) and a dummy indicating whether the country follows a "contract model" of fiscal governance or a "delegation model".<sup>5</sup> One dummy distinguishes "small" countries from those that could be considered as "big". The choice follows the weight these countries have in the European Council; this way the dummy captures not only economic size but also the possibility of a different degree of peer pressure coming from the EU fiscal framework, due to the different ability of countries to influence the outcome of the decisions by the EU Council. A series of dummies capture the main developments in the EU fiscal framework: the start of phase II of the Economic and Monetary Union (i.e., the start of the "run up to Maastricht"); the introduction of the Stability and Growth Pact; the 2004 enlargement of the Union to 10 new countries. The dummies take value 1 in the years and for the countries that are concerned with the above mentioned EU processes. Finally, we include a series of political variables: dummies to take into account the presence of elections and the nature of the electoral system (proportional or majoritarian), the degree of dispersion of seats in the Parliament as measured by the Herfindahl index, the margin of majority held by government in the Parliament, and dummies capturing the orientation of the ruling coalition along the political spectrum. The source of these data is the World Bank Database of Political Institutions (Beck et al. (2001)).

Table 3 shows the regression results. Data are pooled across countries and time. All time-varying explanatory variables are taken with a lag to avoid simultaneity problems. To take into account the possibility of heteroscedastic residuals, t tests are constructed on the basis of robust standard errors. Overall, the regressions explain a large share of the variance of the dependent variables, as measured by the R-square statistics. However, only few explanatory variables appear to be highly statistical significant.

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<sup>5</sup> The classification used is based on Von Hagen et al. (2001, 2002, 2005) and Yläoutinen (2004).

Contrary to what one might expect, the evolution of fiscal rules indexes is only loosely related to the initial state of countries' public finances. Alternative specifications (not reported) have been estimated using, instead of the lagged budget balance, total government expenditure and debt ratio, the 3-year lag in the government budget balance and in the total expenditure variable, their year-on-year change, and their cumulated change over 3 years. As a further alternative, the budget balance has been replaced by the primary cyclically-adjust budget balance both in the specifications reported in Table 3 and in the alternative specifications mentioned above. In none of these alternative cases fiscal variables appear to gain statistical significance. Overall, there is no strong evidence that national fiscal frameworks were strengthened neither when starting conditions in public finances were critical, nor following marked or protracted deteriorations in budgetary situations. The analysis also shows that macroeconomic conditions, as summarized by the output gap, do not seem to play a significant role in explaining developments in national-level fiscal frameworks. In particular, the hypothesis that the introduction of fiscal frameworks could follow protracted periods of slow growth and therefore a worsening cyclical component of the budget is not supported.

On the contrary, our results indicate that the construction of the EU fiscal framework seems to have been a powerful catalyst for the introduction of numerical fiscal rules. The dummy variables corresponding to the start of the run up to EMU and to the entering into force of the SGP are generally statistically significant in explaining the developments in the fiscal rule index. The introduction of a credible constraint at the EU level seems to have triggered the development of numerical fiscal rules in the Member countries.

Regarding the impact of national-level fiscal governance, the results in Table 3 suggest that both the presence of independent Fiscal Councils and a fiscal governance model based on the contract approach seem to favour the development of numerical fiscal rules at country level. A-priori, Fiscal Councils could be thought as an alternative to numerical fiscal rules, since they also aim at reducing discretion on the part of fiscal authorities by eliminating possible distortions in specific aspects of fiscal policy making. The analysis rather suggests that the existence of such councils favours the development of numerical fiscal rules. This complementarity relation can be related to the fact that fiscal councils may contribute to "strengthening" fiscal rules by improving their implementation and ensuring independent monitoring of compliance. Regarding the model of fiscal governance, the analysis shows that, other things being equal, contract countries are more likely to develop an internal system of numerical fiscal rules. This result is consistent with the arguments usually put forward in the

existing literature (i.e., that “contract” countries are more likely to rely on explicit agreements, rules and procedures rather than on delegating strong control powers to finance ministries) and with evidence that EU contract countries seem to have strengthened their budgetary procedures (e.g., Hallerberg et al. (2006)).

## **4. Fiscal rules and budgetary discipline**

### **4.1. Budgetary developments following the introduction of numerical fiscal rules**

A first basic approach to assess the influence of fiscal rules on budgetary outcomes is to check whether budgetary developments in the years immediately following the introduction of fiscal rules differ from those observed on average across the whole sample. Table 4 reports the average changes over different time horizons in the cyclically-adjusted primary balance (primary CABs) and in the ratio of cyclically-adjusted primary expenditure to GDP, and compares them with the changes recorded for the same variables in the years immediately following the adoption of new numerical fiscal rules. All fiscal rules were considered when comparing the changes in the primary CABs; only expenditure rules were considered instead when comparing changes in cyclically adjusted primary expenditures. The sample considered is the same as that considered in the questionnaire on fiscal rules (22 EU countries over the 1990-2005 period). Over the sample period there were episodes of very large and rarely observed changes in budgetary data, observed mostly in the countries that joined the EU with the 2004 enlargement. In order to avoid results being driven by these outliers, the sample was trimmed in such a way to exclude the observations exhibiting changes in the CAPB and in the primary cyclically-adjusted expenditure outside the 2.5 per cent and the 97.5 per cent percentiles of the overall distribution.

The results (see Table 4) indicate that the primary CAB on average improved in the years following the introduction of numerical fiscal rules. This conclusion holds for the different time horizons considered, i.e. one, three and five years after the introduction of the rule. It contrasts with the fact that, on average across the whole sample, the primary CAB remained roughly unchanged over the same time horizons. Analogously, while expenditures did not change significantly over the whole sample, there was on average a reduction in government spending following the introduction of fiscal rules.

Results also suggest that the marginal benefits associated with the introduction of fiscal rules tend to decrease with time: the discrepancy between the change in the primary CAB in the years following the introduction of fiscal rules and in normal times is roughly the same when considering a 3-year horizon and when considering a 5-year horizon. A similar phenomenon is observed for expenditures. Such a result could be consistent with fiscal rules mainly defining targets and ceilings for fiscal aggregates in levels rather than in terms of growth rates: once the adjustment required by the newly-introduced fiscal rule has been achieved, no further significant changes in the target fiscal aggregate are required to achieve compliance with the rule.

This preliminary analysis suggests that there may be a link between the introduction of numerical fiscal rules and budgetary outcomes. However, some caveats are in order. First, there is a need to control for other factors that may have affected government budgets and expenditure. In particular, controlling for the impact of other factors on budgets may permit to explain the apparent contradiction between positive developments in budgets following the introduction of rules and budgetary positions remaining roughly unchanged on average across the sample during a period in which the number of fiscal rules was growing in the EU. This seems to suggest that some factors may have led to a progressive budgetary deterioration after the initial improvement in budgetary positions following the introduction of rules. Second, the analysis does not take into account that the disciplinary effect of numerical fiscal rules may not only depend on their existence, but also on the share of government finances they cover and their characteristics.

#### **4.2. Evidence from the estimation of fiscal reaction functions**

To assess the link between numerical fiscal rules and budgetary outcomes, we estimated fiscal reaction functions augmented with our indexes of fiscal rules (Fiscal Rules Coverage Index, Fiscal Rules, Expenditure Rules Index and Expenditure Rules Coverage Index), thereby taking into account the information on both the coverage and characteristics of the numerical fiscal rules in EU countries.

The dependent variable is the primary cyclically-adjusted balance (CAPB). Some of the explanatory variables appear in most analogous estimations of fiscal reaction functions (see, e.g., Gali and Perotti (2003)). The lagged CAPB captures an element of inertia (positive expected sign). The lagged debt ratio captures a debt-stabilising motive on the part of fiscal

authorities: the higher the outstanding stock of debt, the less likely fiscal authorities will allow loose structural budgetary positions (the expected sign is positive). All fiscal variables are expressed as shares of potential output. The output gap captures an output-stabilising motive of fiscal authorities (the CAPB is likely to stay high compared to the past level if output is perceived to be above potential). A well-known problem with the use of the output gap variable in the estimation of fiscal reaction functions is the endogeneity of the output gap, which is both a determinant and an effect of fiscal policy. Different routes have been followed to overcome this endogeneity issue. In some papers the output gap is used with a lag, which reflects the assumption that fiscal authorities take their decisions on the basis of the cyclical conditions prevailing before the budget is actually implemented (see, e.g., Manasse (2006)); in other papers the output gap variable is instrumented with own lags and measures of an “international” output gap (e.g., Gali and Perotti (2003)); finally, other papers adopt GMM estimation methods to account for the endogeneity of the output gap (e.g., Forni and Momigliano (2004)). In this paper we are not primarily focused on the response of fiscal authorities to the cycle, hence we will normally overcome the issue of endogeneity by the use of the output gap variable with one lag. However, when analysing the impact of numerical fiscal rules on the cyclical response of fiscal authorities (see section 5) we will also use instrumental variable estimates.

The standard specification of fiscal rules has been augmented with additional explanatory variables. First, dummies capturing the main steps of the evolution of the fiscal framework have been introduced. These variables are the same as those used in Table 3 for the analysis of the determinants of the evolution of national-level numerical fiscal frameworks: a dummy capturing the run-up to EMU, a variable summarising the effect of the entering into force of the SGP, and a dummy aimed at capturing the impact of the 2004 enlargement of the EU. In light of the strong performance demonstrated in existing analyses (e.g., Golinelli and Momigliano (2006)) an election dummy was also included among the explanatory variables, taking value 1 in the year in which Parliamentary elections were held (source Beck et al. (2001)). Finally, the specification of the fiscal reaction function is augmented to account also for the impact of the national numerical fiscal framework, as summarised in our Fiscal Rule Index. The index is used lagged as an explanatory variable, to avoid possible issues of reverse causation.<sup>6</sup> Country fixed effects are aimed at capturing all remaining country-specific

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<sup>6</sup> The issue of reverse causation and endogeneity of fiscal rule indexes in the estimation reaction functions is however likely to be limited in our case. As shown in Table 3 presenting the analysis of the

determinants. The sample was trimmed to exclude budgetary developments that could be considered as outliers (see previous section).

Results of the estimations are reported in Table 5. The estimation method is OLS with robust standard errors. The CAPB results to be quite strongly persistent, as denoted by the highly statistically significant coefficient for the lagged CAPB of 0.6. In accordance with existing estimates of fiscal reaction functions for EU countries (e.g., Gali and Perotti (2003), Turrini and in't Veld (2004), European Commission (2006)), the estimated response of fiscal authorities to output gap results to be weak, while there is a strongly significant positive response to debt. The election year variable is highly significant and negative (big deteriorations in budget balances in election years). Regarding our Fiscal Rule Index, the coefficient is positive and significant, which indicates that an increase the share or quality of government finances covered by numerical fiscal rules leads to an improvement in the primary CAB. The coefficient of 0.21 indicates that a 1 standard deviation increase in the value of the index improves the CAPB by 0.2 GDP points at impact. This impact effect does not take into account the fact that CAPBs are highly persistent and adjust only partially at impact to shocks. Once the inertia of CAPBs is taken into account, the long-term impact of 1 standard deviation increase in the Fiscal Rule Index raises CAPBs by about 1/3 of GDP point.<sup>7</sup>

Results for the impact of the Expenditure Rule Index on government expenditure are illustrated in columns (4)-(6) of Table 5. The dependent variable is now the ratio of cyclically-adjusted primary expenditure to GDP. Most explanatory variables behave in a similar way as in the case in which the CAPBs as the dependent variable. Although the statistical significance of the Expenditure Rule Index is borderline, it appears to reduce expenditure at impact by about 0.3 GDP points for any 1 standard deviation increase in the value of the index, and the long-term coefficient is about 1.5.

Both the results in Table 3 and Table 5 do not appear very sensitive to the exclusion of country dummies, while significant changes are produced by the inclusion of year dummies

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determinants of the fiscal rule index, budgetary variables have limited explanatory power in explaining fiscal rules.

<sup>7</sup> The long-term coefficient is obtained as the impact coefficient times the speed of adjustment (namely the average number of years necessary for the CAPB to fully adjust to a shock). The speed of adjustment is computed as the inverse of the fraction of adjustment of the CAPB computed in 1 year. Hence, on the basis of the regression results reported in Table 4, the steady-state multiplier is approximately  $0.2/(1-0.6)=0.33$

(results are not reported but are available by the authors upon request). This may suggest that the impact of fiscal rules is more felt along the time series dimension than across countries.

With a view to checking the robustness of the results to the ways the Fiscal Rule Index and the Expenditure Rule Index were calculated, we have calculated the indexes in a large number of different ways, reflecting different possible weightings for the five criteria entering in the composition of the index measuring the strength of each fiscal rule (statutory base, body in charge of monitoring, body in charge of enforcement, enforcement mechanisms, media visibility of the rule). Following the method used in Sutherland and al. (2005), we used 10000 sets of randomly-generated weights to calculate the synthetic indicator in 10000 different ways.<sup>8</sup> In light of the lack of a-priori information on the weight to be given to the different criteria entering the construction of the index, the production of random weights allows defining a probability distribution for the index of strength of fiscal rules. The mean value of this distribution is asymptotically equivalent to the indicator calculated using equal weights for the constituent components. This is the baseline value of the indexes that we use in our analysis (columns (1) and (4) in Tables 5 refer to this case). Columns (2)-(3) and (5)-(6) in Table 5 report benchmark regression results also for the case of, respectively, the Fiscal Rule Index and the Expenditure Rule Index when computed using different set of weights for the calculation of the index measuring the strength of numerical fiscal rules. To that purpose, we calculated the Fiscal Rule Index and the Expenditure Rule Index using the 1-percentile and the 99-percentile of the distribution of the indexes measuring the strength of each fiscal rule (low and high end of the vertical lines in chart 15 in the annex). Regression results remain qualitatively unchanged when using these alternative weighing schemes to construct the Fiscal Rule and the Expenditure Rule Index.

#### **4.3. Which characteristics of numerical fiscal rules matter most?**

The previous analysis shows that higher values in the Fiscal Rule Index and in the Expenditure Rule Index lead, respectively, to an improvement in the primary CAPB and to a reduction in primary government expenditure. However, these indexes encapsulate a broad set of information, including the share of government finances covered by fiscal rules and the various characteristics of fiscal rules. In this section we attempt to assess to what extent the various characteristics of numerical fiscal rule matter for their influence of rules on budgetary

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<sup>8</sup> The random weights are drawn from a uniform distribution between zero and one and then normalised to sum to one.

outcomes. Such an analysis could provide indications on what desirable characteristics fiscal rules should have to be effective.

Like in the previous section, we proceed by augmenting standard fiscal reaction functions with Fiscal Rule Sub-Indexes constructed in different ways, taking into account none or only one of the five qualitative features of fiscal rules (statutory base, body in charge of monitoring, body in charge of enforcement, enforcement procedures, media visibility). When no qualitative features are taken into account in the construction of the sub-indexes, then the only information reported by the index is the coverage in terms of the share of government sectors concerned by the rule. Sub-indexes constructed this way correspond therefore to the Fiscal Rule Coverage Index and to the Expenditure Rule Coverage Index described in section 3.3.

Tables 6 and 7 report results for the estimation of fiscal reaction functions using, instead of the Fiscal Rule Index and the Expenditure Rule Index as in Table 5, the sub-indexes constructed taking into account none of the qualitative characteristics of fiscal rules (i.e., the coverage indexes) and the five remaining sub-indexes where only one qualitative feature at a time is considered. Looking at Table 6, where the dependent variable is the CAPB, from the comparison of the results when the Coverage Index is used as an explanatory variable (no qualitative features at all considered) with those in which one qualitative factor is taken into account, it appears that the inclusion of qualitative information on fiscal rules improves the degree of statistical significance of the regression coefficients in three cases (when the sub-indexes take into account the statutory base of the rules, the body in charge of enforcement and the enforcement procedure). Conversely, in the case of the sub-indexes providing information on the body in charge of monitoring and on the media visibility of the rule, the degree of significance falls compared with the case in which the coverage index appears as the explanatory variable. Turning to Table 7, showing the results of fiscal reaction functions for government expenditure, it emerges that the inclusion of information relating qualitative features of expenditure rules improves the performance of Expenditure Rule Sub-Indexes compared with the case in which no qualitative factors are taken into account (the Expenditure Rule Coverage Index). Also for the case of fiscal reaction functions for government expenditure, it turns out that features of rules relating to their enforcement (body in charge of enforcement and enforcement procedure) are the most significant in triggering expenditure reductions.

Overall, these results provide an indication that the characteristics of fiscal rules matter for their influence on budgetary outcomes. There is an indication that the most important features of the rules to ensure an effective impact of numerical fiscal rules on budgetary outcomes regard the nature of the enforcement mechanisms. Both the consideration of the characteristic of the rule in terms of the body in charge of the enforcement and in terms of enforcement procedure improves the fit of the sub-index when no qualitative features are accounted for. This result suggests that enforcement-specific design aspects are key elements for the effectiveness of numerical fiscal rules.

## **5. Fiscal rules and the cyclical stance of fiscal policy**

There is agreement that in the EU pro-cyclical policies were quite common in past decades (see, e.g., IMF (2004), European Commission (2006) for recent assessments and surveys of existing literature). There is also wide agreement that the presence of numerical fiscal rules and their design may have an impact on the capacity of fiscal authorities to stabilise the economy via an appropriate stance of fiscal policy over the cycle.

In the case of budget balance or debt rules, there is a common presumption that numerical rules could induce pro-cyclical behaviour in bad times. This was always one of the major concerns with the SGP, and most of the efforts carried out by EU policy makers in recent times were aimed at revising the letter and the interpretation of the original SGP in such a way to reduce the risk of induced pro-cyclical behaviour in bad times (especially after having breached the 3% reference value for deficits, i.e., during the so-called Excessive Deficit Procedure) and to strengthen the incentives to run an appropriate fiscal stance in good times (see European Commission (2005)). The problem with the pro-cyclicality of deficit and debt rules is not related only to the existence of the SGP. A number of EU countries had in place deficit or debt rules for the lower tiers of government since years or decades. The extent to which deficit and debt rules interfere with the stabilisation function of fiscal policy depends to some extent on their design. As illustrated in section 3 of this paper, while most deficit and debt rules applied at sub-national level are applied yearly and do not allow for special provisions for cyclically sensitive items, those applied at the central or general government level more often are defined over a multi-annual horizon and exclude cyclically sensitive items.

The case of numerical expenditure rules is quite different. Such rules are not likely to prevent the operation of automatic stabilisers. Moreover, they could help curbing a possible pro-cyclical bias in good times related with the presence of implementation and identification lags and strong pressures for additional spending in the presence of budgetary windfalls (European Commission (2006)). Of course, as in the case of deficit and debt rules, also the impact of expenditure rules on the cyclical stance of fiscal policy depends on the way the rules are designed, notably on whether all government expenditures are targeted or cyclical items are excluded, on the time-frame for the application of the rule, and on the specification of the expenditure ceilings (whether in levels or in growth, and whether defined in nominal or in real terms).

Although a-priori there are clear arguments why deficit and debt rules could induce a pro-cyclical bias in fiscal policy in bad times, providing empirical support to such arguments does not seem trivial. In a large panel of developed and developing countries, Manasse (2006) finds that the presence of numerical fiscal rules reduces the extent of pro-cyclicality of fiscal policy. Regarding the EU fiscal framework, Gali and Perotti (2003) show that after the run up to EMU fiscal policy across euro area countries has become less, not more pro-cyclical on average. The evidence is also not strongly conclusive on the impact of deficit and debt rules applied at lower levels of government. Although there is evidence that budget balances at lower level of government seems to exhibit a more pro-cyclical behaviour than general government budget balances (e.g., Bayoumi and Eichengreen (1995), Sorensen et al. (2001), Rodden and Wibbels (2006)), the evidence is not strongly conclusive concerning the impact on the cyclical behaviour of budget balances of borrowing restrictions a lower tiers of government.<sup>9</sup> Regarding expenditure rules, European Commission (2006) provides evidence that the episodes of pro-cyclical expenditure behaviour were less frequent in countries endowed with strong expenditure rules.

These difficulties in detecting an impact of numerical fiscal rules on the cyclical stance of fiscal policy could be related to several causes. First, the need to satisfactorily take into account not only the presence of rules but also their design (whether rules are defined over an annual or a multi-annual framework, whether they exclude cyclically-sensitive items...). Second, the necessity to capture the way multiple fiscal rules interact to produce an overall

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<sup>9</sup> While Alesina and Bayoumi (1996) do not find a significant relation between the degree of stringency of borrowing constraints and the cyclicity of budget balances across EU states, Sorensen et al. (2001) find a positive relation between the degree of stringency and the degree of pro-cyclicality.

impact on the cyclical stance of fiscal policy. Finally, a proper analysis of the impact of fiscal rules on the fiscal stance requires controlling for all the other factors that may have an impact of the behaviour of fiscal authorities over the cycle.

Taking into account these difficulties, our analysis proceeds in two steps. The first step consists of the construction of a Fiscal Rule Cyclicity Index which provides information on the likely impact of the whole set of numerical fiscal rules in place in a given country in a given year. As mentioned in section 3.3. and explained in the Annex, this index permits to take into account both which type of rules (i.e., targeting which fiscal aggregate) are present and how they are designed (e.g., whether they apply on an annual basis, on a multi-annual basis, “over the cycle”,...). A higher value of the index signals a less likely pro-cyclical impact on the stance of fiscal policy.

The second step consists of assessing whether high values of the index are indeed associated with a less pro-cyclical behaviour of fiscal authorities. A customary way to measure the output stabilisation response of fiscal authorities is by means of the estimation of fiscal reaction functions. Whenever the coefficient of the output gap variable appears to be significantly negative (resp., positive), then there is an indication that the behaviour of fiscal authorities is pro-cyclical (resp., counter-cyclical). Our aim is to check whether high or low values of the Fiscal Rule Cyclicity Index matter for the output gap coefficient in fiscal reaction functions estimated across our sample of EU countries.

To that purpose, we re-estimate fiscal reactions adopting the same specification used in our baseline regressions (Table 5). However, we now perform separate regressions for two sub-groups of countries: countries with high and low values of the Fiscal Rule Cyclicity Index. The countries with high (resp., low) values for the index are defined as those with a Fiscal Rule Cyclicity Index which is on average equal or above (resp., below) the median value of the index across the whole sample.

Table 8 reports the results. It appears that while the coefficient of the output gap is not statistically different from zero for the countries with a low value of the Fiscal Rule Cyclicity Index, the output gap coefficient is significantly positive for the countries with a high index, denoting a counter-cyclical behaviour of fiscal authorities. The estimates have been carried out both using OLS and the lagged output gap and the instrumental variables estimation method, instrumenting the output gap variable with its own lag and with the lag of a measure of the “international” output gap, consisting of the export-weighted output gap of

the 3 major export markets of each country. Results appear to be qualitatively similar. Also in the case of instrumental variables estimation the output gap coefficient is significantly positive for countries with fiscal frameworks a-priori less likely to induce pro-cyclicality, while it is not significantly different from zero for the countries with a low value of the Fiscal Rule Cyclical Index.

The analysis confirms the a-priori expectation that some type of numerical fiscal rules and some design features are more likely to be associated with an induced pro-cyclical behaviour of the fiscal stance. A relevant related question is whether there is a trade-off between the “strength” of fiscal rules in inducing fiscal discipline and their possible pro-cyclical effects. Such an issue is a complex one, and a full-fledged answer is beyond the scope of this paper. However, some suggestive prima-facie evidence can be derived from the comparison of the Fiscal Rule Index with the Fiscal Rule Cyclical Index. Across the whole sample, the Spearman rank correlation between the two indexes appears small but positive (0.016) and a t test rejects the hypothesis of independence of the two indexes at the 90% level. Looking at the average value of the Fiscal Rule Index in the two country groups, the one with a high and that with a low Fiscal Rule Cyclical Index, it turns out that in the former group the Fiscal Rule Index is significantly higher than in the latter (0.11 versus -0.09, with a t test excluding the equality of the two indexes at the 90% level).

Overall, the analysis supports the view that the nature and design of numerical fiscal rules may have an impact on the cyclical behaviour of fiscal policy. The analysis also confirms that the elements of fiscal rules that are commonly perceived as relevant in terms of their impact on the stabilisation function of fiscal policy (namely, those considered in the construction of our Fiscal Rule Cyclical Index, see Annex) seem to indeed to be associated with a different response of fiscal authorities to the cycle. This evidence, however, does not imply necessarily a strong trade-off between the disciplinary role of fiscal rules and their properties from the viewpoint of the stabilisation function of fiscal policy. There is no significant negative relation between the Fiscal Rule Index and the Fiscal Rule Cyclical Index.

## **6. Conclusions**

The aim of this paper is to provide a comprehensive overview of the numerical fiscal rules in force in the 25 countries of the European Union and to analyse their determinants and their impact on budgetary outcomes. The analysis is based on a new dataset of existing numerical

fiscal rules in the EU, including details on their characteristics and evolution over time. Synthetic indicators are constructed to measure the intensity in the use of numerical fiscal rules across countries and over time, to provide a quantification of the factors that are likely to be related to the effectiveness of rules on budgetary outcomes, and to measure the likely impact of these rules on the cyclical behaviour of fiscal policy.

There is clear evidence that over the past decades there has been an increasing reliance on numerical fiscal rules in the EU countries. The introduction of the Maastricht Treaty and of the Stability and Growth Pact seem to have been powerful catalysts for the introduction of these rules. The presumption that the introduction of fiscal rules would follow major crisis, recessions and / or marked deteriorations in government finances (government deficit, cyclically-adjusted primary balance or debt) is instead not supported by the analysis. A framework for fiscal governance conforming with the "contract approach" (Hallerberg and Von Hagen (1999)) and the presence of independent Fiscal Council seem also to favour a more extensive use of numerical fiscal rules.

The analysis confirms the existence of a link between numerical rules and budgetary outcomes. The analysis shows that an increase in the share of government finances covered by numerical fiscal rules leads, *ceteris paribus*, to lower deficits. The analysis also suggests that the characteristics of fiscal rules matter for their influence on budgetary outcomes. Some dimensions matter particularly for the capacity of fiscal rules to influence fiscal policy. Notably, the presence of strong enforcement mechanisms seems important to maximise the effect of fiscal rules. Finally, the analysis supports the view that the nature and design of numerical fiscal rules may have an impact on the cyclical behaviour of fiscal policy. In countries where numerical fiscal rules are designed in such a way not to hamper the stabilisation function of fiscal policy the fiscal stance appears to behave more counter-cyclically.

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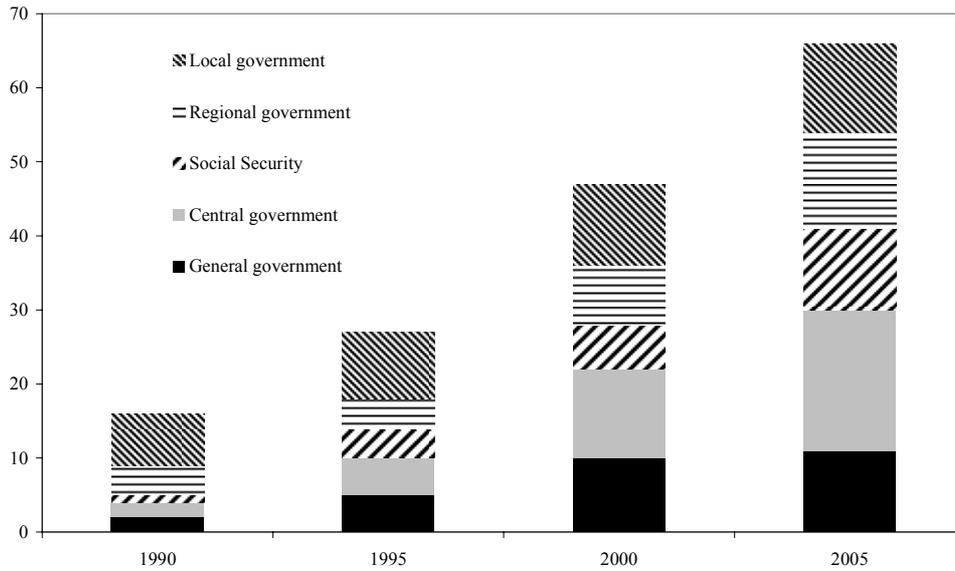
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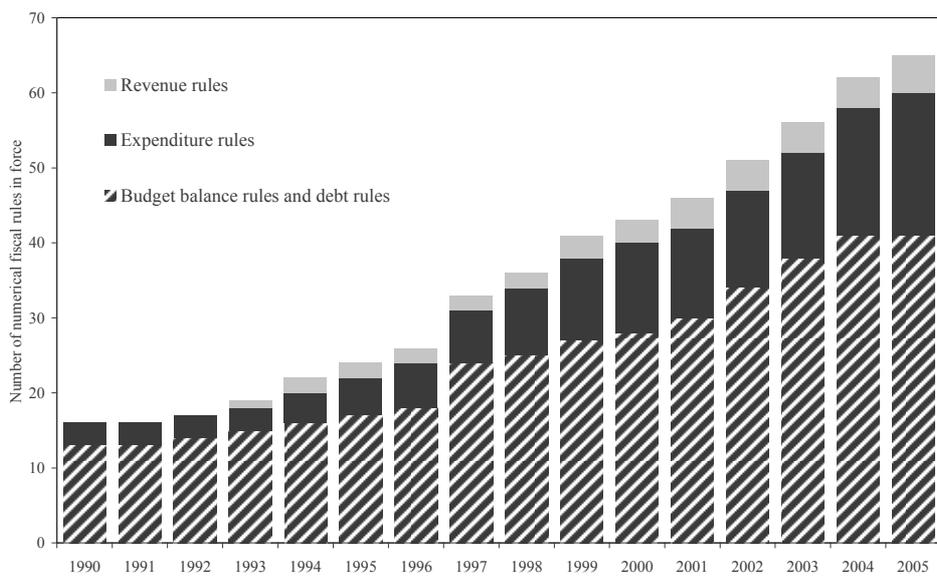
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## Charts

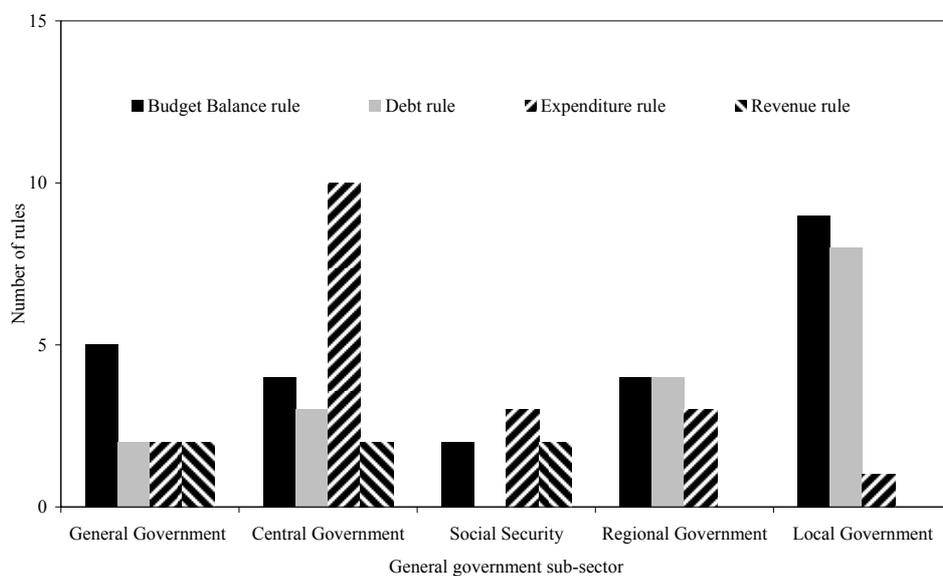
**Chart 1. Number of numerical fiscal rules in force in the EU since 1990 by level of government**



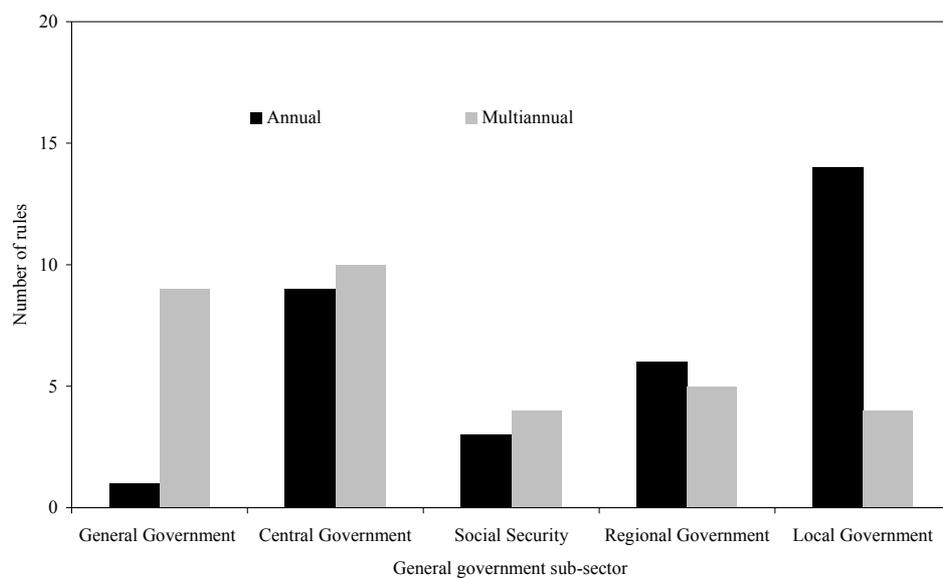
**Chart 2. Number of numerical fiscal rules in the EU since 1990 by fiscal aggregate targeted**



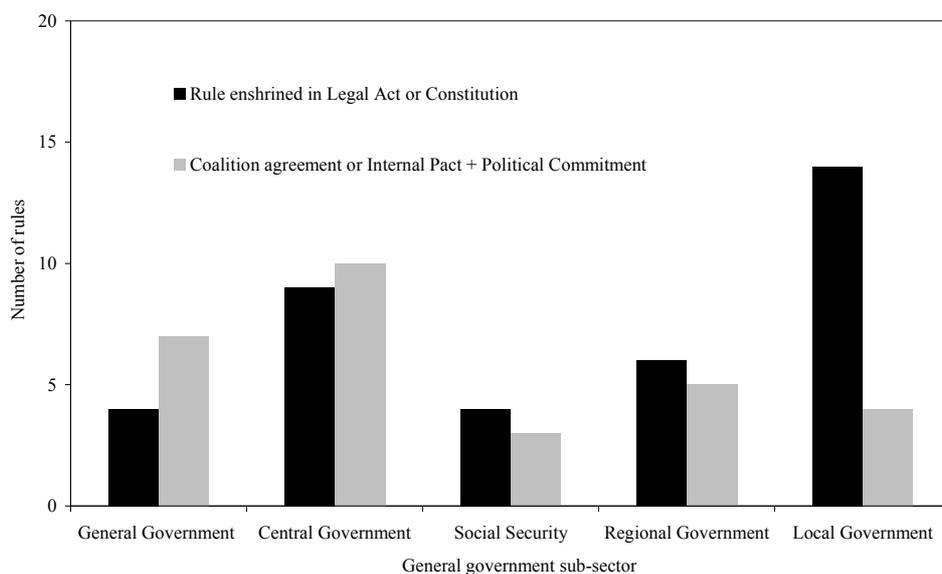
**Chart 3. Distribution of numerical fiscal rules in the EU by level of government and fiscal aggregate targeted (year 2005)**



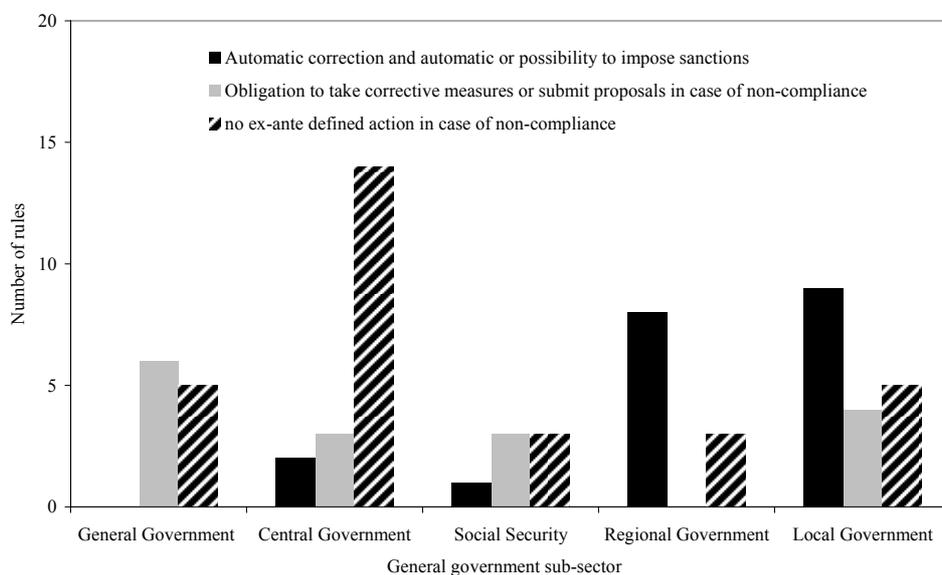
**Chart 4. Distribution of numerical fiscal rules in the EU by level of government and time horizontal (year 2005)**



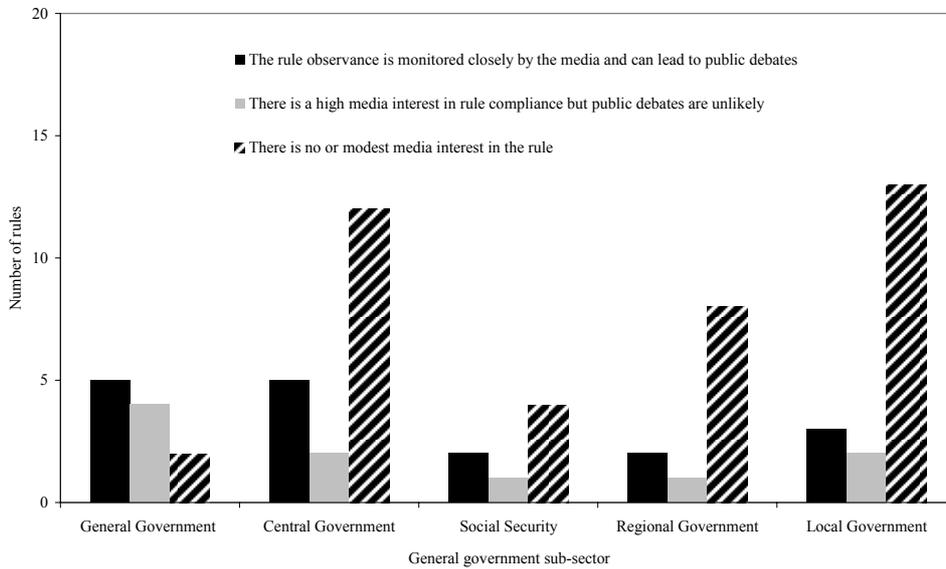
**Chart 5. Distribution of numerical fiscal rules in the EU by level of government and statutory basis of the rule (year 2005)**



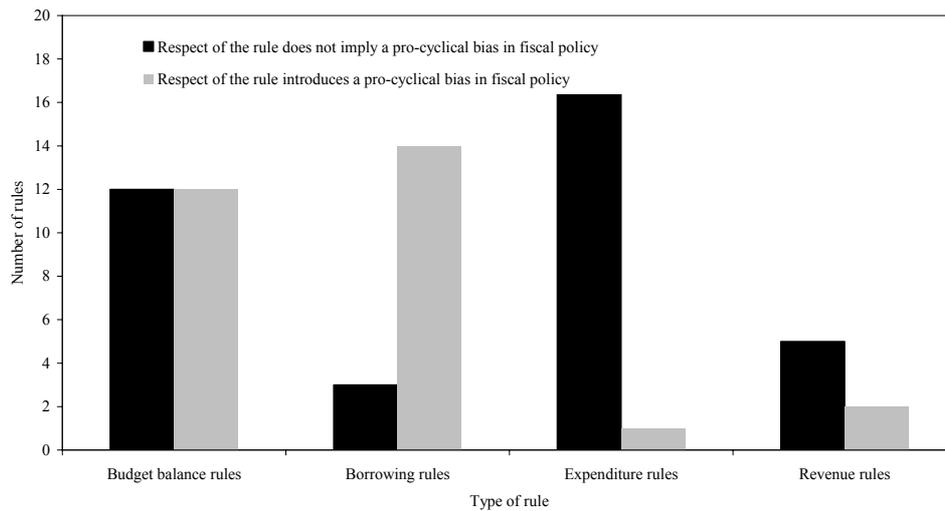
**Chart 6. Distribution of numerical fiscal rules in the EU by level of government and enforcement mechanism of the rule (year 2005)**



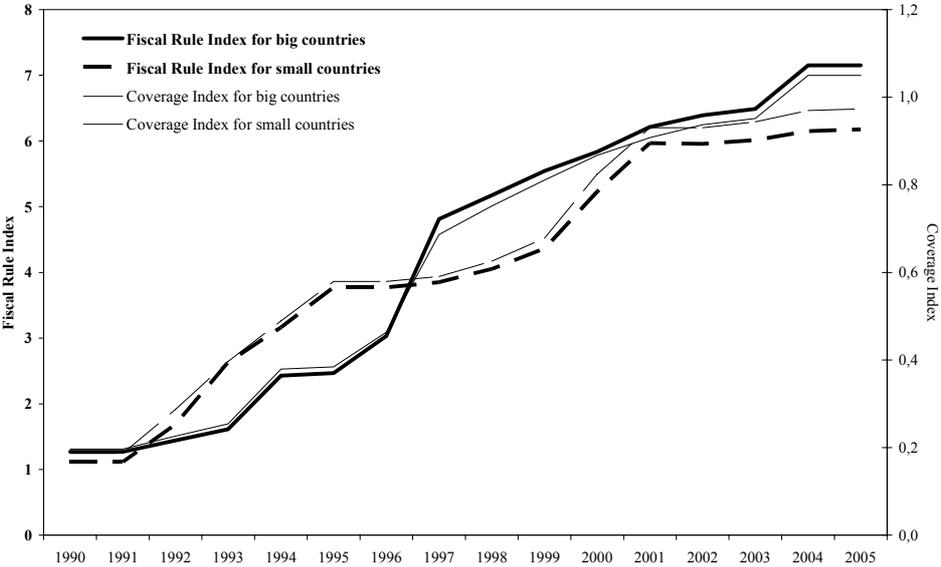
**Chart 7. Distribution of numerical fiscal rules in the EU by level of government and media visibility (year 2005)**



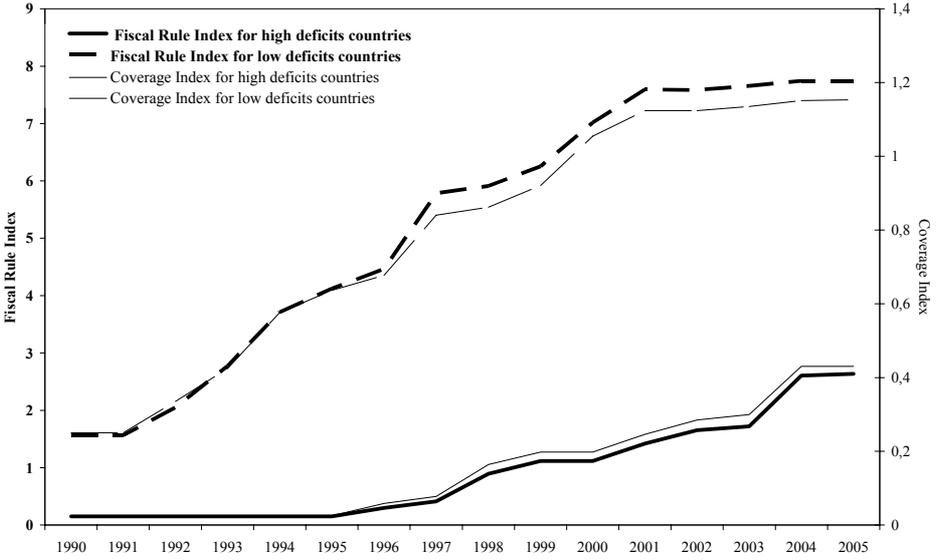
**Chart 8. Distribution of numerical fiscal rules in the EU by fiscal aggregate targeted and perceived impact on cyclical stabilisation (year 2005)**



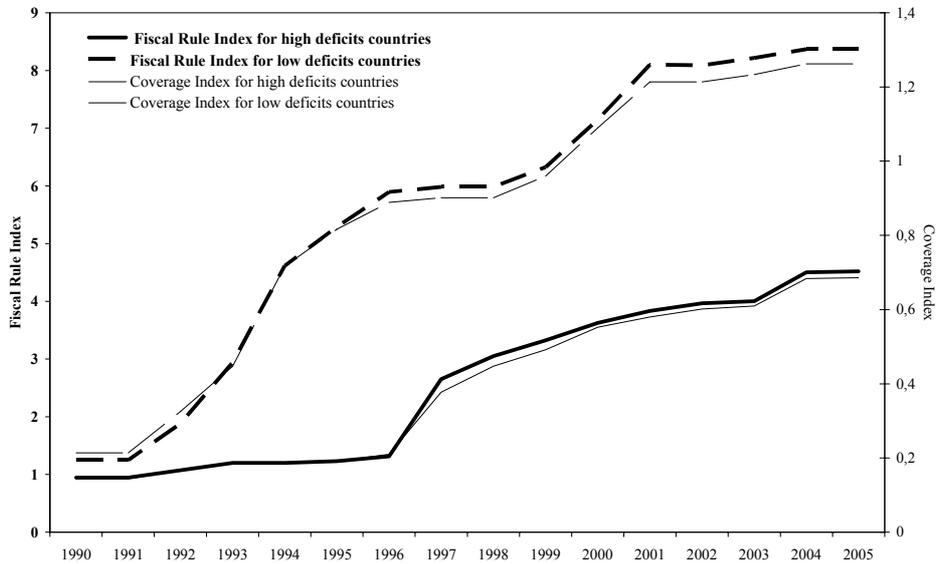
**Chart 9. Evolution of the Fiscal Rule Index and the Fiscal Rule Coverage Index in "big" and "small" EU countries**



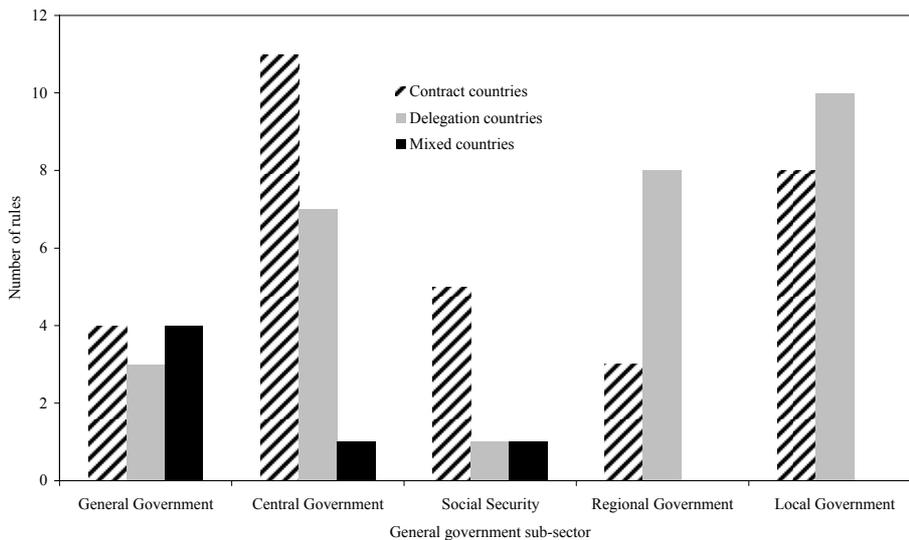
**Chart 10. Evolution of the Fiscal Rule Index and the Fiscal Rule Coverage Index in countries with an average deficit over the 1990-1995 period below and above 3% of GDP**



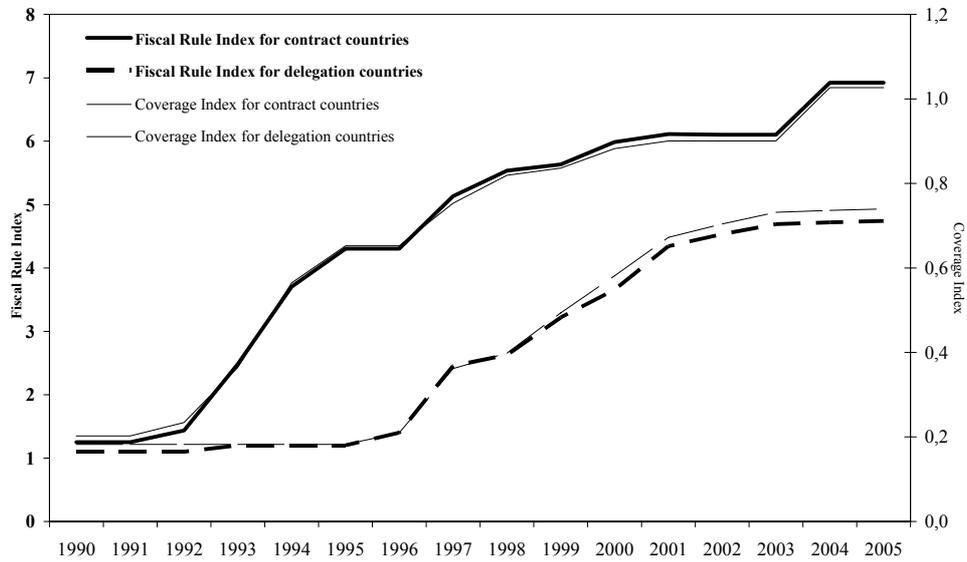
**Chart 11. Evolution of the Fiscal Rule Index and the Fiscal Rule Coverage Index in countries with an average deficit over the 1990-2005 period below and above the median deficit over the whole sample**



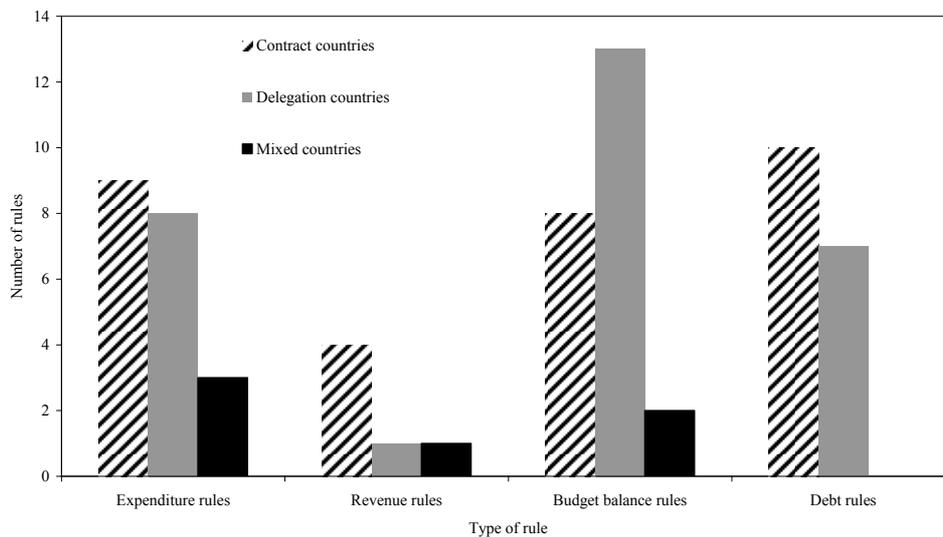
**Chart 12. Distributions of numerical fiscal rules in contract and delegation countries by level of government (year 2005)**



**Chart 13. Evolution of the Fiscal Rule Index and the Fiscal Rule Coverage Index in contract and delegation countries**



**Chart 14. Distribution of numerical fiscal rules in contract and delegation countries by fiscal aggregate targeted (year 2005)**



## Tables

**Table 1. Review of some fiscal governance indexes**

Author, country, year	Index	Elements considered
ACIR, USA Federal States, 1987	Index of Budget Balance Rule Stringency	<ul style="list-style-type: none"> <li>● Statutory base</li> <li>● Constitutional base</li> <li>● Governor only has to submit a balanced Budget</li> <li>● Legislature has to pass a balanced Budget</li> <li>● Carry over : possibility and number of years to correct</li> </ul>
Von Hagen, EU-12, 1992	Structural Index	<ul style="list-style-type: none"> <li>● <b>Structure of negotiation within government.</b> General constraint ; agenda setting for negotiations ; scope of budget norms; structure of negotiations</li> <li>● <b>Structure of the parliamentary process.</b> Amendments: limited ; offsetting ; cause fall of government ; one vote: on expenditure ; on total budget size</li> <li>● <b>Informativeness of the budget draft.</b> Inclusion of special funds ; budget in one document ; transparency ; national accounts ; government loan</li> <li>● <b>Flexibility of execution.</b> Finance Minister (FM) can: block ; put cash limits ; approve disbursements ; transfer ; allow budget changes ; carry over</li> </ul>
Von Hagen, EU-12, 1992	Index of Long Term Planning Constraint	<ul style="list-style-type: none"> <li>● <b>Structure of the parliamentary process.</b> Amendments limited</li> <li>● <b>Informativeness of the budget draft.</b> Inclusion of special funds ; budget in one document ; transparency ; national accounts ; government loan</li> <li>● <b>Flexibility of execution.</b> FM can: block ; put cash limits ; approve disbursements ; transfer ; allow budget changes ; carry over</li> <li>● <b>Long term planning constraint.</b> Target ; horizon ; nature ; commitment</li> </ul>
Inter-American Development Bank, 1997	Index of Budgetary Institutions	<ul style="list-style-type: none"> <li>● Constraint on the budget deficit</li> <li>● Procedural rules</li> <li>● Transparency</li> </ul>
	Index of Activity Decentralization	Level of government that decides on: amounts, structure of spending, subcontractors, hiring, disburses funds, supervises delivery
	Index of Political Autonomy & Participation	Types of election ; existence of additional mechanisms of popular participation ; political right
	Index of Discretionality of Intergov. transfers	Mechanisms to determine: amount and distribution of the transfer among jurisdictions
	Index of Borrowing Autonomy	Ability to borrow, existence of authorisations and constraints ; limits on use of debt ; sub level of government owns: banks, public enterprises
Alesina, Hausmann, Hommes, Stein, Latin America, 1998	Index of Budget Institution	<ul style="list-style-type: none"> <li>● <b>Sub Index of Constraint.</b> Constitutional constraints on deficit, macroeconomic program required; government has: borrowing autonomy ; possibility of late adjustments, decides unilaterally spending cuts</li> <li>● <b>“Agenda-setting” Sub Index.</b> Authority of FM vs. spending ministries ; legal constraints on congress' authority to amend proposed budget ; options after rejection of proposed budget</li> <li>● <b>Transparent procedures sub index.</b> Budget covers other public entities' debt; borrowing autonomy of sub level of government.</li> </ul>
De Haan, Moessen, Volkerink, EU-15, 1999	Similar indexes as von Hagen (1992)	<ul style="list-style-type: none"> <li>● <b>Position of the FM.</b> Agenda setting for budget negotiations ; structure of negotiations ; FM can: block ; approve disbursements</li> <li>● <b>Position of legislature.</b> Amendments: limited ; offsetting ; cause fall of government ; one vote: on expenditure ; on total budget size</li> <li>● <b>Presence of some kind of constraint.</b> General constraint ; degree of commitment</li> <li>● <b>Transparency of the budget.</b> Inclusion of special funds ; budget in one document ; transparency ; national accounts ; government loan</li> <li>● <b>Flexibility during execution of the budget.</b> Cash limits ; transfers ; budget changes ; carry over</li> <li>● <b>Relationship with other parts of government.</b> Existence of budget balance constraint in other levels of government ; degree of planning autonomy</li> </ul>
	Indicator of Strength of Budgetary Procedure	
Hallerberg, Strauch, von Hagen, EU-15, 2001	Connectedness Index	<ul style="list-style-type: none"> <li>● Stability or convergence programme and budget done by same department</li> <li>● Accounting rules and reporting</li> <li>● Calendar for preparing the annual budget an the stability program</li> <li>● Budget targets conceptually</li> </ul>
	Finance Minister Index	<ul style="list-style-type: none"> <li>● Level of discussions within the cabinet</li> <li>● Resolution of disagreements: Finance Minister vs. spending ministers</li> <li>● Possibility that Cabinet overrules FM's decisions</li> </ul>
	Parliament Index	<ul style="list-style-type: none"> <li>● Can Parliament propose separate budget?</li> <li>● Amendments: allowed ; not limited ; offsetting ; cause fall of government</li> <li>● Existence of time limit to parliamentary consideration</li> </ul>
	Finance Ministry-	Information on whether Finance Minister can impose expenditure and cash limits, approves disbursements, must approve transfers between chapters

	Implementation Index	
Gleich, Central and Eastern European Countries, 2003	Preparation stage	<ul style="list-style-type: none"> <li>● Statutory fiscal rule</li> <li>● Sequence of budgetary decision-making</li> <li>● Compilation of the draft budget</li> <li>● Members of executive responsible for reconciling conflicts over budget bids</li> </ul>
	Legislative stage	<ul style="list-style-type: none"> <li>● Relative power: upper house vs. lower house</li> <li>● Constraints on the legislature to amend the government's draft budget</li> <li>● Sequence of votes</li> <li>● Relative power of the executive vs. parliament</li> <li>● Authority of the national president</li> </ul>
	Implementation stage	<ul style="list-style-type: none"> <li>● Flexibility to change budget aggregates during execution</li> <li>● Transfers of expenditures between chapters</li> <li>● Carry-over of unused funds to next fiscal year</li> <li>● Procedure to react to a deterioration of budget deficit</li> </ul>
Filc & Scartascini, Latin America, 2004	Fiscal Rule Index	Fiscal limits; medium term fiscal framework ; borrowing limits; reserve funds
	Hierarchical Procedures Index	Within the executive branch ; executive-legislative relations
	Transparency Index	Budget document: is comprehensive ; covers extra-budgetary funds
Yläoutinen, Central and Eastern European Countries, 2004	See Hallerberg et al. 2001	
Von Hagen, EU-15 and Japan, 2005	Index of Budgeting Institutions	<ul style="list-style-type: none"> <li>● <b>Budget Negotiations.</b> Quantitative constraint ; strong agenda setting powers of FM ; early fixed quantitative constraints</li> <li>● <b>Parliamentary Stage.</b> Executive strong agenda setting powers , overall constrain on budget ; vote on total spending</li> <li>● <b>Informativeness.</b> Budget in one document; inclusion of: special funds, loans to non government; link to national account data; transparency of data</li> <li>● <b>Flexibility of Execution.</b> Budget law binding for government ; instruments of FM to avoid overspending ; transfers between minister years</li> </ul>
Von Hagen, EU-15 and Japan, 2005	Fiscal Rule Index	<ul style="list-style-type: none"> <li>● Time horizon</li> <li>● Degree of commitment</li> <li>● Anchoring of the fiscal targets in the coalition agreement</li> <li>● Connection between national budget and Stability Program</li> <li>● Existence of clear rules dealing with shocks to exp</li> <li>● Strength of fiscal minister to enforce budget law</li> </ul>
Von Hagen, Hallerberg, Strauch , EU-15 2006	Delegation Index of the Budgetary Process	<ul style="list-style-type: none"> <li>● <b>Executive Planning Stage.</b> General constraint ; agenda setting of FM ; budget norms ; structure negotiations in cabinet</li> <li>● <b>Legislative Approval.</b> Amendment are: limited ; offsetting ; can lead to fall of government ; vote :all expenditure passed in one ; on total size of budget</li> <li>● <b>Implementation.</b> FM can: block ; put cash limits ; approve disbursements ; constraint transfer allowance; allow budget law changes ; carry over</li> </ul>
Von Hagen, Hallerberg, Strauch , EU-15, 2006	Stringency Index for Fiscal Rules	<ul style="list-style-type: none"> <li>● Time horizon</li> <li>● Degree of commitment</li> <li>● Nature of plan</li> <li>● Type of multiannual target</li> </ul>
Sutherland, Price, Jourmad, OECD Countries, 2006	Indicator of preferred attributes of fiscal rules for sub-levels of government	<ul style="list-style-type: none"> <li>● <b>Restraining size of the public sector.</b> Expenditure growth control ; limit on tax autonomy ; budget transparency ;ratchet effect</li> <li>● <b>Supporting allocative efficiency.</b> Board budget coverage ; board spending targets ; uniform rules for investment</li> <li>● <b>Ensuring debt sustainability.</b> Deficit and debt control, deficit and debt monitoring</li> <li>● <b>Coping with shocks.</b> Protection from the cycle ; escape clauses ; budget balance rigidity ; borrowing relief</li> </ul>

**Table 2. Distribution of numerical fiscal rules in the EU by fiscal aggregate targeted and design (year 2005)**

<b>Budget Balance Rules</b>	Golden rules	Balanced budget rules	Nominal ceiling	Ceiling as a % GDP	Rules in structural terms	Total
	5	8	5	1	3	22
<b>Debt Rules</b>	Debt ceiling in nominal terms	Debt ceiling as a % of GDP	Debt ceiling related to repayment capacity	Other		Total
	5	2	7	1		15
<b>Expenditure Rules</b>	Nominal expenditure ceiling	Real expenditure Ceiling	Expenditure growth rate (nominal)	Expenditure growth rate (reall)	Other	Total
	5	2	3	3	2	15
<b>Revenue rules</b>	Tax burden as a % GDP	Rule related to tax rates	Allocation of extra revenues	Other		Total
	0	1	3	1		5

**Table 3. Determinants of the value of the Fiscal Rule and Expenditure Rule Indexes**

Dependent variable	(1)	(2)	(3)	(4)
	Fiscal Rule Coverage Index	Expenditure Rule Coverage index	Fiscal Rule Index	Expenditure Rule Index
Explanatory variables				
Lagged index	0.87*** (26.21)	0.92*** (32.28)	0.88*** (25.98)	0.92*** (27.43)
Lagged net lending	0.016 (1.24)	0.004 (0.65)	0.019 (1.60)	0.00 (0.62)
Lagged expenditure	0.005* (1.83)	0.00 (0.33)	0.00 (0.94)	0.00 (0.17)
Lagged debt/ GDP ratio	-0.00 (-1.21)	-0.00 (-0.92)	-0.00 (-0.63)	-0.00 (-0.71)
Lagged output gap	0.00 (0.44)	0.00 (0.51)	0.00 (0.04)	0.00 (0.53)
Dummy run-up EMU	0.11** (2.03)	0.17*** (2.93)	0.07 (1.46)	0.16** (2.74)
Dummy SGP	0.13* (1.89)	0.14** (2.10)	0.08 (1.26)	0.13* (1.80)
Dummy enlargement	0.07 (1.49)	0.04 (1.08)	0.06 (1.37)	0.04 (0.91)
Election year	0.04 (0.60)	0.06 (1.05)	0.13 (1.61)	0.06 (0.98)
Dummy: contract vs. delegation country	0.09* (1.99)	0.12 (1.89)	0.09* (1.77)	0.14* (1.98)
Dummy Fiscal Council	0.14** (2.56)	0.11 (1.57)	0.13** (2.24)	0.13* (1.76)
Herfindahl index	0.11 (0.45)	0.11 (0.35)	0.24 (1.00)	0.22 (0.73)
Dummy proportional representation	-0.14 (-1.18)	-0.14* (-1.97)	-0.14 (-1.23)	-0.14* (-2.01)
Dummy country size	0.03 (0.64)	-0.45 (-1.04)	0.03 (0.53)	-0.06 (-1.43)
Margin of majority	-0.06 (-0.30)	0.06 (0.38)	-0.10 (-0.46)	0.04 (0.27)
Dummy political colour	-0.02 (-1.59)	0.03 (1.36)	-0.02* (-1.79)	0.03 (1.44)
Constant	-0.11 (-0.45)	-0.12 (-0.50)	-0.02 (-0.07)	-0.14 (-0.61)
N. obs.	217	217	217	217
R sq.	0.88	0.92	0.88	0.92

Notes: Estimations method: OLS with robust standard errors. Student's "t" coefficients are reported in parentheses. \*, \*\*, and \*\*\* denote, respectively, significance at the 10, 5 and 1 per cent level.

All fiscal variables are expressed over potential output.

Dummy run-up to EMU: 1 for EU-15 countries and years between years 1994 and 1998.

Dummy SGP: 1 for euro-area countries and years after year 1998.

Enlargement: 1 for EU-10 countries after year 2003.

Election year: 1 if parliamentary elections took place.

Dummy contract vs. delegation country: 0 if delegation country, 1 if contract country.

Dummy Fiscal Council: 1 if a Fiscal Council was in place in the country over the sample period.

Herfindahl Index: Sum of squared seat shares of all parties in the government.

Dummy proportional representation: indicates if candidates are elected based on the percent of votes received by their party.

Dummy country size: 1 for the following countries: Germany, France, Italy, Spain, Poland, UK.

Margin of Majority: fraction of seats held by the government in the Parliament.

Dummy political colour: 2 for leftist governments; 1 for intermediate coalitions; 0 for rightist governments.

**Table 4. Average change in budgetary variables following the introduction of numerical fiscal rules across EU countries, 1990-2005**

Change in the primary CAB	Average over the whole sample	Average over cases in which a fiscal rule is introduced
Over the subsequent year	0.0 (-0.2; 0.2)	0.2 (-0.2; 0.7)
Over the 3 subsequent years	0.0 (-0.4; 0.3)	0.4 (-0.7; 1.5)
Over the 5 subsequent years	-0.1 (-0.5; 0.3)	0.3 (-0.9; 1.4)
Change in primary expenditure/GDP	Average over the whole sample	Average over cases in which a fiscal rule is introduced
Over the subsequent year	-0.2 (-0.5; 0.0)	-1.5 (-2.8; -0.2)
Over the 3 subsequent years	-0.9 (-1.3; -0.4)	-1.9 (-3.3; -0.6)
Over the 5 subsequent	-2.1 (-1.4; -2.7)	-3.1 (-4.4; -1.3)

Note: Confidence interval values (5%) are reported in brackets.

**Table 5. Influence of fiscal rules and expenditure rules on budgetary outcomes: evidence from the estimation of fiscal reaction functions**

Dependent variables:	Cyclically adjusted primary balance (CAPB)			Primary expenditure (PEXP)		
	(1)	(2)	(3)	(4)	(5)	(6)
Explanatory variables	Fiscal Rule Index	Fiscal Rule Index - low	Fiscal Rule Index - high	Expenditure Rule Index	Expenditure Rule Index - low	Expenditure Rule Index - high
Lagged CAPB	0.61*** (12.77)	0.61*** (13.18)	0.61*** (12.42)			
Lagged PEXP				0.88*** (7.99)	0.88*** (7.83)	0.88*** (8.14)
Lagged debt/GDP ratio	0.03** (2.51)	0.03** (2.53)	0.03** (2.51)	-0.02 (-1.20)	-0.02 (-1.20)	-0.18 (-1.19)
Lagged output gap	0.05 (1.22)	0.05 (1.22)	0.05 (1.22)	0.03 (0.70)	0.03 (0.67)	0.03 (0.72)
Dummy run-up EMU	0.4 (1.06)	0.40 (1.05)	0.41 (1.08)	-0.74 (-1.50)	-0.74 (-1.49)	-0.74 (1.51)
Dummy SGP	-0.06 (-0.19)	-0.07 (-0.21)	-0.06 (-0.17)	-0.45 (-0.89)	-0.46 (-0.91)	-0.44 (-0.87)
Dummy enlargement	-0.31* (-1.93)	-0.31* (-1.91)	-0.31* (1.95)	0.62** (2.18)	0.62** (2.17)	0.62** (2.19)
Election year	-0.45*** (-3.11)	-0.44*** (-3.11)	-0.45*** (-3.11)	0.40*** (2.79)	0.40*** (2.81)	0.40*** (2.78)
Lagged Index	0.21** (2.06)	0.22** (2.04)	0.21* (1.96)	-0.31 (-1.64)	-0.28 (-1.47)	-0.34* (-1.77)
Constant	-1.69 (-1.18)	-1.66 (-1.18)	-1.70 (-1.18)	7.97* (1.74)	7.86 (1.67)	8.04* (1.79)
N. obs.	227	227	227	227	227	227
R sq.	0.86	0.86	0.86	0.97	0.97	0.97

Notes: Estimations method: Fixed-effect OLS with robust standard errors. Student's "t" coefficients are reported in parentheses. \*, \*\*, and \*\*\* denote, respectively, significance at the 10, 5 and 1 per cent level.

All fiscal variables are expressed as a share of potential output.

Dummy run-up to EMU: 1 for EU-15 countries and years between years 1994 and 1998.

Dummy SGP: 1 for euro-area countries and years after year 1998.

Enlargement: 1 for EU-10 countries after year 2003.

Election year: 1 if parliamentary elections took place.

Fixed effect coefficients are not reported.

**Table 6. Influence of fiscal rules characteristics on budgetary outcomes: evidence from the estimation of fiscal reaction functions**

Dependent variable: primary CAB (CAPB)	(1) Fiscal Rule Coverage Index	(2) Statutory base	(3) Body in charge of monitoring	(4) Body in charge of enforcement	(5) Enforcement procedure	(6) Media visibility
Explanatory variables						
Lagged CAPB	0.61*** (12.64)	0.61*** (12.59)	0.62*** (12.42)	0.61*** (12.98)	0.60*** (13.13)	0.62*** (12.61)
Lagged debt/GDP ratio	0.02** (2.48)	0.03** (2.54)	0.03** (2.47)	0.03** (2.47)	0.03** (2.53)	0.03** (2.51)
Lagged output gap	0.05 (1.19)	0.05 (1.21)	0.05 (1.23)	0.05 (1.2)	0.05 (1.21)	0.05 (1.25)
Dummy run-up EMU	0.38 (1.02)	0.4 (1.06)	0.39 (1.03)	0.37 (1.02)	0.41 (1.09)	0.41 (1.09)
Dummy SGP	-0.12 (-0.36)	-0.09 (-0.27)	-0.05 (-0.15)	-0.11 (-0.34)	-0.1 (-0.28)	-0.01 (-0.03)
Dummy enlargement	-0.31* (-1.97)	-0.31* (-1.91)	-0.31* (-1.97)	-0.31* (-2.00)	-0.31* (-1.86)	-0.31* (-1.89)
Election year	-0.49*** (-3.27)	-0.44*** (-3.11)	-0.46*** (-3.15)	-0.44*** (-3.11)	-0.43*** (-3.07)	-0.46*** (-3.15)
Lagged sub-Index	0.26* (1.76)	0.23** (2.2)	0.17 (1.46)	0.24** (2.18)	0.26** (2.66)	0.17 (1.51)
Constant	-1.62 (-1.15)	-1.71 (-1.2)	-1.68 (-1.14)	-1.67 (-1.18)	-1.69 (-1.21)	-1.68 (-1.14)
N. obs.	227	227	227	227	227	227
R sq.	0.86	0.86	0.86	0.86	0.86	0.86

Notes: Estimations method: Fixed-effect OLS with robust standard errors. Student's "t" coefficients are reported in parentheses. \*, \*\*, and \*\*\* denote, respectively, significance at the 10, 5 and 1 per cent level.

All fiscal variables are expressed as a share of potential output.

Dummy run-up to EMU: 1 for EU-15 countries and years between years 1994 and 1998.

Dummy SGP: 1 for euro-area countries and years after year 1998.

Enlargement: 1 for EU-10 countries after year 2003.

Election year: 1 if parliamentary elections took place.

Fixed effect coefficients are not reported.

**Table 7. Influence of characteristics of expenditure rules on budgetary outcomes: evidence from the estimation of fiscal reaction functions**

Dependent variable: primary expenditure (PEXP)	Fiscal Rule Coverage Index	Statutory base	Body in charge of monitoring	Body in charge of enforcement	Enforcement procedure	Media visibility
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(7)
Lagged PEXP	0.88*** (7.96)	0.88*** (7.81)	0.88*** (8.07)	0.87*** (8.42)	0.88*** (8.08)	0.89*** (7.86)
Lagged debt/GDP ratio	-0.02 (-1.10)	-0.02 (-1.22)	-0.02 (-1.09)	-0.02 (-1.19)	-0.02 (-1.25)	-0.02 (-1.20)
Lagged output gap	0.03 (0.69)	0.03 (0.64)	0.03 (0.70)	0.03 (0.70)	0.03 (0.73)	0.03 (0.70)
Dummy run-up EMU	-0.74 (-1.50)	-0.74 (-1.47)	-0.75 (-1.52)	-0.71 (-1.45)	-0.74 (-1.50)	-0.76 (-1.55)
Dummy SGP	-0.44 (-0.85)	-0.46 (-0.91)	-0.44 (-0.87)	-0.40 (-0.80)	-0.46 (-0.93)	-0.49 (-0.97)
Dummy enlargement	0.62** (2.18)	0.65** (2.17)	0.61** (2.18)	0.61** (2.20)	0.61** (2.18)	0.63** (2.17)
Election year	0.39*** (2.81)	0.40*** (2.82)	0.40** (2.79)	0.39** (2.76)	0.39*** (2.77)	0.40*** (2.82)
Lagged sub-Index	-0.30 (-1.47)	-0.27 (-1.51)	-0.32 (-1.64)	-0.37 (-1.65)	-0.34* (-1.69)	-0.27 (-1.51)
Constant	7.65 (1.66)	7.74 (1.64)	7.91* (1.75)	8.51* (1.96)	8.22* (1.80)	7.48 (1.59)
N. obs.	227	227	227	227	227	227
R sq.	0.97	0.97	0.97	0.97	0.97	0.97

Notes: Estimations method: Fixed-effect OLS with robust standard errors. Student's "t" coefficients are reported in parentheses. \*, \*\*, and \*\*\* denote, respectively, significance at the 10, 5 and 1 per cent level.

All fiscal variables are expressed as a share of potential output.

Dummy run-up to EMU: 1 for EU-15 countries and years between years 1994 and 1998.

Dummy SGP: 1 for euro-area countries and years after year 1998.

Enlargement: 1 for EU-10 countries after year 2003.

Election year: 1 if parliamentary elections took place.

Fixed effect coefficients are not reported.

**Table 8. Influence of fiscal rules on the cyclical stance of fiscal policy: evidence from the estimation of fiscal reaction functions**

Dependent variable: primary CAB (CAPB)	Least squares		Instrumental variables	
	Countries with low values for Cyclicity Index	Countries with high values for Cyclicity Index	Countries with low values for Cyclicity Index	Countries with high values for Cyclicity Index
Explanatory variables	(1)	(2)	(3)	(4)
Lagged CAPB	0.54*** (10.54)	0.63*** (12.15)	0.54*** (10.32)	0.63*** (11.82)
Lagged debt/GDP ratio	0.00 (0.28)	0.03** (2.04)	0.00 (0.41)	0.02* (2.01)
Lagged output gap	-0.01 (-0.16)	0.09* (1.87)	0.02 (0.11)	0.16* (1.76)
Dummy run-up EMU	-0.10 (-0.35)	0.68* (1.78)	0.02 (0.05)	0.83* (1.86)
Dummy SGP	-0.05 (-0.16)	-0.17 (-0.57)	0.04 (0.14)	-0.13 (-0.44)
Dummy enlargement	-0.24 (-1.57)	-	-0.26 (-1.31)	-
Election year	-0.65** (-2.92)	-0.35** (-2.45)	-0.63*** (-3.06)	-0.35** (-2.43)
Lagged Fiscal Rule Index	0.51* (1.98)	0.30* (2.08)	0.48* (2.06)	0.27* (1.89)
Constant	1.78 (0.81)	0.34 (0.64)	1.68 (1.08)	-1.16** (-2.97)
N. obs.	91	147	91	147
R sq.	0.88	0.86	0.88	0.86

Notes: Estimations methods: (1)-(2): Fixed-effect OLS regression with robust standard errors; (3)-(4): Instrumental variables regression and robust standard errors. The output gap is instrumented with its own lag and a lagged indicator of foreign output gap. The foreign output gap indicator is the export-weighted output gap of the 3 major export markets of each country. Student's "t" coefficients are reported in parentheses. \*, \*\*, and \*\*\* denote, respectively, significance at the 10, 5 and 1 per cent level. All fiscal variables are expressed as a share of potential output.  
 Dummy run-up to EMU: 1 for EU-15 countries and years between years 1994 and 1998.  
 Dummy SGP: 1 for euro-area countries and years after year 1998.  
 Enlargement: 1 for EU-10 countries after year 2003.  
 Election year: 1 if parliamentary elections took place.  
 Fixed effect coefficients are not reported.

## Annex: The construction of the synthetic fiscal rules indexes

### The Fiscal Rule Coverage Index

The purpose of this index is to summarise information on the degree of reliance on numerical fiscal rules at country level. This index provides information on the number of rules in place and on what part of general government finances is covered by each rule. The construction of the indicator is based on the following assumptions.

- **Aggregation of rules of different type** (e.g., an expenditure rule and a budget balance rule). In absence to a strong prior regarding which types of rules have a greater influence on fiscal outcomes, equal weighting was used as a transparent and straightforward criterion.
- **Information on rules' coverage.** Taking into account that the purpose of the analysis is to assess the impact of numerical fiscal rules on fiscal discipline, all numerical fiscal rules have been aggregated on the basis of the share of general government they cover. In other words, if a part of government finances is covered by an expenditure rule, and another part is covered by a budget balance rule, the part of government finances covered by numerical fiscal rules can be considered to be the sum of both.
- **Overlapping.** In order to take into account the possible redundancy among rules, the 'fiscal rule coverage index' was constructed following this simple approach: when more than one rule apply to the same sub sector of general government, the index gives a weigh of 1 to the rule with the "stronger" features as measured by the Index of Strength (see next section of this Annex) and a weight of 0.5 to any additional rule. For instance, if in a given country, in a given year, coexist a strong expenditure rule applied to the whole of the general government and a weak budget balance rule for local governments (10% of government finances), the Fiscal Rule Coverage Index will be equal to  $100\% + 10\% * 0.5 = 1.05$ .

A time-varying 'Expenditure rule coverage index' measuring the share of government finances covered by expenditure rules was constructed following the same methodology, but restricting the sample to numerical expenditure rules.

### The Index of Strength of Numerical Fiscal Rules

With a view to take into account the characteristics of the individual fiscal rules, an index of 'strength' of numerical fiscal rules was calculated for each rule. The index takes into account five criteria: the statutory base of the rule; whether there is an independent monitoring of the rule; the nature of the institution responsible for the enforcement of the rule; the existence of pre-defined enforcement mechanisms; and the media visibility of the rule. The methodology followed is akin to that in existing literature (e.g. Deroose, Moulin and Wiertz (2005)). For each criterion, scores were attributed as follows.

#### **Criterion 1: statutory base of the rule**

The score of this criterion index is constructed as a simple average of the two elements below:

##### *Statutory or legal base of the rule*

- 4 is assigned for a constitutional base
- 3 if the rule is based on a legal act (e.g. Public finance Act, Fiscal Responsibility Law)
- 2 if the rule is based on a coalition agreement or an agreement by different general government tiers
- 1 for political commitment by a given authority (central or local government, Minister of Finance)

##### *Room for setting or revising objectives*

- 3 if there is no margin for adjusting objectives (they are encapsulated in the rule)
- 2 there is some but constrained margin in setting or adjusting objectives
- 1 there is complete freedom in setting objectives (the statutory base of the rule only contains principles)

#### **Criterion 2: Nature of the body in charge of monitoring respect of the rule**

The score of this criterion index is calculated as follows:

- 3 monitoring by an independent authority (Fiscal Council, Court of Auditors...) or national Parliament
- 2 monitoring by the Ministry of Finance or any other government body
- 1 no regular public monitoring of the rule (there is no report systematically assessing compliance)

The score of this variable is augmented by 1 point in case there is a real time monitoring of compliance with the rule ('alert mechanisms')

**Criterion 3: Nature of the body in charge of enforcement of the rule**

The score of this criterion index is calculated as follows:

- 3 enforcement by an independent authority (Fiscal Council or any Court) or the National Parliament
- 2 enforcement by the Ministry of Finance or any other government body
- 1 no specific body in charge of enforcement

**Criterion 4: Enforcement mechanisms of the rule**

The score of this criterion index is calculated as follows:

- 4 automatic correction and sanction mechanisms in case of non-compliance
- 3 automatic correction mechanism in case of non-compliance and the possibility of imposing sanctions
- 2 Obligation to present corrective proposals to the relevant authority
- 1 there is no ex-ante defined actions in case of non-compliance

The score of this variable is augmented by 1 point in case escape clauses are foreseen and clearly specified.

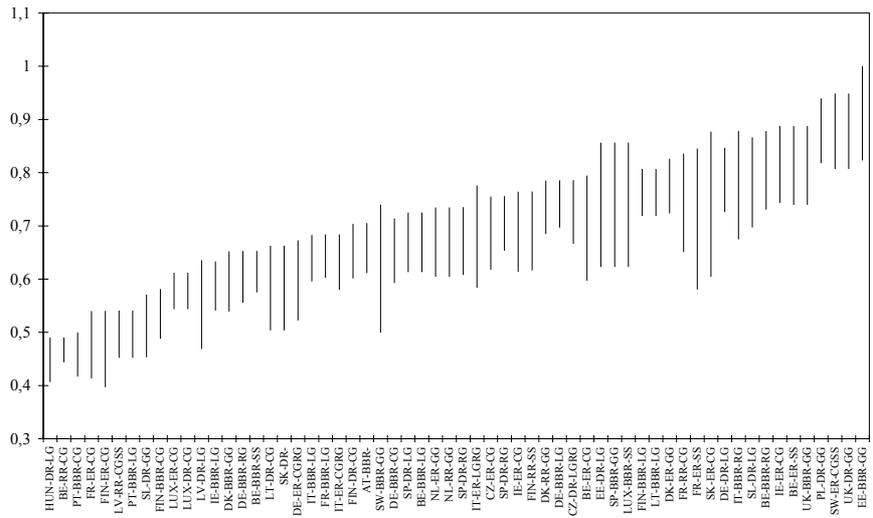
**Criterion 5: Media visibility of the rule**

The score of this criterion index is calculated as follows:

- 3 if the rule observance is closely monitored by the media, and if non-compliance is likely to trigger a public debate
- 2 for high media interest in rule-compliance, but non-compliance is unlikely to invoke a public debate
- 1 for no or modest interest of the media

In absence of strong theoretical base or preference regarding the weight to be given to each criterion, the Index of Strength was computed in a large number of different ways, reflecting different possible weightings for the five criteria. The scores of the five criteria were first standardised to run between 0 and 1. A random weights technique was used following the method used by Sutherland and al. (2005). 10000 sets of randomly-generated weights were used to calculate the synthetic indicator in 10000 different ways. The random weights are drawn from a uniform distribution between zero and one and then normalised to sum to one. The resulting distribution for the synthetic indicator reflects the possible range of values given no a priori information on the weight to be given to each component of the index. The mean value of the synthetic indicator is asymptotically equivalent to the indicator calculated using equal weights for the constituent components (unweighted arithmetic average). The chart below shows, for all the fiscal rules considered in the study, the range containing 98% of the values of the index of strength of the rule calculated with 10000 different sets of random weights (we eliminated the 1% lowest and highest values of the synthetic index).

**Chart 15 Index of strength of the fiscal rules in force in the EU, year 2005 (ordered according to the average value)**



**Notes:**

1/ The chart shows, for all the numerical fiscal rules considered in the study, the range containing 98% of the values of the index of strength of the fiscal rule concerned. Rules were classified in an ascending order. The scores of the individual criteria taken into account in the calculation of the overall index were normalised to one. The size of the vertical line provides an indication of the heterogeneity of the scores related to the five criteria considered in the calculation of the synthetic index.

2/ When the characteristics of a rule have evolved over time, the chart only present the index consistent with the most recent features. Three rules presented in the chart are not anymore in force in 2005. For Belgium, the expenditure rule and the revenue rule were implemented for the convergence process leading to EMU qualification. For Slovenia, the debt rule was in force over 2000-2004.

## The Fiscal Rule Index

The purpose of this index is to summarise information on the degree of the intensity in the use of the rules and on the average degree of strength of the rules. The indicator is constructed in two steps. First, the potential contribution of each rule to the Fiscal Rule Index is computed by multiplying the share of government finances covered by the rule by the Index of Strength of the rule. Second, these rule-specific indicators are summed up over all the rules in place in a given country in an given year. For example, take the case of a country *C* having three fiscal rules in year *t*: an expenditure rule to contain developments in health care spending (index of strength *x*) covering a percentage of general government expenditure equal to *a*; a budget balance rule for local governments (index of strength *y*) covering a fraction of general government finance equal to *b* and an expenditure rule at central government level (index of strength *z*) covering a fraction of total general government expenditure equal to *c*. The indicator for country *C* in year *t* is therefore determined as follows:

$$I_{C,t} = ax + by + cz$$

In case several rules apply to the same general government sub-sector, we follow the same methodology as for the calculation of the Fiscal Rule Coverage Index. Weight 1 is given to the rule with the highest Index of Strength and a weight 0.5 is given to all the other rules.

Following the same approach but taking into account only expenditure rules, a time-varying 'expenditure rule index' was constructed for each Member State.

## The Fiscal Rule Cyclicity Index

The purpose of this index is to summarise the likely impact of the system of numerical fiscal rules prevailing in a given country in a given year on the cyclical stance of fiscal policy. The index is constructed in the same way as the Fiscal Rule Index, except that in this case the information on the strength of individual fiscal rules is replaced by information on the properties of each fiscal rule with respect to stabilisation. Positive numbers imply a counter-cyclical impact; negative numbers a pro-cyclical impact (note that as opposed to the Fiscal Rule Index, the effect of different fiscal rules may offset each other as far as their impact of on cyclicity is concerned). In case several rules of the same type apply, we take into account only the most binding one, as measured by the Index of Strength.. The scoring assigned to different types of rules is as follows.

### *Expenditure rules*

- 1 is assigned if a rule capping expenditure growth or level (in nominal or real terms)
- 1 if the rule is defined in terms of an expenditure to GDP ratio

### *Budget balance rules*

- 0 if the rule is defined in cyclically-adjusted terms or if the period for assessing compliance is a full business cycle
- 1 for budget balance rules defined over a medium-term horizon
- 2 for budget balance rules with a short time horizon (1 year)

### *Borrowing and debt rules*

- 0 if the period for assessing compliance is a full business cycle
- 1 for other debt or borrowing rules

### *Revenue rules*

- 1 is assigned if the rule ensures that cyclical revenues are used for debt reduction, or favours it (the government has to specify in advance how cyclical revenues will be used)
- 0 is assigned if the rule targets a given revenue-to-GDP ratio
- 1 is assigned if the rule targets an amount of revenue in nominal terms .

# WHO PROVIDES SIGNALS TO VOTERS ABOUT GOVERNMENT COMPETENCE ON FISCAL MATTERS? THE IMPORTANCE OF INDEPENDENT WATCHDOGS

Eloïse STÉCLEBOUT-ORSEAU<sup>1</sup> and Mark HALLERBERG<sup>2</sup>

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## **Abstract**

We present a game that first models the relationship among a population, a government and a watchdog. The focus is on the incentives that the government faces when making fiscal policy decisions. The population has incomplete information about the type of government that is in office, but an independent watchdog can reveal whether it is competent or affected by a deficit bias. In the second part of the paper, we elaborate on the strategic changes in fiscal policy-making induced by the introduction of fiscal surveillance at the European level. Based on recent developments, we discuss whether multilateral surveillance is effective as a safeguard against fiscal indiscipline. We find that, if the watchdog acts strategically and internalizes the impact of its signals on the intergovernmental game, it will only provide information on the economic and budgetary state of Member States in specific cases – namely when the cost of sanctions is sufficiently high compared to electoral stakes and provided that few countries are mentioned.

**Keywords:** Stability and Growth Pact, fiscal policy, budgetary surveillance

**JEL codes:** C72, D72, D80, E62, H62, H77

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## NON-TECHNICAL SUMMARY

We identify two stylized facts under the Stability and Growth Pact (SGP). First, more states over time have recorded “excessive deficits” as defined in the SGP. Second, larger countries are more likely to run excessive deficits than smaller ones. Why has the SGP not succeeded in maintaining fiscal discipline?

To answer this question, we consider the incentives that governments themselves face. We begin with a model that considers the domestic game for government. Governments may be competent or incompetent. On average, competent governments have better economic performance, but an incompetent government could experience a positive shock and have the same performance as a competent government that experiences a negative shock. Voters observe economic outcomes only, not government type or the nature of the shock. Voters support governments in good times and throw them out in bad times, but they will not know what to do during periods of intermediate economic performance. It would help voters to make decisions if some watchdog could reveal the nature of the shock and thereby also provide needed information about the type of their government.

We then consider the effects of Economic and Monetary Union (EMU), where governments commit to fiscal discipline under the Stability and Growth Pact (SGP). To investigate the strategy of governments, we introduce three changes to the game. First, the SGP focuses on deficit levels rather than the health of the overall economy. How do populations view deficits? We therefore consider that they may differ in their relative aversion to deficits. We add a new stage to the game that comes at the beginning where nature determines whether a population is mostly “Keynesian” or “Ricardian”. Keynesian populations are comfortable with governments that implement deficit-financed expansionary fiscal policies while Ricardians are deficit-averse. The game therefore considers the decision for a government to initiate a fiscal impulse.

The second change is to evaluate what happens at the European level, and more precisely in the ECOFIN Council. Under the SGP, multilateral fiscal surveillance implies that governments can choose to punish countries that are found to have excessive deficits. We model the circumstances under which a country can expect to be subject to sanctions under an excessive deficit procedure. As the implementation of the SGP depends upon the Member States sanctioning themselves, there is the possibility of a blocking minority preventing sanctions.

This, in turn, leads to a third change, namely the addition of a sub-game at the EU level. We discuss how it affects the government’s behaviour with regard to the budget deficit and the odds of its re-election. The overall message from a set of two- and three-player games is intuitive. If voters in a given country want a balanced budget badly enough, they simply get it. If populations want fiscal impulses, the outcome depends upon several factors – the underlying distribution of Keynesian and Ricardian populations, the behaviour of other governments and whether governments care more about voters support or the overall cost of sanctions. Because of the political game in the ECOFIN Council, governments look for signals about whether other governments will comply with the Pact or defect. If they know that enough of them will not comply and can constitute a blocking majority, they will not comply either. These outcomes capture well the two fore mentioned stylized facts: if a large share of countries run high deficits simultaneously, it also weakens the incentives for other countries to comply with the SGP. This explains the increasing number of “sinners”.

The question then becomes, under what circumstances would a watchdog want to send a signal about whether a given country is running a high deficit? The answer depends on the relative importance of the electoral stakes and the cost of sanctions at the international level. We find that the one case when a signal may prevent defection in the three player game is when the cost of international sanctions is sufficiently high compared to electoral stakes and so long as only one country is mentioned. In all the other cases, signals are either useless or counterproductive. A signal on one country would not prevent defection, and it could even lead other countries to defect too. The implication is clear – if it wants to maximize the chances of compliance with the Pact, paradoxically a strategic watchdog will provide little information. It will send signals only when it expects them to be effective. There is a dilemma inherent in multilateral surveillance: signalling bad pupils can have counterproductive implications on the behaviour of other countries.

## 1 INTRODUCTION

The Maastricht Treaty set a series of goals that Member States have to meet to join the euro area. The Treaty is not specific, however, about how to prevent free-riding fiscal behaviour of its members once Economic and Monetary (EMU) is in place.<sup>3</sup> In response to domestic pressure both from the public and from the Bundesbank, the German Finance Minister, Theo Waigel, proposed a ‘Stability Pact’ in autumn 1995 to address the absence of European level fiscal rules. While it was renamed as ‘the Stability and Growth Pact’ (SGP) and some parts of the proposal were weakened, the core parts of the proposal became EU law after the Member States agreed to it at the Dublin Summit in December 1996 (Heipertz and Verdun 2004).

The Pact’s design includes preventive and corrective mechanisms. The emphasis for the preventive arm rests on the monitoring of Member State behaviour. States were expected to submit economic plans in the form of ‘convergence programmes’ already in 1994, but the content of those plans as well as their timing was not clear, and was not explicitly laid out in legal terms at the time. Based on both the SGP and on provisions Member States agreed to at subsequent European Council meetings, the rules for either convergence programmes (which non-participating countries file) or stability programmes (which euro area countries file) became clear. States would have to update their programmes yearly in the late autumn. The Commission, for its part, would assess the programmes and make recommendations to the Council of Economic and Finance Ministers (henceforth “ECOFIN”) on whether the programmes met European goals, which in particular included budget balances “close to balance or in surplus,” and whether the goals themselves were realistic.

In order to move to the formal corrective arm of the Pact, a Member State would have to be found to have an “excessive deficit,” and the procedure that was used here is important. The general ‘floor’ the Pact sets is a deficit of 3% of GDP. Prior to the reform of the Pact in March 2005, ‘exceptional’ circumstances, such as a decline in economic growth of 2% or, upon ECOFIN’s approval, a decline of between 0.75% and 2%, would be grounds for a state not to receive the “excessive deficit” label if it ran large deficits. Note that the Commission had to recommend that an excessive deficit existed and ECOFIN would have to agree by qualified majority in order for a country to receive the “excessive deficit” label.

The corrective arm of the Pact was designed to encourage states not to run excessive deficits in the first place. The original version of the SGP specified that, once a country had an excessive deficit, it had only a year to correct the deficit “unless there are special circumstances.” If the Commission and ECOFIN judged that the Member State was not making progress to eliminate the excessive deficit, they could require the country to make a non-interest bearing deposit with the Commission up to 0.5% of its GDP. If the country did not make correction, the deposit was eventually to become a fine.

Due to some difficulties in implementing the Pact, in March 2005 the Member States agreed to a revision that changed both the Pact’s preventive and corrective mechanisms. On the preventive side, Member States now propose their own medium-term objectives as well as the country-specific factors they face, including the future fiscal effects of major structural reforms. In terms of the corrective mechanism, the revision clarifies the definition of mitigating factors, such as a severe economic downturn or the fiscal consequences of

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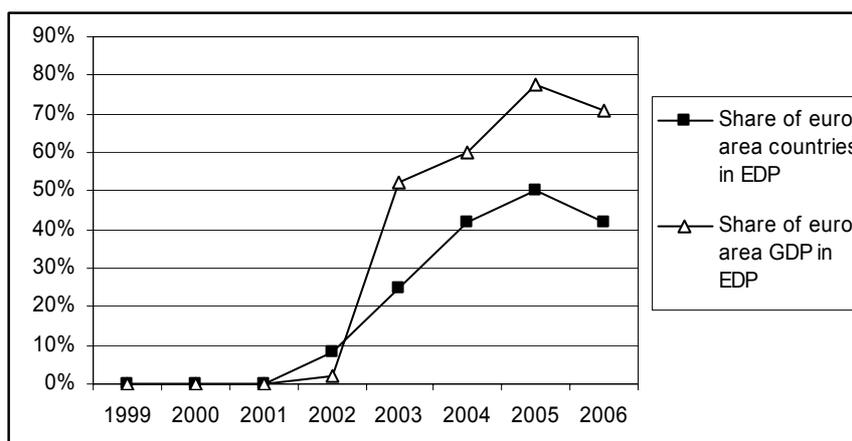
<sup>3</sup> Non participating Member States are required to comply with SGP requirements but they are not subject to sanctions.

European unification. Yet despite these revisions, the core elements of the Stability and Growth Pact, that is, the reliance on preventive and corrective arms and the 3% deficit limit, remain the same.<sup>4</sup>

How well has the Pact worked in maintaining fiscal discipline among European countries, and in particular in the euro area? The first way to think about this is in terms of the percent of states in the euro area that have “excessive deficits.” This measure, however, may not be adequate--if only a few small states that together constitute a negligible share of the euro area economy have problems, the overall effects may be slight, while it could also be the case that few states have excessive deficits but they are the largest economies. The second way to think about this is therefore in terms of the overall euro area economy; what percent of the euro area gross domestic product (GDP) is generated in countries with excessive deficits?

Graph 1 presents evidence for each of the indicators. Two stylized facts emerge from this simple picture. First, the number of states with excessive deficits has increased over time, from none in the early years to 50% of the states in 2005. The second fact is that the percentage of the euro area economy with an excessive deficit is almost always higher than the percent of states, with almost 78% of the economy in excessive deficit in 2005.

**Graph 1. Percent of euro area countries and euro area GDP in Excessive Deficit Procedure**



Data on GDP from the April 2006 AMECO database, while data on which countries had excessive deficits when is found at [http://ec.europa.eu/economy\\_finance/about/activities/sgp/procedures\\_en.htm](http://ec.europa.eu/economy_finance/about/activities/sgp/procedures_en.htm). The Netherlands is the state that no longer has an excessive deficit in 2006 based on the ECOFIN decision in June 2005.

Why has the SGP both in its original, and in its recently revised, form not restrained Member States from running excessive deficits? Moreover, why are large states more likely to have excessive deficits than small ones? We seek to explain each of these stylized facts in this paper. The obvious place to begin an answer is with the incentives that the states themselves face to behave one way or the other. Indeed, the language of “preventive” and “corrective” mechanisms indicates that the intention of the Pact is to affect the incentives that governments face when they make fiscal policy decisions. What the incentives are in practice, however, is not explicit in EU documents, and they may not be obvious. Moreover,

<sup>4</sup> For a more detailed review of the SGP and the recent reforms, see Morris, Ongena, and Schuknecht 2006.

we know little about the strategy of the institution implementing European legislation in this framework.

To address these issues, the paper first considers the question how, and under what circumstances, efficient budgetary monitoring can enable populations to sanction governments given what the government does in fiscal policy. The literature on economic voting presumes that voters are retrospective. They observe the government's management of the economy. If the economy does well, they conclude that the government is competent and they re-elect it. If the economy does poorly, they conclude that the government is bad and they vote for the opposition. Consistent with the literature, our model assumes that voters decide that the government is competent in boom times and incompetent during busts. However, one important complication that retrospective models generally ignore is that governments do not have complete control over the economy. We presume that there is some random error that appears as part of the estimation of economic performance. At intermediate levels of performance, voters cannot deduce the government's type. It could be that a competent government experienced a negative economic shock or that an incompetent government experienced a positive shock. This means that voters may potentially keep incompetent governments that get lucky and vote out competent governments because of a negative exogenous shock. The game indicates that there is a functional need for an unbiased watchdog to send signals on the nature of economic shocks to voters, from which voters can deduce the government's type. When this watchdog exists, voters punish incompetent governments.

Under EMU, the design of the SGP suggests that its implementation depends on the number of governments that comply with it. If there are few sinners, ECOFIN will sanction them, and governments have a reason to consolidate their budgets. If several countries, and especially the large ones, deviate simultaneously, the implementation of sanctions is likely to be much milder. This is due to the decision-making process at the ECOFIN Council: although a country facing sanctions is not allowed to take part in the vote on its own case, it has clear incentives to ally with other "bad pupils" to agree not to vote against each other. If the proportion of bad pupils in the Council reaches a critical level, their votes can be sufficient to gather a blocking minority.

An important twist to the story concerns the role of information in the European-level game. If it were clear who runs a large deficit and who does not, the coordination among the Member States on whether to implement the sanctions under the Pact or not would be clear. Moreover, there would be no role for a watchdog. Yet a watchdog may be relevant for providing information for two reasons. First, Member States probably do not have complete information about the developing fiscal situations in other states, whereas a European watchdog may have better information about the fiscal situation in each country than the other states. Second and more importantly, it is the watchdog that decides whether to begin a process of identifying a state as having an excessive deficit in the first place.<sup>5</sup> It also is the actor that recommends that a sanction be imposed. In close cases, Member States presumably are uncertain whether the watchdog will propose that a given state has an excessive deficit. It is therefore important to model the decision of the watchdog to reveal its information given that the overall proportion of "sinners" affects whether the Pact will be enforced or not.

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<sup>5</sup> The European Court of Justice reaffirmed the Commission's agenda-setting role on these matters in its decision on July 13, 2004.

We argue that strategic considerations explain a dilemma inherent in the surveillance process: signalling bad pupils can have counterproductive implications on the behaviour of other countries and therefore a strategic watchdog will choose to send signals only when it is certain that they will be effective.

The paper is organised as follows. We first model the relationship between a population and a government on fiscal policy choices, as well as the role of a watchdog at the national level (Section 2). The game changes under EMU (Section 3), as domestic fiscal developments may also trigger sanctions under the SGP. This may result in a trade-off for governments between complying with voters' preferences and European commitments. Furthermore, as governments look for signals what the others will do when deciding whether to "sin" themselves, the watchdog acts strategically: it sends signals when there are only a few sinners, but will want to leave the uncertainty in place when it knows that there are more potential sinners (Section 4). The last section concludes.

## 2 DOMESTIC FISCAL SURVEILLANCE

We begin the domestic discussion with a principal-agent framework<sup>6</sup> (Figure 1). The principal is the population of a given country. The agent is the government. The problem for voters is that they cannot observe whether the government is competent or not. We presume that incompetence leads to both lower growth and to a lower budget balance. More formally, one can think of  $y^*$  as the economic potential of a given country (e.g. on the basis of average observed growth rates in the past),  $R$  as the incompetence level, and  $y = (1-R)y^*$  as the observed level of performance in a given electoral term.<sup>7</sup> This means that, if voters choose "wrong" and  $R > 0$ , the country will experience lower economic growth and lower budget balances. Note that the principal in this case does not directly observe  $R$  but only  $y$ . To simplify the model for now, we assume that governments come in two types, those with  $R=0$  (i.e., competent) and those with  $R > 0$  (i.e., incompetent). The government type is chosen by nature and does not change once the government is in office.<sup>8</sup>

The literature on economic voting (e.g., Fiorina 1981, Ferejohn 1986, Auberger and Dubois 2005) considers such a relationship between voter expectations on the economy and election results. It presumes that voters are retrospective. They observe the government's management of the economy. If the economy does well, they conclude that the government is competent and they re-elect it. If the economy does poorly, they conclude that the government is bad and they vote for the opposition.<sup>9</sup> In our model, voters begin at Stage 1 with ex ante belief  $\alpha$  that

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<sup>6</sup> There are several principal-agent models for the European Union. For specifically fiscal policy issues modeled under the Stability and Growth Pact, see Schuknecht (2004), Schelkle (2005), and Hodson (2005).

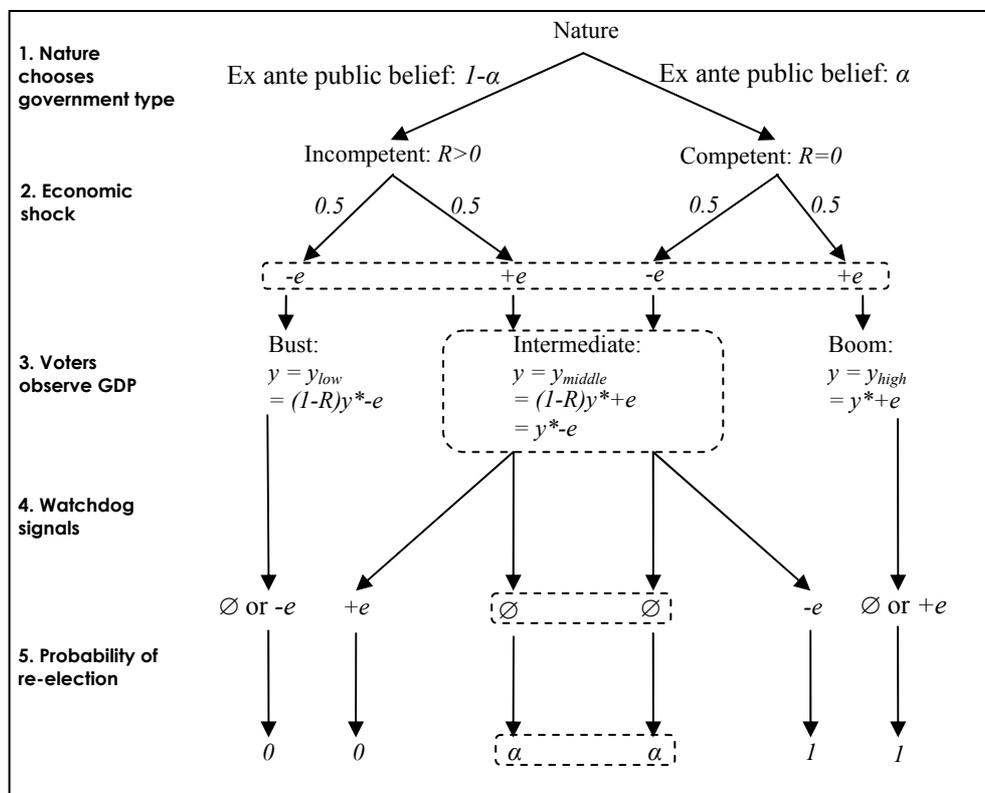
<sup>7</sup> One simplification that we make at this point is that  $y$  reflects both the economic and budgetary performance of government. A dynamic extension of the model would require a more solid analysis of the link between the deficit and growth.

<sup>8</sup> There are several reasons why competence could vary, but for now all that matters is that governments vary on competence and nature chooses the level of competence in any given case. A future paper could treat the level of  $R$  as a choice variable for the government rather than one chosen by nature.

<sup>9</sup> One can think of the application of this general model to topics beyond economic voting. In the American mid-term elections of 2006, there was a public debate about whether the government competently executed policy in Iraq. The Republican leadership argued that external shocks, such as the presence of Al Qaeda terrorist cells, were responsible for the increase in violence in Iraq. The Democrats just as strenuously argued that the root cause of the deterioration of the situation was due to incompetence.

the government is competent and  $1-\alpha$  that it is not – namely,  $P(R=0)=\alpha$  and  $P(R>0)=1-\alpha$ .<sup>10</sup>

**Figure 1. The domestic game**



One important complication that some retrospective models ignore is that governments do not have complete control over the economy. Recent work (Duch and Stevenson 2006; Hellwig and Samuels forthcoming) suggests that economic voting may decline as the share of the international component of a given economy increases, while others (Alesina and Rosenthal 1995; Duch and Stevenson 2006, 2007) consider governments that experience both “exogenous” and “competency” shocks when making economic policy. In a similar spirit to the previous models, we presume that  $y = (1-R)y^* + \varepsilon$ , so that there is some random error  $\varepsilon$  that appears as part of the estimation of  $y$ . For simplicity, we assume that there are only two types of shocks, negative and positive:  $\varepsilon = \{-e, +e\}$ , with each having an equal probability of occurring.<sup>11</sup> Competent governments have an edge over incompetent ones, but random shocks mean that the outcomes that voters observe are not always clear. Specifically, we consider three cases:  $y_{high}$  when there is a boom,  $y_{middle}$  when economic performance is intermediate, and  $y_{low}$  when there is a bust, and we presume that competent governments have only two outcomes, booms and intermediate performance, while incompetent governments

<sup>10</sup> Because this paper focuses on the strategic interaction of governments and a watchdog, we do not model strategic voters.

<sup>11</sup> This model is also similar to Debrun and Kumar (2006). In their model, governments suffer random failures in the provision of public goods. They also have some unobserved level of competence. Populations observe only fiscal outcomes, not the level of competence or the possible provision failure. They then derive optimal fiscal rules in this context, and in particular they suggest that a state-contingent deficit rule would be desirable.

have two potential outcomes, intermediate performance and bust.<sup>12</sup> Intermediate performance may result either from a competent government experiencing a negative shock, or an incompetent government with a positive shock:  $y_{middle} = y^* - e = (1-R)y^* + e$ . Voters do not observe the shock. They do, however, observe economic performance, and they know that the conditional probabilities for each value of  $y$  given the type of government are:

$$P(y = y_{low} | R = 0) = P(y = y_{high} | R > 0) = 0$$

$$P(y = y_{middle} | R = 0) = P(y = y_{high} | R = 0) = P(y = y_{low} | R > 0) = P(y = y_{middle} | R > 0) = 1/2$$

One can now estimate the probability that a given government will be re-elected. While the economic voting literature notes simply that the probability of re-election increases with macro-economic health, we simplify these findings into a presumption that voters decide a government is competent in boom times and incompetent during busts. Indeed, in the model re-election depends on the voters' updated beliefs on the government's type. The probability of re-election is equal to the probability that voters attribute to the competent type after observing the level of GDP. If there is a bust, voters know that the government can only be incompetent and they dump it. Conversely, if there is a boom, the government can only be competent and it is re-elected. In the intermediate case, the level of economic performance does not bring any new information to voters and therefore the government is re-elected with probability  $\alpha$ .

In other terms, booms or busts fully reveal the government's type, while at intermediate levels of performance, voters cannot deduce the government's type. It could be that a competent government experienced a negative shock or that an incompetent government experienced a positive shock. This means that voters may potentially keep incompetent governments that get lucky and vote out competent governments because of a negative exogenous shock.

An addition to the existing literature our model provides is the consideration of possible watchdogs. Such bodies could provide signals that help voters reveal the true type of government under intermediate economic performance. In terms of the model, voters lack the private information that the government has about its type, but there may be others who can provide useful information. In particular, it is possible for a watchdog to tell whether a shock is positive or negative. This in turn allows voters to conclude correctly the type of government in office. The relevance of the signal in practice depends upon the credibility of the sender in the eyes of the voter. Opposition leaders are expected to signal that shocks are positive, so even if they have accurate information their signal is not, by itself, persuasive. Similarly, the government spokesperson is expected to send signals that the economic shock is negative and will also not be believed. An unbiased sender, however, will be believed. Here, we suppose that if there is a watchdog, it is assumed to be unbiased and voters take its signal at face value. The watchdog's signal in case of a boom or a bust brings no new information to voters. However, in the intermediate case, if there is a signal, the probability of re-election becomes  $1$  if the signal is  $-e$  and  $0$  if the signal is  $+e$ .

Multilateral fiscal surveillance under the SGP introduces another level to the game. In the next two sections, we consider how it affects the strategies of governments and the watchdog.

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<sup>12</sup> One could also assume probabilities of all three economic outcomes to both types of government. A competent government could experience a disastrous shock that leads to a bust, while an incompetent government could be so fortunate that it experiences a boom despite rent-seeking. These events would be rare, however, and would complicate the model without leading to any new insights.

### 3 MULTILATERAL FISCAL SURVEILLANCE

#### 3.1 Presentation of the intergovernmental game

There are several key changes to the game when one adds a European level. In particular, the SGP establishes a framework that considers the fiscal performance of Member States. All models require simplification of the world, and we must leave out some details to make the model tractable. There is one dynamic that is crucial to the operationalization of the SGP, and for explaining the two stylized facts above – namely that the number of states with excessive deficits has increased and it is disproportionately the large states that have not been complying. While the watchdog sends the signal about a given state's finances, the Member States themselves (with the exception of the one Member State under consideration at a given point in time) determine whether sanctions will be applied. Furthermore, the SGP focuses on deficit levels. The budget balance is not only considered as an indicator of the government's economic performance but also as a criterion *per se*, and under the Pact a government can be punished for having an excessive deficit.

The first consequence of this focus on deficits is that the preferences of voters regarding the budget balance matter. How do populations view deficits? There is no cross-national study we know of that measures empirically the position of populations on deficits, but presumably populations may differ in their relative aversion to deficits.<sup>13</sup> We add a preliminary stage to the game (Stage 0) where Nature determines whether a population is Keynesian or Ricardian<sup>14</sup>. The population may expect fiscal deficits to be necessary to pick up economic growth, and it will reward governments that execute such policies. For exposition purposes, we consider such populations “Keynesian.” A “Ricardian” population, in contrast, punishes governments that run large deficits. There are other intuitive ways one can think about these population types,<sup>15</sup> but the key is simply that populations differ on the desirability of the government to run deficits.

The second change is to evaluate what happens at the European level. Under the SGP, governments are required to monitor their budgets closely and the ECOFIN Council can choose to punish countries that have excessive deficits. This is reflected in the addition of an intergovernmental sub-game at Stage 6 of the game. We discuss how a government decides whether to initiate a fiscal impulse and how the European-level sub-game affects the odds of its re-election. We also model how the ECOFIN Council decides on the implementation of

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<sup>13</sup> One extension of the model would be to think of the “population” here as the median voter, and to consider populations with some proportion Keynesian and the remaining proportion Ricardian. These proportions would vary across countries and could also change over time in a dynamic model.

<sup>14</sup> For the time being, this is assumed to be known to all players. An interesting extension of the game could make the information on public opinion private to its own government.

<sup>15</sup> A “Ricardian” public opinion could also simply be in favour of the SGP. A public opinion that is reluctant to have high deficits because it expects that future taxes will increase would back the Pact. It can also be because the public opinion is particularly concerned about credibility issues (of government, of EMU, of the SGP). A “Keynesian” public opinion, in contrast, expects the government to implement an expansionary fiscal policy regardless of the Pact. Such a public opinion may be hostile to European sanctions if they reduce fiscal margins of manoeuvre and may encourage the government to breach the Pact. While we do not know of direct public opinion evidence for deficits, Scheve (2004) indicates that populations do differ systematically in their relative acceptance of inflation, with those found in countries with large financial sectors and with more past experience with price volatility the most inflation-averse.

sanctions, based on the assumption that the degree of toughness in the implementation of the SGP depends on the number of governments that comply with it. If there are few sinners, the Council will sanction them, and governments have a reason to consolidate their budgets. If several countries, and especially the large ones, deviate simultaneously, the implementation of sanctions is likely to be much milder. This is due to the decision-making process at the ECOFIN Council: although a country facing sanctions is not allowed to take part in the vote on its own case, it has clear incentives to ally with other “bad pupils” to agree not to vote against each other. If the proportion of bad pupils in the euro area reaches a critical level, their votes can be sufficient to gather a blocking minority.

Figure 2 below provides the complete game tree. The introduction of the intergovernmental sub-game has several implications for voters and governments. First, in the EMU context, the probability of re-election at Stage 5 is transitory, because it only depends on voters’ beliefs on the government’s type. The final probability of re-election, which voters calculate at Stage 7, also depends on the government’s decision in the intergovernmental sub-game at Stage 6. Therefore, in the intergovernmental sub-game, governments need to consider how their decision on an additional fiscal impulse affects their final probability of re-election compared to Stage 5.

Following backward induction, we start to solve the SGP game by looking at Stages 6 and 7 in this section. We presume that in EMU voters still take the watchdog’s signal at face value at Stage 5, as they are not aware of the intergovernmental game and its implications on the watchdog’s signalling strategy (Stage 4), which we will discuss in Section 4.

The remainder of this section walks the reader through the intergovernmental sub-game. The overall message is intuitive. If voters in a given country want a balanced budget badly enough, they simply get it. If populations want fiscal impulses, the outcome depends upon several factors – the underlying distribution of Keynesian and Ricardian populations, the behaviour of other governments and whether governments care more about voters support or the overall cost of sanctions. Because of the political game in the ECOFIN Council, governments look for signals about whether other governments will comply with the Pact or defect. In some cases, if they know that enough of them will not comply and can constitute a blocking majority, they will not comply either.

### **3.2 The intergovernmental game with two players**

At Stage 6, what influences a government’s decision to either implement measures to avoid an excessive deficit or, on the contrary, provide an additional fiscal impulse and go further into deficit?

The government’s strategy in this sub-game depends on four factors. First, they consider their own budget decisions. At the European level, there are two possible actions – the government decides to have an additional deficit ( $D$ ) or it complies with the SGP ( $C$ ). Second, they consider the cost of sanctions ( $S$ ) that come from the SGP if they choose  $D$ . Third, the government considers what other governments are doing. If enough of the others will choose  $D$  as well, the sanction from the SGP will not be imposed. Finally, the government considers the reaction of public opinion and how this reaction affects its electoral chances. Its decision regarding the fiscal impulse may have a positive or negative impact ( $V$ ) on its chances of reelection compared to what they were at Stage 5.

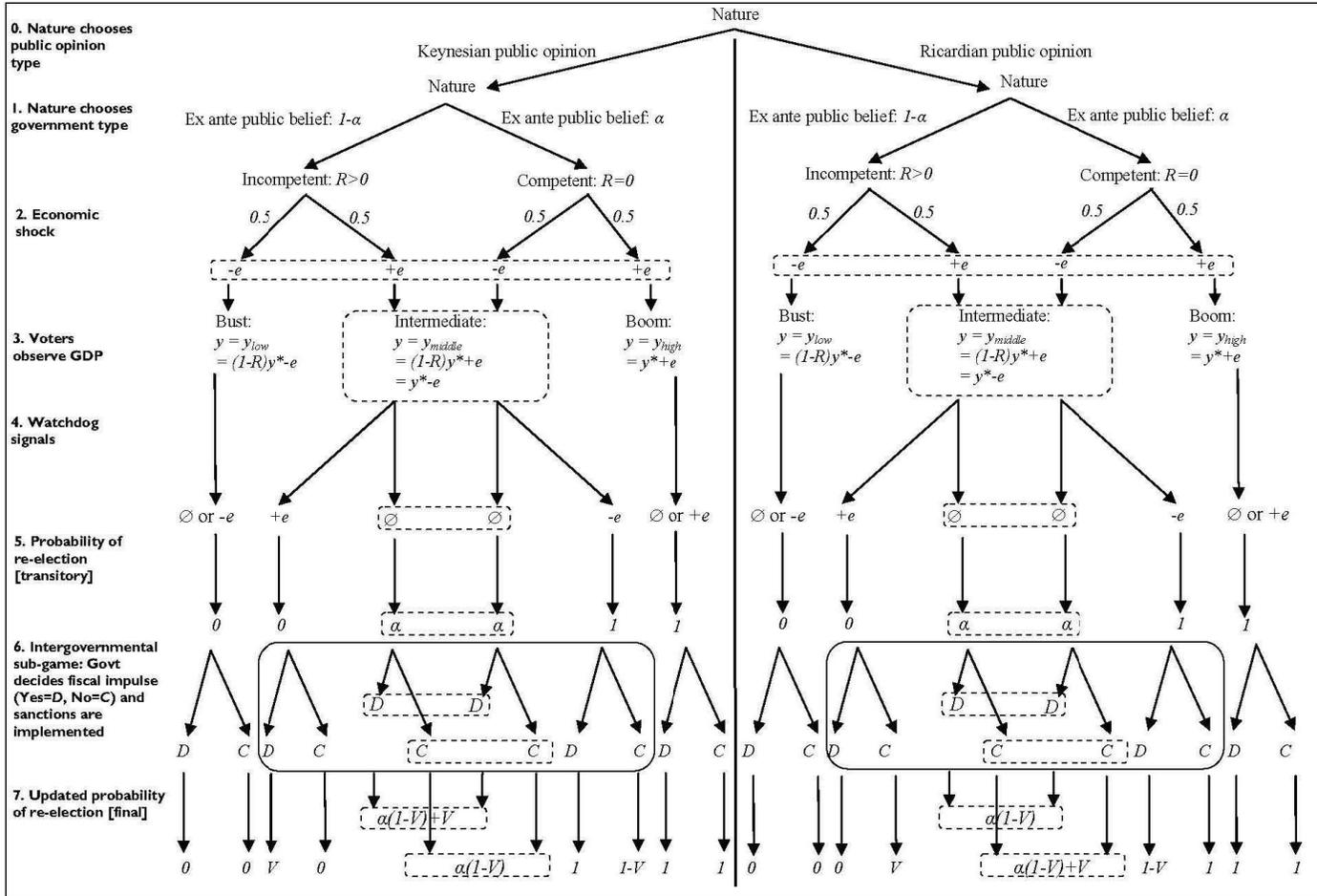


Figure 2. The multilateral fiscal game

Whatever the type of public opinion, there are no changes to the probability of re-election under booms or busts, as voters have such a clear-cut opinion on the government that they will always re-elect it or dump it regardless of its decision.<sup>16</sup> So the interesting case is again the intermediate one. Therefore the governments that we model below are supposed to have had an intermediate economic performance.

We assume that Keynesian public opinions would consider an additional deficit economically efficient and therefore would expect the government to initiate a fiscal impulse. So in the case of intermediate performance, even if a watchdog has signaled a positive economic shock, an incompetent government could improve its image in the eyes of a Keynesian population by playing *D*, thus raising its chances of reelection from  $\theta$  to  $V$  (where  $V \in [0,1]$ ). On the other hand, a competent government experiencing a negative shock and yet complying with the Pact – i.e. playing *C* – would be punished for not supporting the economy and the odds of its re-election would fall from  $1$  to  $1-V$ .

Conversely, a Ricardian public opinion would reward an incompetent government playing *C* for not making the deficit worse than it already is, but would punish a competent government playing *D* for deepening the deficit.

When there is no signal, the probability of re-election is the average of the odds for both types of government weighted by their respective probability. If the population is Keynesian and the government plays *D*, its chances of re-election are  $(1-\alpha)V + \alpha \cdot 1 = V + \alpha(1-V)$  and if it plays *C*, they are  $(1-\alpha)\theta + \alpha(1-V) = \alpha(1-V)$ . If the population is Ricardian, a government playing *D* will be re-elected with probability  $(1-\alpha)\theta + \alpha(1-V) = \alpha(1-V)$  and one playing *C* with probability  $(1-\alpha)V + \alpha \cdot 1 = V + \alpha(1-V)$ .

In all the above cases, when the economic performance is intermediate, regardless of the economic shock and the voters' information, the difference in probability of re-election for the government between playing *C* and *D*, in absolute terms, is  $V$ . Hence, let  $-V$  denote the cost of going counter to voter preferences.

In the payoffs matrices below, we presume that the odds of re-election increase by  $V/2$  if the government adopts a budgetary position consistent with the underlying population type and decrease by  $V/2$  otherwise. The players' strategies would be exactly the same if the payoffs had been  $\theta$  and  $-V$ ,  $V$  and  $\theta$  or any other intermediate combination: what matters is that the difference in terms of public support between playing *C* or *D* is always  $V$  (or  $-V$ ).

If populations are completely indifferent about what governments do on budgets,  $V$  is equal to zero and the game reduces to the one in Figure 1.

$V$  is the election component of governments' payoffs. Furthermore, there is a second component that measures the cost of sanctions under the SGP:

$$\begin{cases} 0 & \text{if the government complies or if sanctions are not implemented} \\ -S & \text{otherwise} \end{cases}$$

Thus  $-S$  is the cost of breaching the SGP if sanctions are implemented. By assumption,  $S$  is strictly positive. Note that a government with a budgetary surplus does not get any reward on the basis of the SGP. It may, however, be rewarded in terms of public opinion.

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<sup>16</sup> We can assume that if there is a bust, it is likely that there is also a large deficit and that voters will always want to get rid of the government. Conversely, a large deficit is highly unlikely if there is a boom, and voters will nearly always be satisfied with the government. As a result, the extreme cases are trivial.

$S$  partly reflects the level of financial sanctions under the SGP. It is, however, a broader concept. There may be clear reputation costs both to voters and to markets for violating the Pact. One can also imagine that ratings services could downgrade the value of a Member State's credit rating.  $S$  represents the overall cost of sanctions. Because  $S$  measures a threat, it is of the same order of magnitude as  $V$ , so that both parameters are homogeneous.<sup>17</sup>

We begin with a two-player game and present later a three-player version. In the two-player game, it is assumed that if only one government breaches the SGP, sanctions are applied, whereas if both governments are deviant, sanctions are blocked. Three settings are then possible, according to what types of public opinion prevail: two Ricardian public opinions, two Keynesian public opinions, or one of each type.

A Ricardian public opinion prefers the government to comply with the SGP, so it grants the government a positive payoff if it is in line with the SGP ( $C$ ) and a negative payoff if it has a large deficit ( $D$ ). The reaction of the Keynesian public opinion to compliance and deviance from the SGP is opposite to that of the Ricardian public opinion: it prefers the government to breach the SGP, so it gives the government a negative payoff if it is in line with the SGP ( $C$ ) and a positive payoff if it has an large deficit ( $D$ ).

**Figure 3. Payoff matrices with at least one Ricardian public opinion**

		2			
		C	D		
1	↑C	V/2, V/2	V/2, -V/2-S		
	↑D	-V/2-S, V/2	-V/2, -V/2		

**3.a. Two Ricardian public opinions**

		2			
		C	D		
1	C	V/2, -V/2	V/2, V/2-S		
	D	-V/2-S, -V/2	-V/2, V/2		

**3.b. Ricardian voters in country 1,  
Keynesian voters in 2**

If public opinions in both countries are favourable to the SGP (Figure 3.a), a government never has incentives to deviate from the rule because it would receive negative payoffs at least from public opinion and possibly also from the implementation of sanctions. The incentives coming from both voters and the SGP operate in the same direction. The Nash equilibrium is that both governments comply with the SGP.

In Figure 3.b, the first government (actions in rows) faces a Ricardian public opinion and the second government (actions in columns) a Keynesian public opinion. The government whose public opinion is reluctant to have a deficit never has an incentive to deviate from the SGP in this game. Note that the government whose public opinion requires an expansionary fiscal policy even if it implies to breach the Pact is better off with a large deficit if sanctions are not implemented – but this is unlikely here, as the other government faces a Ricardian public opinion and will not run a high deficit. If sanctions are applied, the government in a Keynesian country may still have an incentive to breach the SGP provided that sanctions are low or that the public opinion reward is high enough to overcome the cost of sanctions, i.e. if  $-V/2 < V/2-S$ , or  $V/S > 1$ .

At this point, it is important to stress that the ratio  $V/S$  is the key parameter in this game, because it measures the relative importance of the voter reward compared to the European

<sup>17</sup> In the model these parameters are static, but in a dynamic model they could of course vary over time.

sanction. When deciding whether to comply with the Pact, governments face a trade-off between voter support ( $V$ ) and threat of sanction ( $S$ ). If  $V/S$  is high, governments have a higher incentive to follow first and foremost the preferences of voters. If  $V/S$  is low, the cost of possible sanctions is so high that governments may choose to go counter to the preferences of public opinion. We will see in the remainder of the paper that  $V/S$  also affects the equilibria and the watchdog's strategy.

As complying is always a dominant strategy for governments facing Ricardian populations, they never have an incentive to deviate. Let us therefore focus on the less straightforward interaction between two governments with Keynesian populations.

2

		C		D		
		-V/2, -V/2	-V/2, V/2-S	V/2-S, -V/2	V/2, V/2	
↕ ?	← ?	↓	C	D	D	$p$
	→		D	D	D	$1-p$
			$q$	$1-q$		

The outcome depends again on the relative levels of  $S$  and  $V$ . It may not be clear whether a government is better off complying or deviating when the other government is complying, especially if  $V$  is unobservable. However, if one government expects the other will breach the Pact, it will decide to deviate as well. In this setting, expectations are very important. Importantly, this situation results in self-fulfilling prophecies: if government 1 expects that government 2 will deviate, it will choose to deviate too, which in turn will lead government 2 to deviate.

When governments play mixed strategies, let  $p$  denote the probability that government 1 plays  $C$ ,  $q$  the probability that government 2 plays  $C$ , and  $u_i(.)$  the expected payoff of government  $i$  for a given action.

The expected payoffs of government 1 are as follows:

$$u_1(C) = -V/2$$

$$u_1(D) = q(V/2 - S) + (1-q)V/2 = V/2 - qS$$

If government 1 deviates, it always receives support from the population ( $V/2$ ) and it has to bear the cost of a sanction  $S$  when government 2 complies, which happens with probability  $q$ .

Government 1 plays  $C$  if it yields a higher expected payoff:

$$-V/2 > V/2 - qS$$

i.e.  $q > V/S$ .

As the game is symmetric, similarly, government 2 plays  $C$  if  $p > V/S$ .

This is typically a coordination game whereby players are better off when they act similarly. Being the only one to defect is costly, so each government defects only if the probability that the other government defects too is high enough. Indeed, while choosing to defect has a favourable impact in terms of public opinion support, it can also imply a costly sanction if the other government does not defect. If the probability that the other government defects is high, the implementation of a sanction is less likely and is overcome by the gain from public

opinion. Conversely, the higher the cost of the sanction and the lower the stake regarding public opinion, the more governments are willing to comply. We can compute the game's best-response correspondences:

$$p^*(q) = \begin{cases} 0 & \text{if } q < V/S \\ [0,1] & \text{if } q = V/S \\ 1 & \text{if } q > V/S \end{cases} \quad q^*(p) = \begin{cases} 0 & \text{if } p < V/S \\ [0,1] & \text{if } p = V/S \\ 1 & \text{if } p > V/S \end{cases}$$

The equilibria depend on the relative values of  $V$  and  $S$  (see proofs in Appendix 1).

Voter support matters more than international sanctions ( $V/S > 1$ )

The conditions  $p < V/S$  and  $q < V/S$  always hold. In consequence, there is only one equilibrium:  $(p^*=0, q^*=0)$ , meaning that all governments choose to have a large deficit. Note that, in this case, if the amount of the sanction is low compared to the stakes in terms of public opinion, governments always have an incentive to have a high deficit. As a result, both governments deviate and avoid sanctions.

Voter support matters as much as international sanctions ( $V/S = 1$ )

The best responses are:

$$p^*(q) = \begin{cases} 0 & \text{if } q < 1 \\ [0,1] & \text{if } q = 1 \end{cases} \quad q^*(p) = \begin{cases} 0 & \text{if } p < 1 \\ [0,1] & \text{if } p = 1 \end{cases}$$

As soon as there is a positive probability that the other government deviates, governments choose to deviate. In this case, there are two equilibria:  $(p^*=0, q^*=0)$  and  $(p^*=1, q^*=1)$ .

Voter support matters less than international sanctions ( $0 < V/S < 1$ )

This is the most general case. The above equilibria,  $(p^*=0, q^*=0)$  and  $(p^*=1, q^*=1)$ , are also equilibria in this case: governments either all comply or all deviate. Furthermore, there is also a mixed-strategy equilibrium:  $(p^*=V/S, q^*=V/S)$ .

Voter support does not matter ( $V = 0$ )

This implies that  $V/S = 0$  and that best responses are as follows:

$$p^*(q) = \begin{cases} [0,1] & \text{if } q = 0 \\ 1 & \text{if } q > 0 \end{cases} \quad q^*(p) = \begin{cases} [0,1] & \text{if } p = 0 \\ 1 & \text{if } p > 0 \end{cases}$$

The payoff matrix is now:

		2				
		C		D		
1	C	0, 0	0, -S	p 1-p		
	D	-S, 0	0, 0			
		q		1-q		

Each government can intend to defect only if it is certain that the other government will defect too. Once again, there are two equilibria:  $(p^*=0, q^*=0)$  and  $(p^*=1, q^*=1)$ .

### 3.3 The intergovernmental game with three players

We now turn to the three-player game, where the implementation of sanctions on sinners depends on the proportion of sinners. If only one player breaches the Pact, it is sanctioned; if two or three players have high deficits, they can block sanctions.

The three-player game can be considered as a proxy for qualified majority voting, if one thinks of players not as single governments, but as groups of governments. One player would be smaller than a blocking minority, two players a group at least as large as a blocking minority or a winning majority, and three players would be unanimity. Adding more players would increase formal complexity with little gain in insight and realism.

#### 3.3.a. The game with Keynesian and Ricardian public opinions

The case of one Keynesian population (government 1) and two Ricardian populations (governments 2 and 3) is trivial (see below). Complying is always a dominant strategy for both Ricardian countries, so the options for the Keynesian country are simply either to comply or to have a high deficit and be sanctioned. The solution depends on the comparison between  $-V/2$  and  $V/2 - S$ , i.e. between  $V$  and  $S$  as previously.

		2				
		C		D		
1	C	$-V/2, V/2, \swarrow V/2$	$-V/2, -V/2-S, V/2$	1	$-V/2, V/2, \swarrow -V/2-S$	$-V/2, -V/2, -V/2$
	D	$V/2-S, V/2, \swarrow V/2$	$V/2, -V/2, V/2$		D	$V/2, V/2, \swarrow -V/2$
		3 = C ←		3 = D		

Let us now consider a three-player game in which two governments face Keynesian public opinions and one (government 3) faces a Ricardian public opinion.

The payoff matrix is:

		2				
		C		D		
1	C	$-V/2, -V/2, V/2$	$-V/2, V/2-S, V/2$	1	$-V/2, -V/2, -V/2-S$	$-V/2, V/2, -V/2$
	D	$V/2-S, -V/2, V/2$	$V/2, V/2, V/2$		D	$V/2, -V/2, -V/2$
		$q$		$1-q$		
		3 = C $r$		3 = D $1-r$		

C is a strictly dominant strategy for government 3 ( $V/2 > -V/2$  and  $V/2 > -V/2-S$ ) so the government with a Ricardian public opinion always plays C:  $r^* = 1$  for any strategies of governments 1 and 2, where  $r$  is the probability that government 3 complies.

Therefore, the game is reduced to a 2-player game with Keynesian public opinions, as studied above. For governments with Keynesian public opinions, the strategy of the Ricardian country is not an issue, as they know with certainty that they will comply. In consequence, they anticipate the action of the other Keynesian country.

### 3.3.b. The game with only Keynesian public opinions

If all populations are Keynesian, the payoff matrix is:

		2			
		C	D		
1	C	-V/2, -V/2, -V/2	-V/2, V/2-S, -V/2	<i>p</i>	
	D	V/2-S, -V/2, -V/2	V/2, V/2, -V/2		
		<i>q</i>	<i>1-q</i>		
		3 = C	<i>r</i>		

		2			
		C	D		
1	C	-V/2, -V/2, V/2-S	-V/2, V/2, V/2	<i>p</i>	
	D	V/2, -V/2, V/2	V/2, V/2, V/2		
		<i>q</i>	<i>1-q</i>		
		3 = D	<i>1-r</i>		

The expected payoffs of government 1 are as follows:

$$u_1(C) = -V/2$$

$$u_1(D) = qr(V/2 - S) + (1-q)rV/2 + (1-r)V/2 = V/2 - qrS$$

As in the two-player game, when government 1 defects, it receives  $V/2$  from the population, and the sanction  $S$  is implemented provided that both governments 2 and 3 comply, which happens with probability  $qr$ .

Government 1 plays  $C$  if it yields a higher expected payoff:

$$-V/2 > V/2 - qrS$$

$$\text{i.e. } qr > V/S.$$

As the game is symmetric, similarly, government 2 plays  $C$  if  $pr > V/S$  and government 3 plays  $C$  if  $pq > V/S$ .

As previously, this is a problem of coordination. This time, each government has to anticipate the behaviour of the other two governments, so it needs to calculate the product of probabilities that each of them complies. Note that the amount of information a player needs is greater in this case because the player must anticipate what two (rather than just one) player will do.

Once more, the equilibria depend on the relative importance of voter support and the cost of sanctions under the SGP. Appendix 2 presents the proofs and discussions for the different possible situations. A summary of the best responses and equilibria in the two- and three-players cases with Keynesian populations appears in Table 4. Graph 2 presents the equilibria in the three-player case.

### 3.4 Interpretation of the intergovernmental game

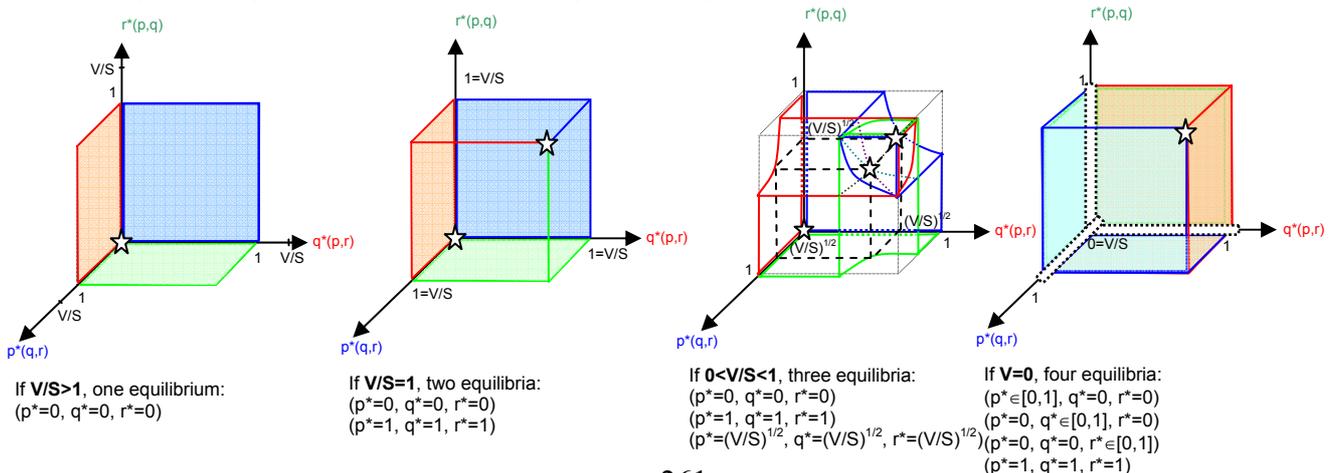
We have identified two sources of possibly conflicting incentives: incentives coming from voters (measured by  $V$ ) and incentives resulting from the threat of sanctions under the SGP (measured by  $S$ ). If voters are in favour of fiscal impulses and the electoral stakes are more pressing than the threat of sanctions under the SGP, then the incentives to breach the Pact are high. This is the case, for instance, just before an election ( $V$  high), or if the credibility associated to the financial and reputation cost of sanctions is low ( $S$  low).

**Table 4. Overview of best responses and equilibria in two- and three-player games**

(p, q, r : probability that government 1, 2, 3 complies with the SGP)

	<i>Two gov'ts with Keynesian populations + possibly a government with a Ricardian population always playing r*=1</i>	<i>Three gov'ts with Keynesian populations</i>
$V/S > 1$	$p^*(q) = 0$ for all $q$ $q^*(p) = 0$ for all $p$	$p^*(q,r) = 0$ for all $q,r$ $q^*(p,r) = 0$ for all $p,r$ $r^*(p,q) = 0$ for all $p,q$
	<b>Eq.: (<math>p^*=q^*=0</math>)</b>	<b>Eq.: (<math>p^*=q^*=r^*=0</math>)</b>
$V/S = 1$	$p^*(q) = \begin{cases} 0 & \text{if } q < 1 \\ [0,1] & \text{if } q = 1 \end{cases}$ $q^*(p) = \begin{cases} 0 & \text{if } p < 1 \\ [0,1] & \text{if } p = 1 \end{cases}$	$p^*(q,r) = \begin{cases} 0 & \text{if } qr < 1 \\ [0,1] & \text{if } qr = 1 \end{cases}$ $q^*(p,r) = \begin{cases} 0 & \text{if } pr < 1 \\ [0,1] & \text{if } pr = 1 \end{cases}$ $r^*(p,q) = \begin{cases} 0 & \text{if } pq < 1 \\ [0,1] & \text{if } pq = 1 \end{cases}$
	<b>Eq.: (<math>p^*=q^*=0</math>), (<math>p^*=q^*=1</math>)</b>	<b>Eq.: (<math>p^*=q^*=r^*=0</math>), (<math>p^*=q^*=r^*=1</math>)</b>
$0 < V/S < 1$	$p^*(q) = \begin{cases} 0 & \text{if } q < V/S \\ [0,1] & \text{if } q = V/S \\ 1 & \text{if } q > V/S \end{cases}$ $q^*(p) = \begin{cases} 0 & \text{if } p < V/S \\ [0,1] & \text{if } p = V/S \\ 1 & \text{if } p > V/S \end{cases}$	$p^*(q,r) = \begin{cases} 0 & \text{if } qr < V/S \\ [0,1] & \text{if } qr = V/S \\ 1 & \text{if } qr > V/S \end{cases}$ $q^*(p,r) = \begin{cases} 0 & \text{if } pr < V/S \\ [0,1] & \text{if } pr = V/S \\ 1 & \text{if } pr > V/S \end{cases}$ $r^*(p,q) = \begin{cases} 0 & \text{if } pq < V/S \\ [0,1] & \text{if } pq = V/S \\ 1 & \text{if } pq > V/S \end{cases}$
	<b>Eq.: (<math>p^*=q^*=0</math>), (<math>p^*=q^*=1</math>), (<math>p^*=q^*=V/S</math>)</b>	<b>Eq.: (<math>p^*=q^*=r^*=0</math>), (<math>p^*=q^*=r^*=1</math>) (<math>p^*=q^*=r^*=\sqrt{V/S}</math>), with <math>\sqrt{V/S} &gt; V/S</math></b>
$V=0$	$p^*(q) = \begin{cases} [0,1] & \text{if } q = 0 \\ 1 & \text{if } q > 0 \end{cases}$ $q^*(p) = \begin{cases} [0,1] & \text{if } p = 0 \\ 1 & \text{if } p > 0 \end{cases}$	$p^*(q,r) = \begin{cases} [0,1] & \text{if } qr = 0 \\ 1 & \text{if } qr > 0 \end{cases}$ $q^*(p,r) = \begin{cases} [0,1] & \text{if } pr = 0 \\ 1 & \text{if } pr > 0 \end{cases}$ $r^*(p,q) = \begin{cases} [0,1] & \text{if } pq = 0 \\ 1 & \text{if } pq > 0 \end{cases}$
	<b>Eq.: (<math>p^*=q^*=0</math>) (<math>p^*=q^*=1</math>)</b>	<b>Eq.: (<math>p^*=q^*=r^*=1</math>) (<math>p^*\geq 0, q^*=r^*=0</math>) (<math>p^*=0, q^*\geq 0, r^*=0</math>) (<math>p^*=0, q^*=0, r^*\geq 0</math>)</b>

**Graph 2. Equilibria with three Keynesian public opinions**



The second lesson from the intergovernmental game is the importance of expectations on what the other governments are doing. The problem for a government with a Keynesian population is that it does not want to be the only sinner. If the other governments seem to comply, it has an incentive to comply too. But any sign that a sufficient share of countries will deviate creates an incentive to deviate as well. In the two-country game, each government needs to guess what the other government will do; in the case of more players, each government needs to form expectations about all the other member states.

Expectations are even more critical in the case of large member states. Given the voting rule at the ECOFIN Council, the weight of larger countries is crucial to form a blocking minority. Information that the largest countries will record high deficits could be sufficient to insure that sanctions will not be implemented and incite more governments to deviate.

These outcomes capture well the two fore mentioned stylized facts: Germany, France and Italy have run high deficits simultaneously, which has also weakened the incentives for other countries to comply with the SGP, hence an increasing number of “sinners”.

The strategies of governments in the intergovernmental sub-game underline the importance of expectations and asymmetric information. The next section investigates the implications for the watchdog’s strategy.

#### **4 THE WATCHDOG'S SIGNALLING STRATEGY**

Going on with backward induction, this section now solves Stage 4 of the game. Here the watchdog has a strategic behaviour. In the purely domestic game, it had no reason not to send a true signal, whereas, as shown below, it may have incentives to remain silent in the multilateral game.

The domestic game indicated the benefit of having a watchdog provide clear signals about the nature of an economic shock. But the watchdog could also interfere in the intergovernmental game as it provides information about the intentions of the different governments to comply or not comply with the Pact. In the model, when there is a particularly large deficit, or when public finances are particularly sound, the information is known to all players. In borderline cases (i.e. intermediate performance), however, the watchdog has discretion. Under what circumstances would it send a signal that a given country will have difficulty complying?

Looking at the decision tree (Figure 2), let us consider for instance the case when the watchdog signals that a country that is likely to record a deficit around 3% of GDP (i.e. intermediate performance) has experienced a positive economic shock. The positive surprise on growth implies that the watchdog is likely to suggest sanctions if the deficit indeed reaches 3%, as there are no reasons to postpone sanctions on the ground of exceptional circumstances. Furthermore, as the signal is  $+e$ , voters will want to dump the government. The odds of re-election can however still be amended depending on the government’s decision on the fiscal impulse. If voters are Keynesian, they will want the government to implement a fiscal impulse to improve growth. The government can only be re-elected if it goes further into deficit, and it will do so unless the threat of sanctions is so high that it more than offsets the cost of non re-election.

Let us work through different scenarios based on the reactions functions in Table 4 to determine the expected impact of signals on countries with Keynesian voters, from which we can deduce the watchdog's strategy when it internalizes the impact of its signals.

Signals are said to be *productive* if they incite governments to comply more than they would have in the absence of a signal. They are *counterproductive* if they have the opposite effect. They are *useless* if they do not affect the governments' budgetary decisions. The watchdog will want to send a signal only if it is productive.

If *voter support matters more than international sanctions* ( $V/S > 1$ ), signals have no impact as all governments with Keynesian public opinions already know that they are all going to defect in the two- and three-player games. ***Signals are useless.***

If *voter support matters as much as international sanctions* ( $V/S = 1$ ), any signal that at least one of the other governments has a positive probability to defect leads all governments to defect as well. ***Signals are counterproductive.***

If *voter support matters less than international sanctions* ( $0 < V/S < 1$ ), governments may decide to comply with the SGP with probability 1 or at least with a positive probability provided that the probability that the other government(s) defect is low enough.

In the two-player game, signalling that the probability that one government defects is high (i.e. the probability that it complies is lower than  $V/S$ ) incites the other government to defect with probability 1.

In the three-player game, even if there is a signal that one government has a high probability to defect, the uncertainty about the second government can still lead the third government to comply, and *vice versa*.

***Signals are counterproductive in the two-player game. They may be productive in the three-player game provided that only one government is mentioned.***

If *voter support does not matter* ( $V = 0$ ), all governments are likely to comply with a positive probability, if not with certainty. They will only defect with probability 1 if they find out that another government is going to defect with probability 1. ***Signals are counterproductive.***

We find that the one case when a signal may be productive is the three player game so long as only one player is mentioned. In all the other cases, signals are either useless or counterproductive. A signal on one country would not prevent defection, and it could even lead other countries to defect too. The implication is clear – if it wants to maximize the chances of compliance with the Pact, paradoxically a strategic watchdog will provide few signals. There is a dilemma inherent in the surveillance process: signalling bad pupils can have counterproductive implications on the behaviour of other countries.

## 5 CONCLUSION

This paper analyses the strategy of a government facing both a domestic constraint and an international constraint. Starting with a purely domestic game, we assume that voters scrutinize the government's economic and budgetary performance and, on that basis, decide whether they want to re-elect it. When voters are imperfectly informed, an independent domestic watchdog can help them find out the type of government which is in office.

Moving on to the European level, governments are committed to fiscal discipline under the SGP. Multilateral surveillance implies that they can decide to punish governments found to record excessive deficits. This affects the strategies of governments and of the watchdog. There is now an intergovernmental game on top of the domestic games. On the one hand, governments seeking re-election may still have an incentive to overspend and go into deficit under pressure from voters, but on the other hand, running a large deficit may lead to costly sanctions at the international level. As a result, there is a trade-off between seeking voter support and compliance with European commitments. Sanctions, however, are voted by governments. One observation that emerges from past developments is that the implementation of the corrective arm of the SGP depends on the number of governments that comply with the Pact. Therefore governments look for signals what the others will do when deciding whether to “sin” themselves.

The question then becomes, under what circumstances would the watchdog want to send a signal about whether a given country is not complying with the Pact? Working through different scenarios, we find that, in all but one case, the signal is either useless or counterproductive. In most cases, a signal on one country would lead others to defect too. The implication is clear – if it internalizes the impact of its signals on the intergovernmental game, a strategic watchdog will provide signals when there are only a few sinners, but will want to leave the uncertainty in place when it knows that there are more potential sinners. The strategic behaviour means that under multilateral surveillance, a strategic watchdog provides information only when it is certain that its signal will be effective.

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### Appendix 1: Proofs for the two-player game

#### Voter support matters as much as international sanctions ( $V/S = 1$ )

Let us assume that  $p = 1$ . The best response function of government 2 indicates  $q \in [0,1]$ . If  $q < 1$ , the best response of government 1 would be 0: contradiction. As a result,  $q = 1$ , which in turn implies  $p = 1$ .

Let us now assume that  $p < 1$ . We deduce from government 2's best response function that  $q = 0$ , which in turn implies  $p = 0$ .

#### Voter support matters less than international sanctions ( $0 < V/S < 1$ )

$p = 1 \Rightarrow p > V/S \Rightarrow q = 1 \Rightarrow q > V/S \Rightarrow p = 1$  and  $p = 0 \Rightarrow p < V/S \Rightarrow q = 0 \Rightarrow q < V/S \Rightarrow p = 0$ .

*Proof for the mixed-strategy equilibrium:*

Let us assume that  $p = V/S$ . The best response function of government 2 indicates  $q \in [0,1]$ . If  $q < V/S$ , the best response of government 1 would be 0: contradiction. If  $q > V/S$ , the best response of government 1 would be 1: contradiction. As a result,  $q = V/S$ , which in turn implies  $p = V/S$  for the same reasons.

#### Voter support does not matter ( $V = 0$ )

$p = 1 \Rightarrow p > 0 \Rightarrow q = 1 \Rightarrow q > 0 \Rightarrow p = 1$ .

$p = 0 \Rightarrow q \geq 0$ . If  $q > 0$  then  $p = 1$ : contradiction. Consequently,  $q = 0$ , which in turn implies  $p = 0$  for the same reasons.

### Appendix 2: Proofs for the three-player game with only Keynesian public opinions

#### Voter support matters more than international sanctions ( $V/S > 1$ )

As  $p < 1$ ,  $q < 1$  and  $r < 1$ , the conditions  $qr < V/S$ ,  $pr < V/S$  and  $pq < V/S$  always hold. In consequence, there is a unique equilibrium: ( $p^*=0, q^*=0, r^*=0$ ).

In this case, the stakes in terms of public opinion are so high relative to the level of the sanction that each government always has an incentive to have a high deficit. As a result, all governments deviate and avoid sanctions.

#### Voter support matters as much as international sanctions ( $V/S = 1$ )

The best responses are:

$$p^*(q,r) = \begin{cases} [0,1] & \text{if } qr = 1 \\ 0 & \text{if } qr < 1 \end{cases} \quad q^*(p,r) = \begin{cases} [0,1] & \text{if } pr = 1 \\ 0 & \text{if } pr < 1 \end{cases}$$

$$r^*(p,q) = \begin{cases} [0,1] & \text{if } pq = 1 \\ 0 & \text{if } pq < 1 \end{cases}$$

As soon as there is a positive probability that at least one of the other governments deviates, governments choose to deviate with certainty. In this case, there are two equilibria:  $(p^*=0, q^*=0, r^*=0)$  and  $(p^*=1, q^*=1, r^*=1)$ .

Proof:

The condition  $pr = 1$  is equivalent to  $p = r = 1$  (and similarly for  $qr = 1$  and  $pq = 1$ ).

Let us assume that  $q = 1$  and  $r = 1$ . The best response function of government 1 indicates  $p^* \in [0, 1]$ . If  $p < 1$ , then  $pr < 1$  and  $pq < 1$ . The best responses of governments 2 and 3 would be  $q^*=r^*=0$ : contradiction. As a result,  $p = 1$ , which in turn implies  $p = 1$  and  $r = 1$ .

Let us now assume that  $p < 1$ , which implies  $pr < 1$  and  $pq < 1$ . We deduce from the best response functions of governments 2 and 3 that  $q = 0$  and  $r = 0$ , which in turn implies  $p = 0$ .

### Voter support matters less than international sanctions ( $0 < V/S < 1$ )

The above equilibria,  $(p^*=0, q^*=0, r^*=0)$  and  $(p^*=1, q^*=1, r^*=1)$ , are also equilibria in this case. Moreover, there is a third pure-strategy equilibrium:  $(p^*=\sqrt{V/S}, q^*=\sqrt{V/S}, r^*=\sqrt{V/S})$ .

Note that as  $V/S < 1$ ,  $\sqrt{V/S} > V/S$ .

Proof:

Let us assume that  $p = 0$ .  $pq = 0 < V/S$  implies  $r = 0$  and  $pr = 0 < V/S$  implies  $q = 0$ . Furthermore,  $qr = 0 < V/S$  implies  $p = 0$ . **Equilibrium:**  $(p^*=0, q^*=0, r^*=0)$ .

Let us assume that  $0 < p < V/S$ . As  $q \leq 1$ ,  $pq < V/S$ , so  $r = 0$ , which implies  $qr = 0 < V/S$ , hence  $p = 0$ : contradiction.

Let us assume that  $p = V/S$ .

- If  $q < 1$ ,  $pq < V/S$ , so  $r = 0$ , which implies  $qr = 0 < V/S$ , hence  $p = 0$ : contradiction.
- If  $q = 1$ ,  $pq = V/S$ , so  $r \in [0, 1]$ . If  $r = 0$ ,  $qr = 0$  hence  $p = 0$ : contradiction. If  $0 < r < 1$ ,  $pr < V/S$ , so  $q = 0$ : contradiction. If  $r = 1$ ,  $qr = 1 > V/S$  so  $p = 1$ : contradiction.

Let us assume that  $V/S < p < \sqrt{V/S}$ . This implies  $\sqrt{V/S} < (V/S)/p < 1$ .

- If  $0 \leq q < (V/S)/p$  then  $pq < V/S$ . This implies  $r = 0$ , so  $qr = 0$  and  $p = 0$ : contradiction.
- If  $q = (V/S)/p$ , then  $pq = V/S$  and  $r \in [0, 1]$ .
  - If  $0 \leq r < (V/S)/p$  then  $pr < V/S$ , hence  $q = 0$ : contradiction.
  - If  $r = (V/S)/p$  then  $qr = (V/S)^2/p^2$ . Now,  $(V/S)^2 < p^2 < V/S$  so  $V/S < (V/S)^2/p^2 < 1$ .  $qr > V/S$  implies  $p = 1$ : contradiction.
  - If  $(V/S)/p < r \leq 1$ ,  $pr > V/S$  so  $q = 1$ : contradiction as  $q = (V/S)/p < 1$ .

Let us assume that  $p = \sqrt{V/S}$ .

- If  $0 \leq q < \sqrt{V/S}$  then  $pq < V/S$ , hence  $r = 0$ . This implies  $qr = 0$ , so  $p = 0$ : contradiction.
- If  $q = \sqrt{V/S}$  then  $pq = V/S$ , which implies  $r \in [0, 1]$ .
  - If  $0 \leq r < \sqrt{V/S}$  then  $qr < V/S$ , so  $p = 0$ : contradiction.
  - If  $r = \sqrt{V/S}$  then  $pr = qr = V/S$ , implying  $p \in [0, 1]$  and  $q \in [0, 1]$ , which is consistent with  $p=q=\sqrt{V/S}$ . **Equilibrium:**  $(p^*=\sqrt{V/S}, q^*=\sqrt{V/S}, r^*=\sqrt{V/S})$ .
  - If  $\sqrt{V/S} < r \leq 1$  then  $qr > V/S$  so  $p = 1$ : contradiction.
- If  $\sqrt{V/S} < q \leq 1$  then  $pq > V/S$  so  $r = 1$ . This implies  $qr > V/S$ , hence  $p = 1$ : contradiction.

Let us assume that  $\sqrt{V/S} < p < 1$ . This implies  $V/S < (V/S)/p < \sqrt{V/S} < 1$ .

- If  $0 \leq q < (V/S)/p$  then  $pq < V/S$ . This implies  $r = 0$ , so  $qr = 0$  and  $p = 0$ : contradiction.
- If  $q = (V/S)/p$ , then  $pq = V/S$  and  $r \in [0, 1]$ .
  - If  $0 \leq r < (V/S)/p$  then  $pr < V/S$ , hence  $q = 0$ : contradiction.
  - If  $r = (V/S)/p$  then  $qr = (V/S)^2/p^2$ . Now,  $V/S < p^2 < 1$  so  $(V/S)^2 < (V/S)^2/p^2 < V/S$ .  $qr < V/S$  implies  $p = 0$ : contradiction.
  - If  $(V/S)/p < r \leq 1$ ,  $pr > V/S$  so  $q = 1$ : contradiction as  $q = (V/S)/p < 1$ .

Let us assume that  $p = 1$ .

- If  $0 \leq q < V/S$  then  $pq < V/S$ , hence  $r = 0$ . This implies  $qr = 0$ , so  $p = 0$ : contradiction.
- If  $q = V/S$  then  $pq = V/S$  so  $r \in [0, 1]$ .
  - If  $0 \leq r < V/S$  then  $qr \leq (V/S)^2 < V/S$ , hence  $p = 0$ : contradiction.
  - If  $V/S \leq r \leq 1$  then  $pr > V/S$  so  $q = 1$ : contradiction.

- If  $V/S < q \leq 1$ ,  $pq > V/S$  so  $r = 1$ , which implies  $pr = 1$  and  $q = 1$ . Consequently  $qr=1$ , so  $p = 1$ .  
**Equilibrium:**  $(p^*=1, q^*=1, r^*=1)$ .

Voter support does not matter ( $V = 0$ )

This implies that  $V/S = 0$  and that best responses are as follows:

$$p^*(q,r) = \begin{cases} 1 & \text{if } qr > 0 \\ [0,1] & \text{if } qr = 0 \end{cases} \quad q^*(p,r) = \begin{cases} 1 & \text{if } pr > 0 \\ [0,1] & \text{if } pr = 0 \end{cases}$$

$$r^*(p,q) = \begin{cases} 1 & \text{if } pq > 0 \\ [0,1] & \text{if } pq = 0 \end{cases}$$

The payoff matrix is now:

		2			
		C	D		
1	C	0, 0, 0	0, -S, 0	p	
	D	-S, 0, 0	0, 0, 0		
		q	1-q		
		3 = C    r			

		2			
		C	D		
1	C	0, 0, -S	0, 0, 0	p	
	D	0, 0, 0	0, 0, 0		
		q	1-q		
		3 = D    1-r			

Each government can intend to defect only if it is certain that the other two governments will defect too. Once again,  $(p^*=1, q^*=1, r^*=1)$  is a pure-strategy equilibrium. There are also three mixed-strategy equilibria:  $(p^* \geq 0, q^* = r^* = 0)$ ,  $(p^* = 0, q^* \geq 0, r^* = 0)$  and  $(p^* = 0, q^* = 0, r^* \geq 0)$ .

Proof:

Let us assume that  $p > 0$ . If  $q > 0$  then  $pq > 0$ , hence  $r=1$ . Consequently,  $pr > 0$  (which implies  $q = 1$ ) and  $qr > 0$  (which implies  $p = 1$ ).

Let us assume that  $p = 0$  and  $q = 0$ .  $pq = 0$ , hence  $r \geq 0$ . For all  $r \geq 0$ ,  $pr = 0$  (consistent with  $q=0$ ) and  $qr = 0$  (consistent with  $p = 0$ ).

The other two mixed-strategy equilibria are trivial by symmetry.

# Optimal Debt Policy, and an Institutional Proposal to help in its Implementation

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## Extended Abstract/Executive Summary

This paper does two things. First it reviews the recent literature on optimal fiscal policy, including work by the authors. In particular, it focuses on results in Benigno and Woodford (2003), Schmitt-Grohe and Uribe (2004), Kirsanova and Wren-Lewis (2006), and Leith and Wren-Lewis (2006) that suggest that an optimal fiscal policy would involve steady-state debt following a random walk in response to shocks, rather than debt returning to some target level. Second, it puts forward a proposal for the establishment by national governments of a Fiscal Monitoring Commission. Although this body, at least initially, would have no statutory power, it would provide independent information about the long term prospect for government finances, and provide a mechanism by which governments could be encouraged to move towards implementing an optimal fiscal policy.

Recent developments in the public finance and macroeconomics literature have allowed an integrated evaluation of budgetary policy at the macroeconomic level, where costs due to distortionary taxes can be directly compared to the costs arising from Keynesian disequilibria. Using this approach, both Benigno and Woodford (2003) and Schmitt-Grohe and Uribe (2004) show that it is optimal for government debt to follow a random walk after fiscal shocks. Essentially the discounted costs of servicing permanently higher debt (through higher distortionary taxes) are outweighed by the short term costs of reducing this debt, due to both temporarily higher taxes and changes to inflation.

This result appears robust in a number of respects. First, it remains even if government spending as well as taxes are treated as an instrument, as Leith and Wren-Lewis (2006a) show. Second, it remains even if fiscal policy is not fully optimal, but is instead described by a simple feedback rule, where spending responds to debt disequilibrium. Kirsanova and Wren-Lewis (2006) show in this case that optimal feedback will be at a minimal level, such that debt disequilibrium is eliminated over centuries rather than years, and so debt almost follows a random walk.

The paper discusses these results in detail. It draws on Leith and Wren-Lewis (2006a) to show that the random walk result depends on the existence of some form of commitment technology, so that policy can either be fully optimal and time inconsistent, or follow a 'timeless perspective' approach. Leith and Wren-Lewis (2006a) show that under discretion, optimal policy in a closed economy will involve a return to the original level of debt, so that the random walk result no longer holds. However, the paper argues that this does not provide a rationale for debt targets.

The random walk result does depend critically on policy makers being benevolent, in the sense that they maximise social welfare. The paper gives new results to show how excessive discounting by fiscal policy makers will distort the optimal policy, and how this can lead to explosive paths for debt. Debt targets provide a possible mechanism for avoiding such outcomes, but they are inevitably second best, in the sense that they preclude achieving the optimal outcome that would occur if policy makers were benevolent (the random walk result). In contrast, applying pressure on a myopic fiscal policy maker to be more concerned about debt disequilibrium can come very close to achieving the first best policy.

The paper suggests institutional change as a way of improving aggregate budgetary decisions. A number of authors (e.g. Wyplosz (2005)) have suggested various forms of Fiscal Policy Committee, often drawing parallels with Independent Central Banks. The proposal in this paper is a more modest, although we would argue it is also more politically feasible. This is for a Fiscal Monitoring Commission, which would be charged with producing the best available projection for the public sector finances, and making recommendations if these projections appeared to imply an unsustainable or sub-optimal path for public sector debt.

The paper outlines five minimum requirements for such a body: that it be funded by government, that its director be responsible to an independent committee, that it should have the resources to undertake once a year a long term (e.g. 50 year) projection of government finances based on current plans, that if these projections indicated that there was a significant chance that the public finances were not sustainable or sub-optimal the FMC should publish proposals for changes to aggregate spending or taxes, and that the government is required to publish a response to these proposals. The FMC is compared to existing institutions, such as the Congressional Budget Office in the US, and monitoring by the EC Commission.

Although the government would not be required to implement the proposals of the FMC, the paper argues that the FMC would achieve a number of goals. The government would be forced to address the issue of sustainability, either by agreeing with the FMC's assessment, or by publishing alternative assessments of its own, and justifying why its own assessment was superior to the FMC's. This would put the issue of the long term control of debt, and the funding of any fiscal changes, firmly into the political arena. If the government undertook expansionary, counter cyclical fiscal action they would explicitly have to address the issue of how deficits would eventually be funded.

## 1. Introduction

This paper does two things. First it reviews some recent literature on optimal fiscal policy, including work by the authors, with a particular focus on optimal policies towards debt. It also presents some new results involving a mildly myopic fiscal policy maker. Second, it puts forward a proposal for the establishment by national governments of a Fiscal Monitoring Commission, which would produce independent information about the long term prospect for government finances, and provide a mechanism by which governments could be encouraged to move towards implementing an optimal fiscal policy.

We argue that the proposals in the second part of the paper are strengthened by the analysis in the first part. In particular, results in Benigno and Woodford (2003), Schmitt-Grohe and Uribe (2004), Kirsanova and Wren-Lewis (2006), and Leith and Wren-Lewis (2006a) all suggest that a first best fiscal policy would involve debt following a random walk in response to shocks, rather than debt returning to some target level. Simple fiscal rules, like those embodied in the Stability and Growth Pact or operated by the UK government, would find it almost impossible to reproduce this first best outcome. We believe this strengthens the case, made by Wyplosz (2005) and others, for exploring institutional solutions to improve fiscal outcomes.<sup>1</sup> Our own proposal is relatively modest, because it involves establishing an institution with no formal control over fiscal instruments, but for the same reason we believe that this proposal may be easier for national governments to contemplate.

Section 2 of the paper looks at recent research that calculates optimal paths for debt following shocks, using a framework that incorporate costs due to distortionary taxes, sub-optimal provision of public goods, inflation and output disequilibrium in an integrated manner. A key result is that debt should follow a random walk, and we examine the robustness of this result. The role of fiscal policy as a countercyclical device is implicit in this analysis. We make it explicit in Section 3, and discuss its role in complementing (in a closed or small open economy) or replacing (in a monetary union member) national monetary policy.

In both these sections we restrict ourselves to considering benevolent, cooperative policy makers. This is clearly unrealistic. In section 4 we present some new results that extend the analysis of section 2 to cases where fiscal policy makers are myopic. We compare the welfare implications of mildly myopic policy makers with policy that is forced to follow simple rules for debt. We show how both outcomes are inferior to cases in which 'outside pressure' leads to an adaptation of policy makers preferences such that they include a concern about debt disequilibrium.

Section 5 presents our proposal for a national Fiscal Monitoring Commission, and also compares these proposals with existing institutional arrangements, including the Congressional Budget Office in the United States. A final section concludes.

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<sup>1</sup> The case for independent fiscal institutions remains strong, however, even without these arguments.

## 2. The Benevolent Policy Maker and Debt

How should a national fiscal authority respond to some unexpected shock to the budget deficit, which raises (say) national debt? It is generally acknowledged that some fiscal action is required in this situation, because otherwise a debt interest spiral will emerge (where additional debt interest is paid for by borrowing, which raises debt further etc), and debt will eventually explode.<sup>2</sup>

Until recently, the general presumption in the literature has been that some action should be taken to bring debt back down to its original (pre-shock) level, and the main question was how quick this correction should be. (See Leith and Wren-Lewis, 2000, for example.) The outlines of this debate are familiar. If correction is too rapid (at the extreme, if the budget is always balanced), the automatic stabilisers are switched off and fiscal action may generate unwelcome movements in output and inflation. However, correction that is very slow may not be credible.

More recently, an alternative answer has emerged. On the assumption that policy makers (both fiscal and monetary) are benevolent (i.e. they act to maximise social welfare), then the optimum response to a shock that increases debt is to leave debt permanently higher. The implication is that, under an optimal policy regime, steady-state debt will behave as a random walk, increasing or decreasing as a result of whatever shocks hit the economy.

This result is powerful because it comes from an analysis which integrates a number of issues involved in budgetary policy in a consistent and microfounded way. It takes account of the costs of Keynesian disequilibria (due to nominal inertia/price rigidity), but also the costs of distortionary taxation and the utility derived from public goods, all using a common metric based on the utility of a representative agent. It has the striking implication that a policy that aims to hit an unconditional debt target is bound to be sub-optimal.

Two key papers are Benigno and Woodford (2003), and Schmitt-Grohe and Uribe (2004). Both consider a closed economy, and examine a single fiscal/monetary policy maker (or equivalently cooperation between the two). Both treat government spending as exogenous, and have distortionary income taxes as the fiscal policy instrument. Policy makers are benevolent, in that they maximise the welfare of the representative consumer, and they are able to implement a time inconsistent policy. The papers differ in the particular methods they use. Benigno and Woodford take a 'linear quadratic' approach, by deriving an approximation to social welfare using Taylor expansions. Schmitt-Grohe and Uribe (2004) take a Ramsey approach. However, both

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<sup>2</sup> It can be argued that if no action is taken, debt will not explode, but instead inflation will increase to erode the real value of debt (or reduce the real rate of interest) through mechanisms related to the Fiscal Theory of the Price Level (see, for example, Woodford (2001)). However, even if such a process might occur, it seems likely that the result would in most circumstances be severely sub-optimal, as we note below.

suggest that steady-state debt should follow a random walk under an optimal, time inconsistent policy.

The intuition behind this result is as follows. Imagine two alternative paths for, say, taxes. In one, taxes are immediately raised to eliminate any disequilibrium in debt. In another, taxes are raised by a much smaller amount to simply service the interest payments on the excess debt. In the first case we incur quite large, but short term, costs from higher distortionary taxes. In the second, we incur much smaller distortions, but they are permanent. However, a benevolent policy maker discounts these permanent costs, so they will be finite. Both paths will involve welfare costs because higher taxes are distortionary, so output will fall as taxes rise. However the social welfare function will in general imply that large output gaps are more costly than a sequence of smaller gaps of the same total size (in terms of budgetary arithmetic). Thus, the path where taxes are raised permanently by enough to service the additional debt is likely to involve lower social costs to one that involves eliminating the additional debt.

As this intuition suggests, the optimality of steady state debt following a random walk is implied by tax smoothing (see Sargent (1987) pages 380-390 for example). This conclusion is reinforced when we consider inflation. Inflation will be zero in steady state (assuming zero is the policy target), and as a result it will be zero in all periods where taxes are raised just to service the additional debt. (The output gap is identical in each period.) However, under the alternative path where the additional debt is eliminated, the output gap will be larger in the short term than in the long run, and a changing output gap will imply changing inflation. So the path where debt disequilibrium is completely eliminated will also be more costly in terms of inflation.

This intuition assumes that taxes are the instrument used to control debt. However, the same arguments can be applied if government spending is the instrument. In the original steady state, assume that the provision of public goods is optimal (given consumer preferences). Any variation in government spending away from this level will have social costs, which will also be convex. Kirsanova and Wren-Lewis (2006) show that the results in Benigno and Woodford also apply if government spending is the policy instrument, and Leith and Wren-Lewis (2006a) show that it also applies if both spending and taxes are instruments.

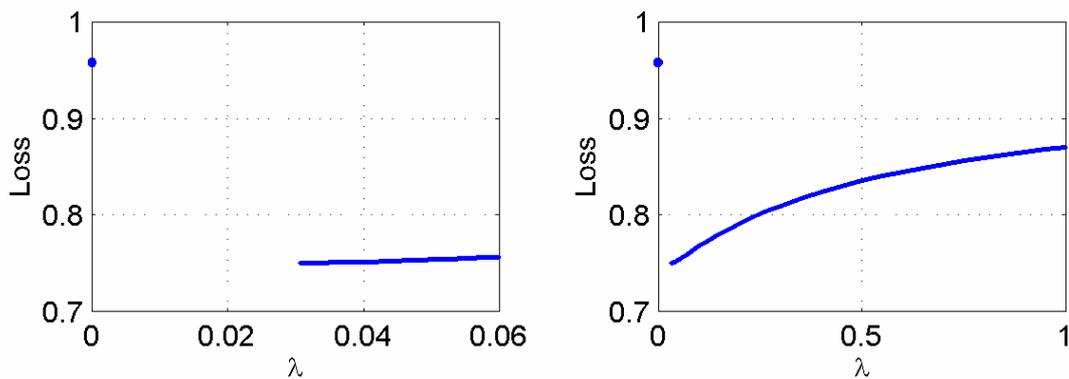
The analysis in Benigno and Woodford (2003) and Schmitt-Grohe and Uribe (2004) involves optimal policy: policy can react immediately to all shocks hitting the economy, including the shock that generates the debt disequilibrium. It might reasonably be objected that while such discretionary activism might be possible for monetary policy, it is unrealistic for fiscal policy from an institutional point of view. However, as the intuition outlined above suggests, the random walk result is 'first order' robust to simpler set-ups.

Suppose, for example, we postulate the simplest possible form of 'fiscal feedback rule', where disequilibrium in the policy instrument (spending or taxes) is a linear function of debt disequilibrium, and the feedback parameter is  $\lambda$ . Whatever model we are using, conventional stability analysis can determine a minimal value of feedback required to avoid explosive debt (as in Leith and Wren-Lewis (2006c) for example), on the assumption that

monetary policy is 'active' in the sense of Leeper (1991). Clearly this minimal value will imply a random walk in debt. Kirsanova and Wren-Lewis (2006) show, using government spending as the instrument, that the optimal value of fiscal feedback is virtually the same as this minimum value, so that for all practical purposes optimal fiscal feedback implies a random walk in debt.

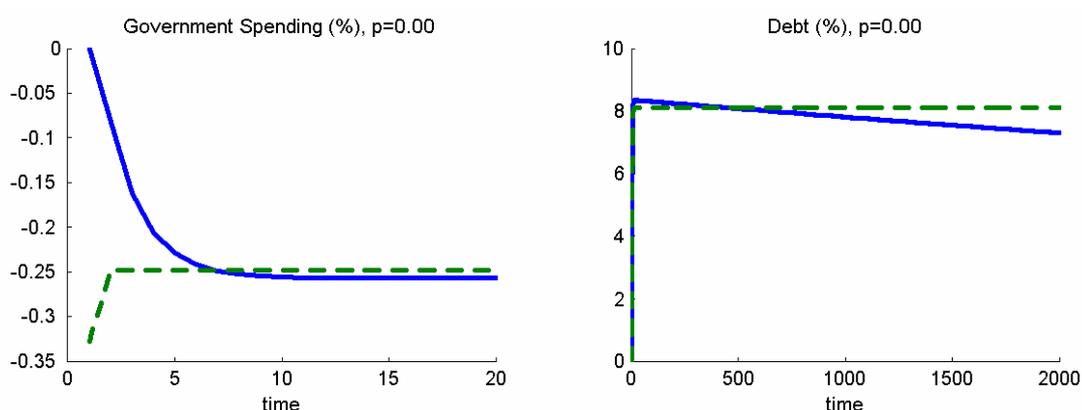
Figure 1 is taken from this paper. It shows how welfare losses vary with different values for fiscal feedback  $\lambda$  following a cost-push shock. There are two panels: one for small values of  $\lambda$ , and one for larger values. Where values are not shown, the model is indeterminate/unstable. The optimal (loss minimising) value of fiscal feedback is very small: government spending is cut by about 5 p.a. for every 100 increase in debt. Figure 2 plots two paths for debt following a shock. One is the fully optimal path, and the other involves optimal fiscal feedback (i.e the optimal value of  $\lambda$  from Figure 1). Although debt under optimal fiscal feedback is not a pure random walk, debt has hardly decreased after 500 years!

Figure 1 Welfare loss for different degrees of fiscal feedback on debt\*



\* Taken from Kirsanova and Wren-Lewis (2006). Unit cost-push shock, loss is measured in percentage of steady state consumption, assuming 1% standard deviation of shocks.

Figure 2 Response of government spending and debt to a cost-push shock over time\*



\*\* Taken from Kirsanova and Wren-Lewis (2006). Solid line is optimal fiscal feedback, dashed line is fully optimal policy. Unit cost-push shock, assuming 1% standard deviation of shocks. Period=Quarterly.

Figure 1 shows that if we increase the degree of fiscal feedback from this optimal value, the welfare costs associated with this shock rise: not by much at first, but significantly once we correct debt disequilibrium rapidly. In addition, Kirsanova and Wren-Lewis (2006) show that this is accompanied by a less aggressive monetary policy. This is because large fiscal feedback is deflationary, reducing the need for monetary policy to respond to the shock. However, fiscal policy is less efficient than monetary policy at dealing with the cost-push shock, which is why welfare deteriorates. (The worst outcome in welfare terms, however, occurs when there is no fiscal feedback at all, when monetary policy is forced to become ‘passive’, controlling debt rather than stabilising inflation. Although the model is determinate for no fiscal feedback, for reasons described in the Fiscal Theory of the Price Level, Figure 1 shows clearly that social losses are highest in this case, so this is not a desirable policy.)

The basic model in Kirsanova and Wren-Lewis (2006), like Benigno and Woodford (2003), and Schmitt-Grohe and Uribe (2004), involves ‘infinitely lived’ consumers. However, Kirsanova and Wren-Lewis (2006) also examine consumers of the Blanchard/Yaari type. Although optimal policy in this case (whether fully optimal or using a fiscal feedback parameter) departs very slightly from a random walk, the return of debt to its original steady state is very slow.

All the analysis described so far applies to a closed economy. However, the basic intuition behind the random walk result does not depend on this assumption. Leith and Wren-Lewis (2006b) and Lambertini (2006) show that the result applies in an open economy, either under flexible exchange rates or as a monetary union member.

In all these senses, the random walk result for optimal debt policy appears to be robust. However, so far we have considered optimal commitment policy i.e. policy that is time inconsistent, so implicitly there exists some commitment mechanism in place to prevent policy makers from re-optimising in the absence of new information. (Benigno and Woodford (2003) assume commitment, but of the timeless perspective variety.) Many would argue that this is rather unrealistic in the context of policy towards debt, because of the long time horizons involved. Does the random walk result still hold for discretionary policy i.e. policy that is constrained to be time consistent?

Leith and Wren-Lewis (2006b) show analytically that in a closed economy it does not. The reason can be seen by looking at the path of government spending with the fully optimal policy in Figure 2, taken from Kirsanova and Wren-Lewis (2006). In the first period of the simulation, government spending falls by more than in the new steady state. This indicates that the optimal commitment solution does not completely accommodate the additional debt caused by the shock: there is an attempt in the first period to reduce debt slightly. (Leith and Wren-Lewis (2006b) demonstrate this algebraically, in a model with both spending and taxes as instruments, and discuss which instruments of policy will be used in this first period to reduce debt.) Spending is cut, or taxes increased, only in the first period, because this minimises any inflation impact.

However, the promise not to reduce debt in subsequent periods is time inconsistent. In each period, policy makers will be tempted to re-optimize, and surprise agents with further action to reduce debt. In fact, this temptation will remain *as long as debt disequilibrium in the long run is positive*. As a result, a time consistent policy in this context will involve debt returning to its original level in the long run. The optimal discretionary policy does not involve a random walk in steady-state debt.

Does this result provide a justification for debt targets? The answer is clearly no. Consider the analogy with inflation bias. In a Barro-Gordon type set-up, the optimal discretionary policy involves positive long run inflation i.e. inflation bias. Under certain circumstances (see Kirsanova, Vines and Wren-Lewis (2005) for example) the optimal commitment policy involves no inflation bias. This provides a rationale for inflation targeting. But note that here inflation targets are designed to move us away from the discretionary solution towards the commitment solution. Debt targets would do the opposite: they would lock us in to the sub-optimal discretionary solution.

It could be argued that risk premia that might emerge as debt levels begin to look potentially unsustainable may negate the random walk result. However, one can conjecture that while such effects may raise the costs of sustaining a higher debt stock, such long-term costs will still need to be traded off against the short-term costs of reducing the debt stock. We can explore this to some extent by looking at a model with Blanchard/Yaari consumers.

As we noted above, in this model higher debt in steady state will raise real interest rates in steady state. Under a standard calibration, where the probability of death ( $p$ ) is 1% per quarter, then this trade-off is small: an increase in the debt to GDP ratio of 10% (from 40% to 50%, say) will raise

real interest rates by only 0.02% points. As we noted above, debt is almost a random walk in this case.

However, if we set  $p=7\%$ , then the real interest rate effects of higher debt are more significant: a permanent 10% increase in debt to GDP raises the long run real interest rate by 0.8%. (Although a value of  $p$  this large is not realistic in a literal sense, it can be justified as a proxy for other sources of discounting by consumers: see Leith and Wren-Lewis (2000) or Kumhof, Laxton and Schule (2006)). In this case, the optimal path for debt does involve a return to its original steady state value, with about half of the initial increase in debt (following a cost-push shock) recovered after 15 years. Debt correction therefore remains very slow, although it would be interesting to re-examine this case in a model with physical capital, where we would get additional costs from crowding out.

These results therefore suggest that any policy that involves unconditional debt targets is bound to be sub-optimal. We consider the size of the costs involved in section 4.

### 3. Cyclical Fiscal Policy Stabilisation

The results above suggest that benevolent policy makers would not act 'as if' they were trying to hit debt targets. Even if policy was formulated such that debt targets were explicit (as in Kirsanova and Wren-Lewis, 2006), those targets would to all intents and purposes be missed by a benevolent policy maker. Another powerful reason for departing from debt targets in the short term is provided by the potential for counter cyclical fiscal policy.

A common benchmark for assessing the contribution of fiscal policy to stabilisation objectives is that of automatic fiscal stabilisers. Automatic stabilisers apply where there is no deliberate change in fiscal instruments over the business cycle, but where progressivity in the tax system and the dependence on income levels of certain government expenditures and transfers can, potentially, offset some of the macroeconomic volatility associated with the business cycle. As discussed in Andres and Domenech (2006), automatic stabilisers fail to function in the presence of balanced budget fiscal rules (an extreme form of debt target) as the progressivity in the tax system is dominated by the pro-cyclicality of government expenditures. Stockman (2001) shows that this failure to allow automatic stabilisers to function, as a result of balanced budget fiscal rules, may have significant welfare consequences. Furthermore, although embedding fiscal policy in real business cycle models appears to exacerbate rather than mitigate macroeconomic volatility (see for example, Gali (1994)), fiscal policy in the form of automatic stabilisers in the absence of strict debt targets can reduce volatility in more realistic economies containing significant real and nominal rigidities (see Andres and Domenech (2006)).

Given that automatic stabilisers appear to have a potential stabilisation role, an obvious question to ask is whether or not a more active approach to fiscal stabilisation can generate further welfare benefits. It is certainly the case that in some circumstances optimal monetary policy is completely adequate at

dealing with shocks, and fiscal stabilisation would add little or nothing. For example, if the only source of nominal inertia are Calvo contracts in price setting, and shocks are to technology or tastes, then monetary policy can in principle completely negate the welfare consequences of these shocks. (This is because these shocks have real impacts, but no necessary impact on nominal variables, so they need not incur the nominal inertia externality.) Even with cost-push shocks, changes in government spending may add little to monetary policy. For example, Kirsanova and Wren-Lewis (2006) show that the difference for social welfare between a fully optimal, commitment policy and optimal fiscal feedback is small.

However, the ability of monetary policy to fully stabilise the economy on its own disappears once we consider models that incorporate other rigidities such as nominal wage inertia. In addition, the effectiveness of fiscal policy increases when we allow for more than a single fiscal instrument. Leith and Wren-Lewis (2006b) consider optimal fiscal and monetary policy following a persistent technology shock in an open economy with wage as well as price inertia, when fiscal policy has three potential policy instruments: government spending, income taxes and revenue (or employment) taxes. They consider both a small open economy, and a (small) member of a monetary union. Including wage as well as price inertia means that monetary policy alone can no longer fully offset taste or technology shocks.

In a small open economy, allowing government spending to complement monetary policy as a stabilisation tool adds little to welfare. However revenue taxes are much more useful. If both tax instruments are used, fiscal policy combined with monetary policy can in principle be used to fully eliminate the impact of technology and cost-push shocks.

The benefits to fiscal stabilisation are even more evident if we consider a member of a monetary union, subject to asymmetric shocks. Tax instruments remain useful (as Ferrero (2006) shows in a two country model of a union), but now government spending can also play an important (welfare enhancing) stabilisation role, as Leith and Wren-Lewis (2006b) show in a model with several small national economies. Other papers (see for example, Lombardo and Sutherland (2004) and Beetsma and Jensen (2004)) emphasise the importance of coordinating stabilising national fiscal policies in order to reap the welfare benefits of fiscal stabilisation when one economy's policy can have significant spillover effects on others.

Leith and Wren-Lewis (2006b) also consider the impact of implementation lags in the operation of fiscal policy. These clearly diminish the effectiveness of fiscal policy as a stabilisation device, but benefits remain, particularly if shocks are persistent. The authors also show that allowing for government debt without lump sum taxes does not significantly alter these results, particularly for optimal policies under commitment.

While fiscal policy can in principle complement monetary policy as a stabilisation tool, particularly if a range of fiscal instruments is available or if the economy is part of a monetary union, the size of any welfare gains will depend critically on the type of model being used. In models with few rigidities except the most basic form of nominal inertia, the welfare gains of any

stabilisation (monetary or fiscal) tend to be small, as Lucas has noted.<sup>3</sup> However, once we add more rigidities, the welfare benefits of stabilisation tend to increase. For example, Kirsanova, Satchi, Vines and Wren-Lewis (2007) examine a two country model of monetary union with inflation persistence as well as nominal inertia. They look at simple stabilisation rules for fiscal policy, where the rules have spending reacting to inflation, output and the terms of trade with a one quarter lag. They find significant benefits to stabilisation in terms of social welfare. One interesting result in this paper is that these rules are still effective if fiscal policy responds only to national differences in output and inflation. Recent work using relatively large SDGE models of a monetary union with a variety of 'rigidities', such as Coenen et al (2006), Forni et al (2006), Ratto et al (2006) and Kumhof et al (2006), also suggests that fiscal stabilisation can have an important stabilising role.

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<sup>3</sup> See Lucas (2003) for a summary of his argument.

#### 4. Myopic behaviour by fiscal authorities

Leith and Wren-Lewis (2006d) argue that the main reason why many economists are wary of fiscal stabilisation relate to problems of political economy rather than economic effectiveness. Part of this has to do with implementation lags of the kind discussed above. In some countries, particularly the US, institutional constraints place important barriers to timely fiscal action. The more the details of fiscal action need to be negotiated between different political actors, the longer is the delay before they can be implemented, and the more distorted they may become.

Perhaps a more serious concern is that politicians may not act benevolently. In particular, as we note in the following section, behaviour in the majority of OECD countries over the last few decades points to a 'deficit bias'. One possible reason for deficit bias (others are noted below) is that governments may not be re-elected, and as a result may discount the future more heavily than the private sector (see Alesina and Tabellini (1990)). Building up debt also restricts the ability of a future government to undertake spending that may not accord with the preferences of the current government.

In this section we re-examine, in a very simple way, how governments would react to shocks if they were 'mildly myopic' – although they remain concerned about the utility of the representative agent, they discount that utility at a higher rate than the private sector. We will look at how debt behaves when the fiscal authorities are mildly myopic, and when debt targets might improve social welfare in these circumstances.

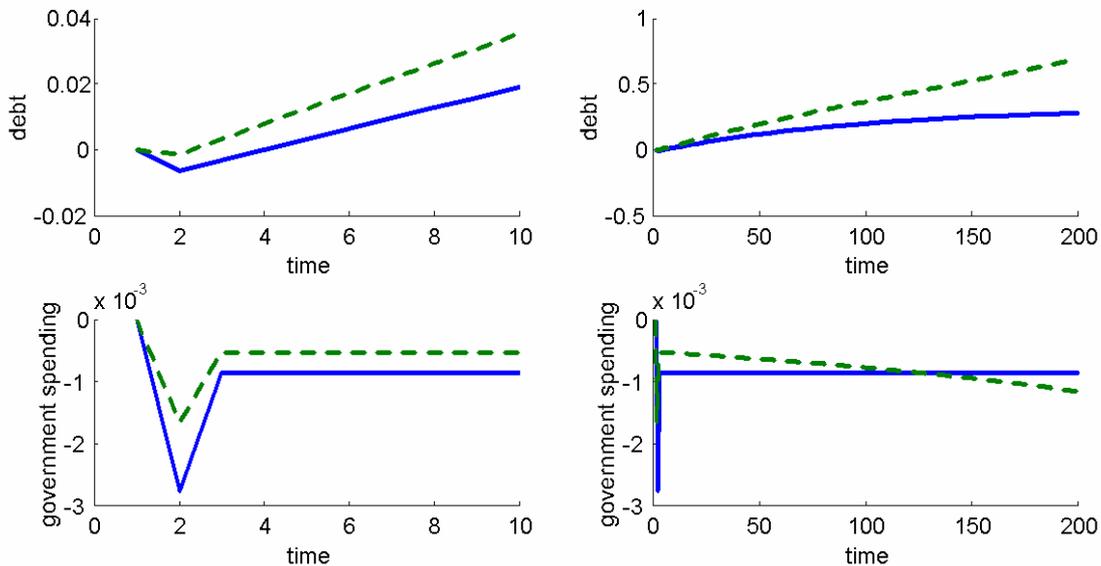
To do this, we use the closed economy model of Leith and Wren-Lewis (2006a). We assume a benevolent monetary policy maker, but a mildly myopic fiscal policy maker, who together play Nash. (Details are given in an appendix.) The fiscal authority's annual discount rate is approximately 6%, compared to 4% for the monetary authority and the private sector. We consider only one fiscal instrument, government spending, but deviations from the initial steady state in government spending are costly for welfare because of over/under provision of public goods. Figure 3 plots the reaction of the fiscal instrument and debt to a cost-push shock, and compares it to the same shock when the fiscal authorities are benevolent.

The solid line represents the outcome when we have benevolent fiscal and monetary policy makers, and this outcome follows the random walk result, for reasons discussed at length above. The dashed line represents the outcome from a Nash game between fiscal and monetary policy makers, where the only difference between the two is that the fiscal authorities have a higher discount rate. In this case, debt steadily increases, and does not (and will not) reach a new steady state.<sup>4</sup>

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<sup>4</sup> Although this solution is explosive (as inspection of eigenvalues confirm), the rate of increase in debt is less than the rate of discount, so welfare costs will still be finite. As a result, we can compute optimal paths. This is why we only consider mild myopia: with stronger discounting, the increase in debt and other macro variables would explode more rapidly, and the social costs of this would be infinite.

Figure 3 Debt following a cost-push shock under optimal cooperative policy and under Nash with myopic fiscal policy makers\*



Solid line = cooperation, Dashed line = Nash. \*period=quarterly.

The reason is straightforward. Government spending needs to fall to provide funds to service the higher debt level. Impatience by the fiscal authorities means that they cut spending by less than is required to stabilise the debt stock. As Figure 3 shows, this will eventually imply that larger cuts are required, but mild myopia means that these future cuts are valued less than smaller cuts in spending in the short term.

Such a result might seem inevitable, given that the socially optimal response with a non-myopic fiscal policy maker is a random walk in debt. However, this simple intuition ignores the actions of the other player. For the monetary authority, explosive debt is costly, because it is maximising social welfare. In principle, it can use monetary policy to influence the budget deficit to prevent this happening. In fact, even in the socially optimal case it does this to some extent (i.e. interest rates fall, despite positive inflation: see Leith and Wren-Lewis (2006a) for a detailed analysis of when and why this happens). However, Figure 3 shows that, when the fiscal authority is short-sighted, it is not optimal for the monetary authority to try and reduce interest rates *sufficiently to prevent* an explosion in debt. (Of course, any attempt by the monetary authority to do so would encourage an even looser fiscal policy, so it's a game they may not be able to win.)

Unconditional debt targets that were enforceable (by which we mean targets that had to be met come what may) would clearly prevent the explosion of debt shown in Figure 3. We characterise unconditional debt targets by assuming that the fiscal authority is forced to follow a feedback rule, where deviations in government spending from the steady state are given by a simple feedback rule on debt disequilibrium of the kind considered above. Table 1 shows the social loss that occurs under various policies following the shock described above.

Table 1 Welfare costs of different debt policies/preferences\*

Policy	Welfare cost
Fully Optimal, co-operation	0.190
Myopic fiscal (6%), Nash	0.349
Optimal debt feedback rule	0.332
Fast debt feedback rule	0.358
Myopic fiscal (6%), plus debt disequilibrium in objective function	0.192

\* Absolute units of loss. Cost push shock is autocorrelated with  $\rho=0.9$ .

The benchmark loss comes from the social optimum random walk result. A (mildly) short-sighted fiscal authority increases the loss considerably, but it is still finite, despite explosive debt. This is because debt explodes at a rate less than the rate of discount, so losses are still finite. The third row shows the optimal degree of debt feedback, which for reasons discussed in section 2 is very slow in returning debt to its original level. The next row shows welfare under more rapid fiscal feedback, such that debt returns to target more rapidly (corrections worth 40 a year for 100 debt disequilibrium). This increases the welfare cost of the shock, such that it is actually above the cost under Nash when debt explodes. This shows that it is possible that strict and very tight debt targets could actually be worse for welfare than debt that exploded very gradually. Of course, if policy makers were more myopic, debt would explode at a rate above the rate of time preference, and so the welfare cost would be infinite, and any debt target would be preferable.

The final row of Table 1 shows the impact of introducing an additional element into the fiscal policymakers objective function, besides (over discounted) representative agent utility. This is a term in the deviation of debt from its original steady state. If the parameter on this additional term is chosen to maximise welfare, then as Table 1 shows we can almost match the benchmark result achieved with benevolent policymakers. We could interpret this result as representing a conditional debt target i.e. a target that fiscal policy makers should aim to get close to alongside other objectives. An alternative interpretation is that it reflects external pressure on fiscal policy makers to avoid debt disequilibrium, perhaps from a 'watchdog' body of the kind discussed in the next section.

We can use these results to draw two conclusions. First, there is a danger with short-sighted policy makers that debt could become uncontrolled: following a positive shock to debt, policy makers would not raise taxes or cut spending by even enough to service the higher level of debt, leading to a

debt-interest spiral.<sup>5</sup> Second, this outcome is avoided when we have unconditional debt targets. However, these targets may be costly in terms of social welfare if they are achieved too quickly. Better outcomes are achieved when debt correction is very slow, but such slow adjustment may in the short term be difficult to distinguish from lack of control, and may therefore lack credibility.

The results above also suggest a third possibility: that by applying the right degree of 'pressure' on short-sighted policy makers to avoid debt disequilibrium, we can almost achieve the social optimum. This could take the form of a complex rule for fiscal action, where policy makers attempted to achieve the optimal trade-off between various targets, including minimising debt disequilibrium. However, complex rules of this type do not seem a practical option from a political point of view. In the next section we explore an alternative means of applying pressure: institutional change.

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<sup>5</sup> Short sighted behaviour cannot provide a complete explanation for the tendency for debt to rise over the last few decades in many European economies, because following random shocks we would expect to see as many debt implosions as explosions (although it could be argued that Australia and New Zealand provide examples of steadily falling debt: see Leith and Wren-Lewis (2006d)). The problem may be that the standard model is set-up in a way that makes tax decreases as costly as tax increases.

## 5. A proposal for a quasi-independent Fiscal Monitoring Commission

A number of authors have argued the case for establishing some form of new fiscal institution to tackle problems associated with the control of debt in an uncertain macroeconomic environment. (See, for example, Eichengreen et al (1999), Wyplosz (2001) and (2005), Ball (1997), and Wren-Lewis (1996) and (2003).) One motivation comes from the parallel with monetary policy and independent central banks. To the extent that it may be desirable for fiscal policy makers to take discretionary action in the face of macroeconomic shocks (see section 3 above), then they will be subject to an inflation bias problem, and delegation may help to avoid this (see Calmfors (2003)).

However, a stronger motivation may come from the problem of 'deficit bias'. Levels of government debt in the OECD area today are around double their level thirty years ago, although there is considerable variation among countries around this average. It seems extremely unlikely that increases in debt of this size could represent an optimal response to shocks. Instead, it seems more plausible that this reflects non-benevolent behaviour on the part of fiscal authorities.

Two of the most popular theories used to explain deficit bias are the time inconsistency of preferences theory formalized by Alesina and Tabellini (1990), and the common pool theory (see, for example, Von Hagen and Harden (1995) and Krogstrup and Wyplosz (2006)). In the former theory, governments do not fully internalise the cost of debt, because those costs may be born by an opposing party if the government is not re-elected. Indeed, it may be advantageous for a government to increase debt to constrain the actions of a future government with different political preferences. This is likely to lead to myopic type behaviour of the kind explored in the previous section. Common pool theories focus on the fact that many decision makers (e.g. spending ministries) may be involved in formulating budgets, and these decision makers fail to internalise the overall costs of higher spending and debt.

Most of the literature has focused on the use of policy rules as a means of tackling problems of deficit bias, following the adoption of rules of various types by some governments, and of course the Stability and Growth Pact of the EU. However, as we noted in the previous section, rules that involve returning debt to its pre-shock level are likely to be sub-optimal. This sub-optimality can be reduced if debt correction is very slow, but in this case rules may not be credible. More generally, credible and enforceable rules may by necessity have to involve a significant departure from optimal behaviour.

This motivates an interest in some form of institutional change.<sup>6</sup> The IMF categorises such proposals into two types: those which involve giving control over fiscal instruments to an independent agency ('Independent Fiscal

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<sup>6</sup> While we would argue that rules alone are likely to be inadequate in encouraging optimal policy, it may be the case that rules can coexist alongside new institutions, particularly when these rules are 'soft' and open to interpretation.

Agencies' (IFAs), analogous to monetary policy committees setting interest rates in independent central banks (ICB)), and Fiscal Councils, which only have an advisory role. The basic difficulty with IFAs is that they require policy makers, and through them the public, to give up rather more control than is lost by establishing an ICB. An ICB varies a single instrument to achieve a well defined goal. In some countries that goal is established politically (as in the UK). While changes in interest rates can have powerful effects on individuals, those effects are relatively short term: changes in real rates will not last beyond a business cycle.

An IFA that had control over a variety of tax rates and which was required to ensure long term fiscal sustainability would potentially have much more political discretion. If the IFA decided that taxes should increase, which taxes? More fundamentally, the impact of such tax increases may be permanent, and the only beneficiaries could be unborn generations. Although the IFA could be seen as representing such generations, this position would be bound to be intensely political. Such difficulties might be overcome, particularly if the IFA was only concerned with short term stabilisation, as in Wren-Lewis (2003). However, the fact that no examples of IFAs as yet exist suggest that the political costs involved are very high.

Alesina and Tabellini (2004) discuss some of the criteria for successful delegation. One of these is that there should be a broad consensus on what constitutes 'sound policy' in any particular domain. In the context of public debt, this seems to be true only in part. There is a clear consensus that debt should follow a sustainable path i.e. that fiscal actions (rather than inflation) should ensure that the government's intertemporal budget constraint holds. However, there is less agreement on what an optimal path for debt might be. Should steady state debt follow a random walk, as the literature cited above suggests, or should there be a target for debt? If the latter, what should that target be? This lack of agreement makes delegating decisions over debt problematic.

Fiscal Councils, on the other hand, take no formal power from governments. They may nevertheless be effective, because they help correct an asymmetry of information between the government and its electorate. The electorate does not have the expertise to establish whether an increase in the budget deficit represents the optimal response to some shock, or additional spending designed to appease particular government supporters. The government has an interest in claiming the former, while opposition parties will invariably claim it is the latter. A Fiscal Council can play a 'watchdog' role in providing this information in an unbiased manner, and thereby help the electorate to provide the appropriate judgement.

Although a Fiscal Council is an alternative to an IFA, it can also evolve into an IFA. If the government invariably follows the advice of an established Fiscal Council, and that advice is perceived as helpful in managing public debt, then it becomes much easier for both the government and electorate to then transfer some decision making power to the Council. Indeed, it could be argued that a Fiscal Council is a prudent first step in establishing an IFA. In this sense, Fiscal Councils can facilitate rather than detract from the establishment of IFAs. However, the transformation of a Fiscal Council into an

IFA is neither inevitable or necessarily desirable, as it could be argued that giving a Fiscal Council formal powers removes an important democratic safeguard from fiscal decision making.

Stéclebout-Orseau and Hallerberg (2006) set out three criteria for an institution to provide a successful fiscal 'watchdog' role: technical capacity, visibility and lack of bias. Technical capacity is clearly necessary to correct the informational advantage the government has. Visibility relates to the extent to which the electorate has access to the information provided by the watchdog. Lack of bias is required to ensure that the information provided is free from any strategic interest beyond achieving an optimal outcome for debt. If these criteria are fulfilled, then the government will incur a cost in ignoring the advice of the council, which is essential if the council is to play a useful role (see Debrun and Kumar, 2006).

The body we propose, which we call a Fiscal Monitoring Commission (FMC), is a form of Fiscal Council that would be required to monitor the long term national fiscal position, and if these projections suggested an unsustainable position, to indicate how the overall fiscal position should change to correct this. The minimum requirements for the Fiscal Monitoring Commission (FMC) would be as follows:

- 1) It would be established, and financed, by the national government.
- 2) The director would be appointed by, and subject to, an executive committee made up of experts in relevant fields. Ideally, members of the committee should be appointed on long term (5-10 year) contracts in a bi-partisan manner. Their role would be to ensure the FMC and its director applied best practice, but also that it remained politically neutral.
- 3) The FMC would employ sufficient economists to be able to undertake long term projections of the public accounts, or equivalently evaluate in a complete and critical manner any similar projections put forward by the government. This would involve complex issues such as judging what the current output gap was, evaluating trends in technical progress etc.
- 4) The FMC would report once a year. Its projections would be based on published government plans. Unless its projections suggested that current plans, to a reasonable degree of approximation, were sustainable, it would attempt to compute the optimal degree of correction, in terms of *overall* changes in *either* spending, or taxes, or both. (In other words, it would attempt to calculate what a benevolent policy maker would do).
- 5) The government would be required to formally respond to the proposals made by the FMC, but it would not be required to implement them.

Thus, the FMC would apply political pressure on the government, but that pressure could be ignored. However, as the government finances the FMC, and had a role in appointing its board, ignoring its recommendations would incur some political cost. Once established, then it would always be possible as a further step to give the FMC some control over policy, but to go this far as a first step seems politically unrealistic.

To have the FMC appointed and financed by the current and previous governments might seem unwise in term of independence. However, we also need to ensure that the other key criteria for a watchdog cited above are also fulfilled: technical capacity and visibility. Various countries have completely independent bodies and academics already making evaluations of the longer term fiscal position, but these can easily be dismissed by the relevant government as ‘just another view’. It would be much more difficult to dismiss the views of a body set up and financed by the government itself.<sup>7</sup> Ignoring the advice of the FMC has to be politically costly, and it is clearly more difficult for the government to ignore the advice of an institution it established and finances.

The role of the executive committee of the FMC is crucial for independence. This committee is the Director’s protection from political interference (or under-resourcing), but also the safeguard against the political ‘capture’ of the Director. The precise composition of this executive committee will depend on the existing political and institutional framework, and this differs considerably among countries.

The advantage of publishing 50 year projections is that the issue of sustainability is directly addressed. The UK’s finance ministry, H.M.Treasury, publishes 50 year projections of the public finances each year as part of its pre-budget report. If a FMC were established in the UK, this work would be ‘duplicated’ by the FMC. The key difference, of course, is that the FMC’s projections would be independent. This is not to suggest that H.M.Treasury’s projections are necessarily politically distorted. However, as the reaction to the recent decision in the UK to change the timing of business cycles illustrates<sup>8</sup>, its calculations will always be perceived as potentially biased. If the Treasury is doing its job correctly, the projections of the FMC would demonstrate that it was unbiased, and therefore add to the government’s credibility.

The proposed FMC has a number of similarities to the Congressional Budget Office (CBO) in the United States. The CBO is designed to be politically independent, it has a director appointed by the President and the Speaker of the House of Representatives, and has a panel of economic advisors. It publishes budget projections, including 50 year projections of the

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<sup>7</sup> This is an example of where a competitive market (“competition among fiscal councils”) is unhelpful, in part because the quality of the product is very difficult to establish. With diversity of advice, inevitably the government will choose to follow the advice that suits its own interest. This problem can be reduced to some extent by setting up ‘wise men’ councils, which in effect collect and in some way aggregate diverse opinions. However, if the technical capacity of the government still exceeds those of individual wise men, and the resources of wise men are not pooled, then the government can still claim that it has additional information.

<sup>8</sup> One of the UK Government’s fiscal rules requires balance over the course of the cycle. The timing of the cycle can therefore be crucial in assessing whether this rule has been met.

kind suggested for the FMC.<sup>9</sup> There are however important differences. The scope of the CBO is much more wide ranging, providing detailed analysis of micro as well as macro aspects of the budget process. Most importantly, a key difference between the CBO and the FMC is that the latter would be committed to explicitly advising on policy, in the sense that it would say whether some fiscal correction was needed, and what the optimal timing of that correction should be. The CBO is explicitly precluded from making policy recommendations. Furthermore, under point (5) above, the government would be required to respond to those recommendations. An interesting thought experiment is to imagine whether a CBO refashioned as a FMC would have had an impact on recent US fiscal policy, or public discussion of that policy.<sup>10</sup>

Two countries that do operate Fiscal Councils which make specific policy recommendations are Belgium and Denmark. In Belgium the institutional detail is complex, in part because of the more decentralised fiscal structure (Lebrum, 2006). However, an important role of the 'High Council of Finance' is to provide reports on the budgetary position and make recommendations on short and especially medium-term budgetary targets (and since 2002, also on long-term targets) for the general government and other spending institutions.

In both Belgium and Denmark that central bank is represented on the council. Would it be sensible to go much further, and let an independent central bank take on the role of a Fiscal Council? There are two reasons why this is probably undesirable. First, the focus of the central bank is on short term stabilisation, while the FMC is concerned with long term trends in public debt. While Wren-Lewis (2003) suggests giving the central bank some limited, short term control of selected fiscal instruments, this was to strengthen its ability to stabilise the economy over the business cycle (or in the case of EMU, to partially make up for the lack of a national monetary policy), and not as a means of optimally managing debt. Second, there are good reasons for thinking that a central bank's primary focus on controlling inflation might produce a 'surplus-bias' in its recommendations.

The European Commission monitors budget developments in member countries as part of the SGP. It also makes very public policy recommendations. However, in both respects it falls short of what the FMC would be required to do. Its forecasts operate over a rather short time horizon. Its recommendations are designed to meet the criteria laid down in the SGP. This is quite different from the key aspects of optimal debt policy as described above.

If these two aspects could be corrected, would EC monitoring provide an alternative to a national FMC for EC member states? The difficulty here is that EC monitoring would interact with the strategic position of other member

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<sup>9</sup> A number of other countries ask independent or semi-independent bodies to prepare projections or forecasts that are used as part of the budget process. For example the Netherlands's Central Planning Bureau provides the economic assumptions for the budget. One particularly interesting additional role played by Central Planning Bureau is that it assesses the budgetary implications of the major political parties ahead of elections.

<sup>10</sup> The CBO has published 50 year projections (e.g. December 2003) showing that US fiscal policy is not sustainable. However, it is precluded from saying when this should be corrected, perhaps thereby allowing politicians to postpone solutions.

states, and so advice coming from the EC could reflect those strategic interests. An example of this kind is explored in Stéclebout-Orseau and Hallerberg (2006). It is politically important that the FMC is seen as having only one interest, which is that fiscal policy is optimal from a national point of view. The danger is that advice coming from the EC might not only be ignored, but that politicians might gain nationalistic benefits from doing so.

On the other hand, there are good reasons for retaining an important role for EC monitoring, even if a national FMC is established and its advice is followed. This is because of the externalities involved in fiscal actions by individual EU members (see Uhlig (2003) among others). For example, there may be a tendency for policies based on national welfare to attempt to appreciate the real exchange rate against other members of the union (see Gali and Monacelli, 2004), but of course collectively they cannot achieve this, leading to a sub-optimal union wide allocation. One role that continued EU monitoring would have would be to encourage FMCs to internalise these externalities.

Although the government would not be required to implement the proposals of the FMC, we would argue that the FMC would achieve a number of goals. The government would be forced to address the issue of sustainability, either by agreeing with the FMC's assessment, or by publishing alternative assessments of its own, and justifying why its own assessment was superior to the FMC's. This would put the issue of the long term control of debt, and the funding of any fiscal changes, firmly into the political arena. If the government undertook expansionary, counter cyclical fiscal action they would explicitly have to address the issue of how deficits would eventually be funded. From the perspective of a benevolent policy maker, the FMC would give the government credibility in undertaking countercyclical action, or in allowing 'drift' in the level of public debt where that was appropriate. In short, it could help provide a 'commitment mechanism' by which optimal policy decisions could be implemented.

## 6. Conclusion

Recent research has reinforced the suggestion that optimal policy under commitment should involve steady-state debt following a random walk. Following a fiscal shock stemming from any source, it is not optimal to return debt to its pre-shock level. As a consequence, a policy that involves an unconditional debt target (i.e. a target that has to be met) is bound to be sub-optimal.

The random walk result appears robust, in that it applies (at least approximately) in different types of economies, and to a variety of models. It is also relevant to the design of simple policy rules, where the optimal degree of feedback from debt disequilibrium should be very slow. Our research suggests that it need not apply to optimal discretionary policy (i.e. where there is no commitment mechanism in place, and policy is constrained to be time consistent), but we argue that policy targets should be designed to encourage achieving commitment solutions, rather than locking policy into discretionary solutions.

In practice debt targets may be designed to avoid the consequences of non-benevolent policy makers, and we give an example based on a myopic fiscal authority. We would certainly not recommend that debt targets be abandoned in such circumstances. However, we argue that because such targets will move policy away from the policy that maximises social welfare, this strengthens the case for institutional remedies to non-benevolent behaviour.

We propose one particular institutional change designed to improve budgetary outcomes, which is the establishment of a national Fiscal Monitoring Commission. This body would have no formal control over policy, but with good design can apply advice and pressure on politicians to move towards a first best policy for government debt. In particular, this body would be mandated to provide policy advice on how aggregate fiscal outcomes should be adjusted to achieve not just sustainable but optimal paths for government debt, and the national government would be required to justify any deviation from those recommendations.

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#### Appendix: Details of simulations in Section 4

The results set out in Table 1 are derived using the closed economy model set out in Leith and Wren-Lewis (2006a). The representative agent maximises the following utility function at time zero:

$$E_0 \sum \beta^t \left[ \frac{C_t^{1-\sigma}}{1-\sigma} + \chi \frac{G_t^{1-\sigma}}{1-\sigma} - \frac{N_t^{1+\varphi}}{1+\varphi} \right]$$

where C is a basket (using a CES aggregator) of consumption goods, G is government spending, and N is labour supply. (We ignore stochastic terms not used in this exercise.) Maximisation gives rise to the standard Euler equation and first order conditions for labour supply.

Monopolistically competitive firms, facing a linear production technology, set prices according to Calvo contracts. This gives rise to a standard New Keynesian Phillips curve. Monetary policy sets the nominal interest rate to maximise social welfare. The government finances its spending through lump sum and labour taxation, and by issuing debt. There is an employment subsidy in steady state, which exactly offsets the impact of monopolistic firms and distortionary taxation, so that the steady state is efficient (i.e. equal to the allocation determined by a benevolent social planner). The budget is balanced in steady state using lump sum taxation. However both the employment subsidy and lump sum taxation are fixed at their steady state values, so lump sum taxes cannot be used to respond to shocks to the government budget constraint.

Social welfare is derived as a quadratic approximation to utility, and involves quadratic terms in the output, consumption and government spending gaps (where a gap is the difference between actual and flex price levels of a variable), and a quadratic term in inflation. The fiscal authority maximises per period social welfare, but with a discount rate that may exceed  $\beta$ .

The simulations shown in Figure 3 are derived by applying a unit cost-push shock (a shock to the Phillips curve), with the fiscal authority using government spending as the instrument used to maximise its objective function. The technique used to derive Nash equilibria is described in Kirsanova, Stehn and Vines (2005).

# The Swedish budget "model": a genuine beauty or in need of a face lift?

by

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(21 December 2006)

*In an international setting, the Swedish budget "model" has been praised to be a beauty - an example of a well established rules-based fiscal framework. The national judgement has in some respect been harder. From this dual perspective we assess in the paper what has worked well and less well in relation to the objectives. We also ask whether the "model" is still in shape or needs a face lift. Our conclusion is that the "model" is still successful and that the critical national debate and the memory of the fiscal crisis in the early 1990s are reasons to its success. However, the "model" needs some minor beauty treatments.*

## Introduction

Sweden operates what nowadays can be considered a well established framework of budgetary rules. The framework consists of three parts. Firstly, there are 3-year nominal expenditure ceilings on central government expenditures. Secondly, there is a general government surplus objective. Thirdly, local governments have to follow a budget balance requirement. The overall objective of the framework is to ensure sustainable public finances and to reduce incentives for pro-cyclical policies.

The framework was set up over the period 1997-2000 and it has now been in place for, arguably, a full cycle. Therefore it seems to be a good moment in time to have a broader look at the framework and assess what has been successful and what has worked less well with a view to identify what, if anything, could be further developed. The purpose of this paper is to contribute to such an assessment. There have, of course, been numerous earlier inputs to this

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debate.<sup>1</sup> However, we believe that our paper provides a more comprehensive and systematic picture of the issues involved including also possible avenues for improvements.<sup>2</sup>

The paper is organised as follows: Section (1) gives the background to the Swedish rules-based fiscal and budgetary framework. Section (2) provides a detailed description of the rules and how they work. In section (3) follows an assessment of how the rules have performed since their introduction. Given the identified strengths and weaknesses, section (4) discusses what could be done to improve and safeguard the framework. Section (5) concludes.<sup>3</sup>

## **1. The background to the Swedish budgetary framework**

The key driver behind the introduction of the rules-based budgetary framework was the experiences gained dealing with the economic and budgetary crises in 1992-1994. The crises in the early 1990's were probably among the deepest in the industrialized world at that time. Jonung (2005) qualifies the crises in Sweden as being as severe as those that hit the world during the exceptionally crisis-ridden interwar period. Some figures illustrate the quick turn around in economic conditions. The general government budget balance went from +4 per cent of GDP in 1990, to -11.4 per cent in 1993 (see Figure 1). Over the same period unemployment increased from 1.7 to 9.1 per cent. GDP growth was negative 1991-1993. The depth of the crises was influenced by the international slowdown, but had without doubt also domestic causes in form of a long preceding period of an asymmetric stabilization policy, an infelicitous sequencing of the deregulation of the capital market and the 1991 tax reform and a badly working wage formation process.

Following the deep crisis, Sweden essentially altered the monetary and fiscal policy frameworks. When the fixed exchange rate had to be abandoned in 1992, the Riksbank was given responsibility for monetary policy with the objective of price stability. Fiscal policy was initially aimed at improving public finances by reducing budget deficits and halting the increase in central government debt. A consolidation programme was successfully implemented in stages between 1995 and 1998 containing a strengthening of public finances

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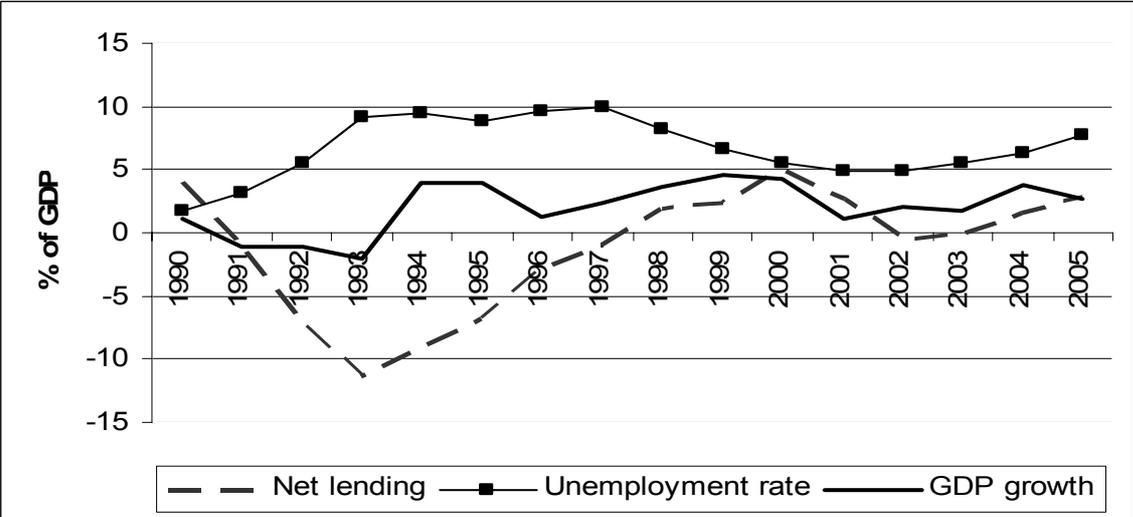
<sup>1</sup> See, for example, Boije (2005), Fischer (2005), Hansson-Brusewitz and Lindh (2005), IMF (2005), OECD (2005) and SOU (2002:16).

<sup>2</sup> We thank Lars Jonung, Klas-Göran Larsson, Yngve Lindh, Gösta Ljungman and Ralph Wilkinson for valuable comments.

<sup>3</sup> Please note that when we refer to the government, we have the former and not the newly elected government in view, if nothing else is said.

of around SEK 125 billion (7.5 per cent of GDP). During the same period a more austere budget process was implemented including the introduction of the expenditure ceilings in 1997. The basic rules governing the budget process, including the multi-year expenditure ceilings, are collected in the Budget Act from 1997. It was also decided that a general government surplus target of 2 per cent of GDP over the cycle should be applicable as from 2000. In addition, as from 2000 local governments are required to plan for balanced budgets.

**Figure 1. General government net lending, unemployment and GDP-growth 1990-2005.**



Source: Commission services

There are a number of national institutions that follow up the different parts of the rules-based framework besides the government itself in its Autumn Budget Bill and pre-budget statement. The National Financial Management Authority (ESV) has a special responsibility to survey expenditures under the ceilings and publishes medium-term forecasts of central government revenues and expenditures four times per year. The National Institute of Economic Research (NIER) quarterly publishes medium-term forecasts of central and general government net lending as well as forecasts of ceiling-restricted expenditures. The National Debt Office publishes forecasts of the central government borrowing requirement for the current year and the coming fiscal year. These institutions, although not strictly politically independent, do not hesitate to complain in case of non-compliance with the rules. In addition, on the EU level the Commission and the Council assess compliance with the EU fiscal framework which also includes commenting on the respect of the national budget rules.

Further, on the international level, the IMF and the OECD express their views in their respective surveillance procedures.

## **2. Description of the budgetary framework**

### **2.1 The expenditure ceilings<sup>4</sup>**

The expenditures subject to the ceiling includes central government expenditures and expenditures of the pension system outside the budget, but not interest expenditures on government debt. The ceilings cover approximately two-thirds of total general government expenditures. Even cyclically sensitive expenditures, such as expenditures on active labour market programmes, unemployment benefits and social security, are included. Interest costs are excluded with the argument that in the short term it is not possible for the government to influence them. Local government expenditure is excluded with reference to the autonomy of the local governments.

One purpose of the expenditure ceilings is to prevent temporary rises in revenue from being used to finance increased spending, thereby making it harder to run a pro-cyclical policy on the expenditure side of the budget. It also contributes to preventing a trend rise in government expenditure as a share of GDP and helps to ensure that consolidation measures are implemented if expenditure risks exceeding the ceiling.

There is a “top-down” budgetary process that assigns a clear role to the Ministry of Finance in drawing up the budget. The multi-year framework includes nominal expenditure ceilings for the coming two or three years. For the two coming fiscal years (t+1 and t+2) these ceilings are already laid down in decisions of earlier years. The new expenditure ceiling three years ahead (t+3) is presented to the Parliament in the Budget bill in September and is approved by the Parliament in November.

The budget process also includes a "two-stage" frame decision process. Total expenditure is divided into 27 different expenditure areas for the coming fiscal year, for each of which the Parliament first determines a budget frame. This decision must comply with the previously set expenditure ceiling for year t+1. The Parliament then approves the level of the appropriations within each expenditure area. The total sums of the appropriations must not exceed the previously determined budget frame. Hence, additional spending on one

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<sup>4</sup> This section draws on Hansson Brusewitz and Lindh (2005).

appropriation must be matched with corresponding spending cuts within the same expenditure area. Otherwise the proposal will not be permitted to be discussed by Parliament. The new decision process in Parliament has reduced the size of parliamentary amendments to the budget. Indicative frames for the expenditure areas for the years t+2 and t+3 are also approved by the Parliament as a starting point for the preparation of future budgets.

A critical feature of the expenditure ceiling is that it has an ex post dimension. It should be implemented in such a way that the outcome of the ceiling-restricted expenditure is below the decided expenditure ceiling. It is not enough that the target is met ex ante when the ceiling is determined three years in advance or at the time of budget approval.

Since the ceiling limits the actual expenditure – not just appropriated funds – one has to take uncertainty in the expenditure forecast into account. To accommodate the impact of unanticipated developments there is a buffer – a so-called budget margin - between the ceiling and the ceiling-restricted expenditures. The main purpose of the budget margin is to absorb fluctuations in the expenditure level due to changes in the business cycle (automatic stabilisers) and other macroeconomic uncertainties. It should also, to some extent, cover unspecified expenditure reforms. The margin should also absorb the uncertainty that is caused by the fact that Swedish agencies can shift the consumption of appropriated funds between years<sup>5</sup>.

There is, within the framework, no established principles for determining the level of the expenditure ceilings and the size of the budget margin. The last few years practice has been that the expenditure ceiling has been set more or less as a fixed share of potential nominal GDP. When the ceiling has been set for the third year, the budget margin has normally amounted to about 2 per cent of the expenditure ceiling. We will come back to these issues in section 3.1.

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<sup>5</sup> For most appropriations there is a carry-over possibility, which means that unused appropriations – within certain limits – can be carried forward to the next year. For most appropriations there is also a possibility to borrow against next years appropriation within certain limits. Such a credit is automatically deducted from the carry-over fund the following year.

## 2.2 The surplus objective

The surplus target covers the general government sector, i.e. the central government, local governments and the old age pension system. The target states that the general government net lending (according to ESA95) should amount to 2 per cent of GDP on average over the business cycle. The target was introduced step by step during a transition period by setting up annual surplus targets.<sup>6</sup>

The principal purpose of the surplus target is to strengthen, via lower government debt, the public sector's position ahead of the strains that will be placed on government finances thereafter by demographic factors.<sup>7</sup> A budget surplus in normal cyclical conditions also lessens the risk of incurring a substantial deficit during a protracted economic slowdown. However, the former argument can not be used to motivate an eternal surplus on average over the cycle, since the government, once the debt is gone, in that case would have to build up net claims on the private sector.

Ex ante the medium-term target is translated into an annual target for the actual budget surplus in year  $t+1$ . This annual target is proposed by the Government in the Budget Bill for the year  $t+1$  in September in year  $t$  and is approved by Parliament later in the autumn. The annual target could, according to the government, deviate from the 2 per cent of GDP objective for cyclical reasons. In its 1999 Convergence Programme (pp. 4-5) the Swedish government stated:

*"As the medium-term goal refers to the public sector fiscal balance seen over the business cycle, the actual budget surplus could fall below 2 per cent of GDP in a phase of the business cycle with relatively high idle capacity in the economy, but conversely exceed 2 per cent of GDP in the peak phase of the business cycle. Thus, the level that the budget surplus will reach in an individual year is dependent on the phase of the business cycle, which provides scope for the automatic stabilisers to work. In this way it is possible to refrain from a pro-cyclical policy. A medium-term goal of a public sector surplus equivalent to 2 per cent of GDP should*

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<sup>6</sup> For 1997, it was decided that the deficit in the government finances was not to exceed 3 per cent of GDP. For 1998, the aim was to achieve a balanced budget. These targets were to be attained irrespective of the economic situation. For 1999 and 2000, the targets were a surplus of 0.5 and 1.5 per cent of GDP, respectively. See *Stabiliseringspolitik i valutaunionen* (Stabilisation policy in the monetary union) (SOU 2002:16), pp. 137-138.

<sup>7</sup> If the overall objective is to lower debt it may be argued that a debt target would be preferable. However, there are two key arguments against this. Firstly, the change in debt depends on several other factors than fiscal policy, for example, financial transactions and valuation effects (which gives rise to stock-flow adjustments). Secondly, if the objective also is to prevent pro-cyclical policies, a target for net lending is both more appropriate and operational.

*also be compatible to some extent with conducting an active fiscal policy, with the aim of moderating swings in the business cycle without risking excessive deficits during down-turns."*

The formulation of the surplus objective however leaves some open questions. In particular it does not include a clear specification on how to measure compliance. How to understand what is in practice "on average over the cycle" is left open as there is no specified method within the framework for calibrating "the cycle" and measuring surpluses against it. We will come back to these aspects in section 3.2

### **2.3 The local government balance requirement**

In 1998 it was stipulated, in the local government law, that as from 2000 at the latest, local governments must plan for revenues higher than or equal to expenditures. The local government sector in Sweden is responsible for roughly 40 per cent of the general public sectors primary public expenditures and for 70 per cent of public sector investment and consumption. Local government revenues include (non-capital) income taxes, central government grants (covered by the central government's expenditure ceiling) and fees.<sup>8</sup>

The balance requirement follows the budgeting accounting framework and relates to the financial result net of extraordinary posts. A key argument behind this balance requirement is that the current community citizens should be financially responsible for its public expenditures. In addition, communities should follow the principle of good financial "house keeping" taking into account future costs in form of pension liabilities. As a benchmark this would require a surplus of 2 per cent of total revenue (SOU 2001:76). The balance requirement is therefore seen as a minimum requirement. Moreover, there is also a principle of caution applied in the local government accounting conventions. For example, capital gains do not count as revenue while capital losses count as expenditures.

Local governments are allowed to borrow to finance investments. It is the cost of the loan and not the investment expenditures that affect the result. As a consequence, the balance requirement can not be satisfied by simply postponing investment expenditures into the future<sup>9</sup>. Should a deficit materialise ex post, there is a clear consolidation rule: the own

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<sup>8</sup>Appendix B in the end of the paper provides more detailed information about the Swedish local public sector and its finances.

<sup>9</sup> This is different to a National Accounts defined net lending objective where the investment expenditure is booked up front. Therefore, a net lending budget target can be reached by postponing investment expenditures.

capital must be restored through surpluses within the next three years. Up to 2004, the own capital had to be restored within two years. The longer respite makes it easier for the communities to compensate for budget slippages without risk running pro-cyclical policies.

There are circumstances under which a local government may be exempt from having to restore its own capital in case of a deficit, for example if it has built up funds as a buffer for future negative budget surprises. However, even with a strong own capital position it is not allowed to *plan* for a deficit.

In the case of non-compliance with the balance requirement there is no explicit sanction mechanism (except, perhaps, for the voters' disapproval in the coming election).

### 3. Performance and assessment

#### 3.1 The expenditure ceilings

##### *The level of the expenditure ceiling*

General government expenditure as a percentage of GDP rose sharply during the economic crisis in the early 1990s. In 1993 the expenditure to GDP ratio amounted to 72.4 per cent of GDP. The savings in the consolidation program contributed to a fall in the expenditure to GDP ratio. After the completion of the consolidation program general government expenditure continued to decline as a percentage of GDP, from 60.3 per cent in 1998 to 56.8 per cent in 2000, mainly due to relative restrictive expenditure ceilings. As a percentage of GDP, expenditures under the ceiling fell by about 2.5 per cent between 1997 and 2000 (see Table 1). The expenditure ceiling, measured as percentage of GDP, has been relatively stable since 2000. The ceilings that now are in effect up to year 2009 imply that the expenditure ceiling to GDP ratio will decline somewhat over the next few years.

Praxis the latter years has been that the expenditure ceiling ( $E^{Cap}$ ) has been set as a fixed share of nominal potential GDP ( $Y^*$ ):

$$(1) \quad E_{t+3}^{Cap} = c * Y_{t+3}^*$$

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Indeed, in the EU debate on the SGP an issue has been how to reduce incentives for Member States to reach budgetary targets by cutting productive investment expenditures, which is a relatively easy measure in the short term.

where the constant includes the budget margin. This praxis has, in our opinion, two major drawbacks:

1. There is no clear link to the surplus target. The set expenditure ceilings have not in any case been adapted with a reference to achieve compliance with the surplus objective.
2. It does not take into account structural changes of the composition of the tax bases caused by for example demographic factors. A minimum requirement of the expenditure ceiling should be that it is set in such way that the surplus target can be reached without the need to increase tax rates if demographic developments lead to decreasing tax bases.

We will come back to these specific problems, and how they can be dealt with, in section 4.1.

**Table 1: Expenditure ceilings, expenditures subject to ceilings and budget margins 1997-2009**

Percent of GDP and SEK billions

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Expenditure ceiling													
% of GDP*	35.9	34.1	33.5	32.3	32.3	31.9	32.3	32.3	32.5	32.1	31.2	30.7	30.2
Actual expenditures													
% of GDP*	34.6	34.0	33.4	32.0	32.1	31.8	32.2	32.2	32.3				
Ex post budget margin	1.3	0.1	0.1	0.3	0.2	0.1	0.1	0.1	0.2				
Ex ante contingency margins in Budget Bill for (bn SEK):													
1999	24.1	1.1	3.3	6.4	20.4								
2000		2.0	1.0	1.5	3.7	22.6							
2001			1.5	0.6	1.2	9.2	17.2						
2002					3.0	2.0	2.0	7.0					
2003						0.3	0.4	0.6					
2004						0.4	0.1	0.2	13.8	28.5			
2005							2.9	0.2	0.2	1.4	10.0		
2006							2.9	2.4	1.6	2.2	11.9		
2007									5.7	7.8	15.8	17.6	34.9

\*In the first section, the table shows the level of the ceilings and expenditures in % of GDP across time. For reasons of comparability across years, the expenditure ceilings are harmonised to take into account technical adjustments (source ESV). Figures over the 2006-2008 period are consistent with the 2007 Budget Bill. In the second section of the table, the development of the budget margins are shown, as from being set 3 years ahead to the first outcome level ("below the staircase"). For example, when the ceiling for the budget year 2003 was set in the budget for 2001 it was estimated to be 17.2 bn SEK. However, already in the budget for 2003 it the estimated margin was down to 0.4 bn SEK and the outcome as given in the 2004 budget was 0.1 bn SEK which was later revised upwards to 2.9 bn SEK.

### *Respect of the ceilings*

As can be seen from Table 1, the expenditure ceilings have been respected all years since their introduction, that is, ex post expenditures have stayed under the ceilings. What explains this apparent success? Firstly, a lot of political prestige has been invested in the expenditure ceilings. By lending a term from the monetary policy terminology one could say that the ceilings have worked as a “budget anchor”. Secondly, there is a legal requirement in the Budget Act stipulating that the government must act if there is a risk that the expenditures subject to the ceiling exceed the ceiling. Thirdly, the transparency of the ceiling has facilitated an effective surveillance by external institutions and by media leading to an open assessment and debate.

Although the expenditure ceilings have been respected, the system has not been applied fully according to the intentions. The budget margin has not been used as intended and the expenditure ceilings have been circumvented. Let’s have a closer look on this.

### *The budget margin*

The difference between the expenditure subject to the ceiling and the expenditure ceiling – the budget margin – is supposed to be a buffer both against uncertainty in economic developments and against factors that may cause unforeseen increases in expenditure, such as increased sick leave. Table 1 shows the outcome of budget margins for 1997-2005. In 1997 the budget margin was relatively large in relation to the expenditure ceiling. Between 1998 and 2005, however, the outcome of the budget margin was just a fraction of a per cent of the expenditure ceiling<sup>10</sup>. Since 1998 until 2004 the budget forecasts for the current year have usually indicated a risk of an overrun of the expenditure ceiling. That is because the budget margin has been used to new spending reforms, examples being increased expenditures for education and economic security for families and children. In addition, higher than expected expenditures related to absence from work due to illness did also contribute to the low margins.

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<sup>10</sup> The new budget process with relatively small budget margins under the expenditure ceiling implies that expenditure forecasting over the short- and medium-term has become a high priority activity. Forecasting now plays a central role both during the budgeting phase and as a component of the in-year monitoring activities.

### *Tax expenditures and creative accounting*<sup>11</sup>

The Swedish government has some years been able to keep expenditures below the ceilings, by taking measures that clearly are against the intentions of the Budget Act. As is well known also from the EU debate, a drawback with hard budget constraints is that they might encourage the use of creative accounting practices, reducing the transparency in the government budget. On the one hand, such operations give the government some flexibility in the implementation of fiscal rules, on the other hand, if used systematically it erodes the purpose of the rules.

One way to circumvent the expenditure ceiling is to introduce subsidies on the revenue side of the budget. Tax subsidies have been used, although to a limited extent, as a remedy by the Swedish government when the expenditure ceilings have been threatened. In 2005 and 2006 the pure tax reductions defined as expenditures in the National Accounts amounted to about 0.5 per cent of GDP. The introduction of such measures has usually not been used as a substitute for existing expenditure programs but as a substitute for new expenditure reforms. We will come back to this issue in section 4.1 in a discussion of how incentives to such behaviour can be avoided.

As a rule the Budget Act prescribes that the state budget shall include all government revenue and expenditure accounted for in gross terms, although there are some exceptions from this rule. The Parliament may also during some circumstances decide on exceptions from these rules. This has occurred on a few occasions when the Government has been given authority to decide on the disposition of certain revenues from user-fees. This means that related expenses are no longer accounted for in the budget. The effect of these operations on ceiling-restricted expenditures has been relatively small and the proposals have been presented to the Parliament in a transparent way.

Other measures have also been used. For example, the Government has submitted proposals to the Parliament on exceptions from the normal rule that infrastructure investments are financed by appropriations. Instead the Government has, in a few cases, proposed that such investments shall be financed by loans in the National Debt Office. This means that accounting in relation to appropriations and the expenditure ceiling takes place in future years when the loans are amortized and not in the fiscal year to which the investment expenditure

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<sup>11</sup> This section partially draws on Hansson-Brusewitz and Lindh (2005)

relates. Such operations tend to reduce the level of the budget margin in the coming fiscal years.

To cope with the ceilings the Government has most years used its right to set maximum allowed expenditures below the amounts appropriated by the Parliament by using so-called limitation amounts. Because of the carry-over possibility that is applied to most appropriations in the Swedish budgetary system, the limitation amounts have carried forward expenditure from the current year to the next fiscal year. Hence, the limitation amounts have therefore not given rise to a permanent reduction of the expenditure level. They have, however, reduced the level of the budget margin in the next fiscal year and have therefore reduced the scope for expenditure reforms or increased the need for budgetary retrenchments in that year.

Restrictive budget constraints might also increase the temptation to present biased expenditure and revenue forecasts. By strategically manipulating the budget assumptions, the government can abide by the law *ex ante* and then have a list of explanations as to why the targets were missed *ex-post*. This may call for politically independent forecasters (Jonung and Larch, 2006). However, overall there is no empirical support for that the Swedish government has produced biased forecasts (except for a systematic underestimation of open unemployment).<sup>12</sup>

#### *Have the expenditure ceilings prevented pro-cyclical policies?*

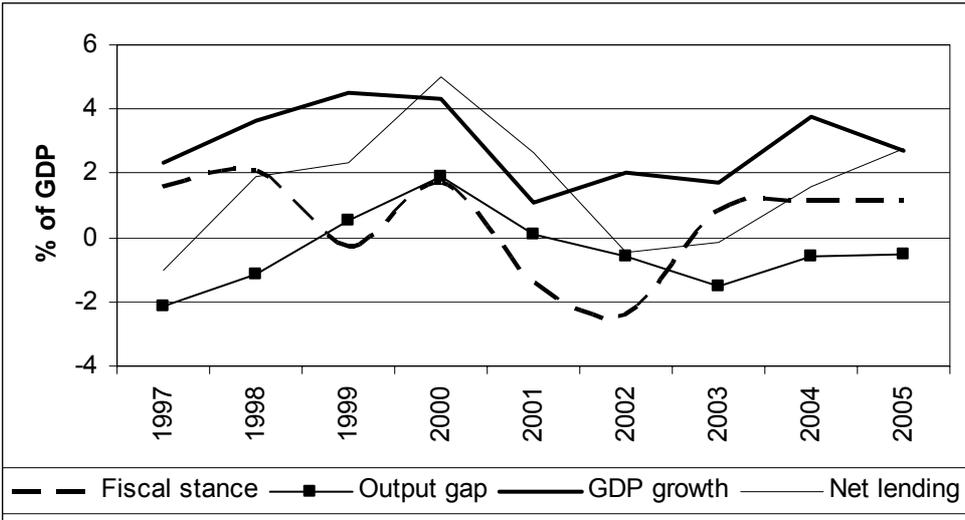
One key purpose with the expenditure ceilings is to limit the risk of pro-cyclical policies on the expenditure side of the budget. To what extent has the application of the expenditure ceiling been successful in this respect?

Figure 2 shows, on the basis of the Commission 2006 Autumn forecast figures, the actual net lending, the fiscal stance (measured as the change in the cyclically-adjusted balance), the estimated output gap and the GDP growth between 1997 and 2005. From a budgetary perspective, it is instructive to take a closer look at this period, by separating out three different time intervals: the favourable 1997-2000 period, the weak 2001-2003 period and the again better 2004-2005 period.

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<sup>12</sup> See the Swedish National Audit Office (2006).

**Figure 2. Output gap and the fiscal stance**



Source: Commission services

Between 1997 and 2000, average GDP growth was 3.7 per cent per year and the output gaps were positive in the end of this period. Net lending increased and was usually better than budgeted as the economic upswing, in particular in 2000, were substantially more powerful than expected, leading to higher revenues and lower expenditures. The central government expenditure to GDP ratio fell by 3.6 per cent of GDP between 1997 and 2000 and reached 32.3 per cent (see Table 1). As several transfers in the Swedish system are indexed to inflation, low inflation mitigated the pressure on the ceilings. This development was also reinforced by the declining unemployment. However, at the same time, the budget margins (reserved for cyclical effects on the budget in “bad times”) were more or less fully used up due to permanent increases in non-cyclical expenditures.

Overall, during this period, the expenditure ceilings provided strict limits for total expenditures pre-venting an extended pro-cyclical policy on the expenditure side of the budget. Significant temporary increases in tax revenue from capital incomes, over and beyond what is captured by the standard budget elasticities used for calculating the CABs, did also contribute to an estimated restrictive fiscal stance during this period.

At the same time, the budget margins were used to new permanent expenditure reforms, leading to some pro-cyclicity and the failure of preserving budget margins for the subsequent weaker period.

The cycle peaked in late 2000. Export demand decreased in 2001 following the dip in the world economy. Stock exchange prices fell dramatically and the IT bubble cracked. GDP

growth was well below potential rates as domestic demand developed weakly. In this unexpected weak economic situation, the general government net lending deteriorated from approximately plus 5 per cent of GDP to just around balance. A significant part of the deterioration was however caused by discretionary fiscal policy measures, non-related to the economic down-turn. The budgetary stance in 2001 and especially in 2002 (the election year) was quite expansionary including both significant tax cuts and increased expenditure. Major expenditure increases were directed towards increased child allowances, education and research and to health care, schools and social services, the latter by increased grants to local governments. Most of this expenditure increases must be seen as permanent measures. Like the pre-ceding period, the budgetary costs for illness and also early retirements grow rapidly.

While the pressure on the ceilings for cyclical reasons was not that hard in 2001, it was more so in 2002 and grew stronger in the two successive years (see Table 1), reflecting the lagged reversal effect on the expenditures due to the low inflation in earlier years and that unemployment increased late in the slowdown. Summing up, due to the earlier “up-eaten” budget margins for 2002 and 2003 there was no room for contra-cyclical fiscal policy. The expansionary policy during these years, although working contra-cyclically, was mainly a result of “permanent” reforms.

During 2004-2005, the economic conditions improved significantly, characterised by high productivity growth and a strong export demand. Labour market conditions, however, did not improve in line with the cycle. The fiscal stance was restrictive over this period mainly explained by positive surprises on the revenue side, in particular due to temporary increases in corporate tax revenues. Disregarding this, the budget improved less given the low tax content of the export-driven growth and weak labour market developments. The pressure of the ceilings remained relatively strong as costs for illness still were high. Additional measures were taken rather on the revenue side, although to a limited extent.

Overall one could conclude that the expenditure ceilings have been successful in preventing an extensive pro-cyclical policy on the expenditure side of the budget. However, the budget margins have to some extent been used in a pro-cyclical way and the ceilings have, although to a limited extent, been circumvented by tax expenditures.

### 3.2 The surplus target

#### *The actual net lending 2000-2005*

As noted above, a problem when assessing to what extent actual budget positions or budget plans are in compliance with the surplus target “on average over the cycle”, is that there is no method within the framework for calibrating “the cycle” and measuring surpluses against it. The lack of an agreed method makes an assessment of compliance unclear. Nor is it clear how “on average” should be understood. The surplus target, as it is defined from 2000, can of course be evaluated *ex post* by calculating the general government sector’s annual net lending for a whole business cycle. If net lending is 2 per cent on average over the cycle, the surplus target has been met. During the period 2000-2005, net lending averaged 1.9 per cent (see Table 2). *Assuming* that this period covers a whole business cycle – an issue we will come back to – one could conclude that the surplus target roughly has been met.

Since 2000 – except for 2001 when the distribution of general government net lending was affected by large transfers between the old-age pension system and the central government due to the change in the pension system – the old-age pension system has accounted for the main surplus in the general public sector. As regards the distribution of net lending between the different sub-sectors, it should also be noted that the local public sector has been able to stick to the local government balance requirement partly due to that it has received additional grants from the central government at the price of a lower central government net lending. Expansionary measures in the central government budget, for example, reduction of labour income taxes, have also contributed to a low (and for some years negative) central government net lending.

**Table 2: General government net lending, 2000-2005**

Per cent of GDP

	2000	2001	2002	2003	2004	2005	Average
General government	<b>5.0%</b>	<b>2.6%</b>	<b>-0.5%</b>	<b>-0.2%</b>	<b>1.6%</b>	<b>2.8%</b>	<b>1.9%</b>
of which							
Central government	2.6%	0.6%	-1.8%	-1.8%	-0.5%	0.4%	-0.1%
Local public sector	0.2%	-0.2%	-0.5%	-0.2%	0.2%	0.5%	0.0%
Old-age pension system	2.2%	2.3%	1.9%	1.9%	1.9%	1.9%	2.0%

Note: In 2001 there was a 155 bn SEK (6.8% of GDP) one-off transfer of funds from the pension system to the central government. The figures in the table have been adjusted for this one-off transfer.

Source: Statistics Sweden and own calculations.

### *The cyclically adjusted budget balance*

Since the period 2000-2005 is not likely to cover an entire business cycle, it is difficult to determine whether the obtained general government net lending during this period has been consistent with the surplus target. A measure of the cyclically adjusted budget balance (the CAB) provides an indicator to which extent the budget position in an individual year is in line with the target. However, in practice there are several methods to be used to calculate the CAB and there is among the relevant institutions in Sweden no consensus on which method to be used; or rather there is no (open) discussion about it at all. The Ministry of Finance (MoF), the National Institute of Economic Research (NIER) and the Riksbank use different methods to calculate the CAB. In Appendix A these different methods are described in detail and we will here only give a brief description of them:

The MoF calculates the CAB with an aggregate GDP-gap and budget elasticity, thus not taking into account composition effects.<sup>13</sup> To estimate the GDP gap for the individual years during the forecast period, the MoF usually assumes that the GDP gap is to be closed in the end of the forecast period (i.e. three years ahead). The budget elasticity is assumed to be 0.7. In principle, the Commission uses the same approach. However, the Commission estimates the output gap using the commonly agreed production function approach in combination with an aggregate budgetary elasticity estimated on the basis of calculations made by the OECD (close to 0.6, see Commission, 2004) .

The Riksbank uses different methods to calculate the CAB but does not publish the results on a regularly basis. Here we will refer only to the method used by the Riksbank in the cooperation within the European System of Central Banks (the ESCB method). The ESCB method takes into account composition effects by de-trending tax- and expenditure bases rather than only the GDP and by making use of several tax- and expenditure elasticities rather than an aggregate budget elasticity. No explicit measure of the GDP-gap is used. The method used by the NIER takes into account composition effects similarly to the ESCB-method (by de-trending the tax bases to GDP-ratios), but makes also use of an explicit measure of the GDP-gap and a measure of the cyclical component of unemployment.

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<sup>13</sup> See Appendix A for an explanation of what is meant by composition effects.

**Table 3: Cyclically adjusted budget balances obtained by different methods**

Per cent of GDP

	2000	2001	2002	2003	2004	2005	Average
ESCB	2,3	0,7	-1,3	0,0	2,4	3,6	1,3
MoF	1,8	2,1	-0,1	1,0	1,9	2,7	1,6
NIER	3,9	2,5	0,4	1,3	2,9	3,6	2,4
COM	3.8	2.3	0.0	0.8	1.9	3.0	2.0

Sources: The Riksbank (October 2006), NIER (Swedish Economy, August 2006), the Ministry of Finance (2007 Budget Bill), European Commission (Autumn forecast 2006).

Table 3 provides, for the years 2000-2005, CABs as obtained by those different methods, including also the most recent figures by the Commission.<sup>14</sup> No matter of the method used, the results indicate that the surplus target has not been respected all years during this period; however, this conclusion should be drawn with the reservation that the CAB, due to estimation problems, usually has a tendency to co-vary with the GDP.<sup>15</sup> The measure used by the MoF indicates that the surplus on average has been slightly undershot during this period, while the indicator used by the NIER states that it has been somewhat overshot. The indicator used by the Riksbank (the ESCB) states that the target on average has been undershot significantly. The Commission measure indicates that the net lending on average has been right on target. As can be seen, the differences in results between the different indicators are substantial for some years. The indicator used by the Riksbank (the ESCB) provides a cyclically adjusted budget balance for 2001-2003 that is about 1 per cent lower than what the other indicators show.<sup>16</sup> If nothing else, this clearly shows the sensitivity to the choice of method used to assess compliance.

#### *Ex ante evaluation of the surplus target and the annual targets for net lending<sup>17</sup>*

The Swedish surplus target, as presently defined, does not preclude the use of an asymmetric fiscal policy. The target can be met even with small surpluses when times are good, but fiscal policy would then have to be contractive during economic downturns. However, such a policy works pro-cyclically and will not contribute to an appropriate fiscal and monetary mix in terms of stabilisation policy. Obviously, the Swedish government aimed to avoid a pro-

<sup>14</sup> The figures obtained by the ESCB-method are not to be regarded as the Riksbank's official ones.

<sup>15</sup> See, for example, Boije (2004) for explanations to why the CAB usually has a tendency to co-vary with the GDP.

<sup>16</sup> In the comparison we have ignored potential differences in the treatment of one-off and temporary effects.

cyclical fiscal policy using the medium-term objective and some measure of the automatic stabilisers, to define yearly targets for the budget balance (see section 2.2). Rather than translating this view into a formal rule determining targets for the annual budget balances, the government instead chose to refer to the use of the nominal expenditure ceiling for the central government as a means of supporting a symmetric fiscal policy. However, the government has deviated from those intentions. The 2005 budget bill (presented in September 2004), for example, provides clear evidence on this (equally apparent in other budget bills). Given the forecast of the automatic stabilisers and the annual budget balance as provided by the Swedish government in the 2005 Budget Bill, Table 4 shows the difference between the expected actual budget balances and those that would have been required if they had to be determined by the medium term objective adjusted for the effect of the automatic stabilisers. As a benchmark, the annual required budget balance can be calculated as:

$$(2) \quad S^{target} = 2 + 0.7 \left( (Y - Y^*) / Y^* \right).$$

where “2” is the surplus target and “0.7” is the budget elasticity used by the government.

**Table 4. A comparison of required and expected budget balance in the 2005 Budget Bill**  
Per cent of GDP

	2004	2005	2006	2007
(1) Budget balance	0.7	0.6	0.4	0.9
(2) GDP gap	-1.3	-0.5	-0.2	0.0
(3) Automatic stabilisers	-0.9	-0.4	-0.1	0.0
(4) Annual target for budget balance (strictly required by the surplus target)	1.1	1.6	1.9	2.0
(5) Annual target actually set up		0.5		
(6) Under/overshooting, (1)–(4)	-0.4	-1.0	-1.5	-1.1

Sources: 2005 Budget Bill, Swedish Ministry of Finance, and own calculations.

In the 2005 Budget Bill the government decided that the target for the annual balance target for 2005 was to be 0.5 per cent of GDP. No targets were set up for the following years. The output gap for 2005 was, at the same time, estimated at -0.5 per cent of GDP. A proper application of the surplus target should instead have resulted in an annual budget balance target of 1.6 per cent for 2005 ( $2 + 0.7(-0.5) = 1.6$ ), provided that no discretionary stabilisation policy measures were (and needed to be) taken. For each year during the relevant forecast

<sup>17</sup> This section follows Boije (2005).

period the predicted net lending would, *ex ante*, have been missed for every year. The government must have been aware that the forecasts of the annual budget balances were not in line with the medium-term objective. The government's *ex-post* defence has been that a labour market upswing has been delayed despite strong GDP growth and that this has motivated some discretionary stabilisation measures which weakened the actual and the cyclically adjusted budget balances. A closer look at the reforms in the latter years indicates, however, that most of them, for example, the reduced labour income taxes, are intended to be permanent and hence cannot be regarded as stabilisation policy measures. One explanation for the *ex-ante* non-adherence to the medium-term objective is rather that the government has circumvented the expenditure ceiling by introducing new tax expenditures, as we argued earlier.<sup>18</sup> A further sign of this is that the government's own forecast in the Budget Bill for 2005 showed that the surplus would not reach 2 per cent of GDP even when the GDP-gap (and also the unemployment gap) was expected to be closed in 2007. One conclusion of this is that the surplus target has not been seen as a binding *ex ante* restriction. However, *ex post*, net lending outcomes have been shown to be better than expected *ex ante*, mainly due to positive surprises on the revenue side of the budget. Overall, this illustrates that there has been a lower degree of political ownership of the surplus objective compared to the expenditure ceilings.

### **3.3 The local government balance requirement**

#### *Fulfilment of balance requirement*

Table 5 shows the local government finances between 1997 and 2005. We have here chosen to report national account figures rather than the net budget results, providing a better link to the overall medium term surplus objective. The national account figures give broadly the same messages and differ normally only marginally to the net budget results. On this basis, over the 2000-2005 period, the average budget balance at the local level has been zero, overall in line with the balance requirement.

However, some qualifications are warranted. First, over the 2001-2003 period, the net lending showed deficits. In 2002, the deficit was even rather substantial considering the requirement of balance. The main reasons behind this development will be discussed further below, suffice to say that initially the main driver behind the deficits was high consumption

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<sup>18</sup> See also Boije (2002 and 2005) and Fischer (2005).

growth and weakening tax bases. This period was followed by a consolidation period where efforts were made to control expenditures while tax rates and central government grants were increased. Clearly, in recent years the situation has improved substantially and also the outlook is beneficial. Overall, the balance requirement did not stop deficits to develop but it has forced an ensuing period of consolidation.

**Table 5. Local government finances**

**Per cent of GDP**

	1997	1998	1999	2000	2001	2002	2003	2004	2005
Revenue	22.1	23.4	23.0	22.2	22.6	23.0	23.4	23.0	23.5
Taxes	15.4	15.4	15.4	15.2	15.7	16.0	16.4	16.3	16.2
Central government grants	4.3	5.5	5.3	5.0	5.0	5.0	5.0	4.7	5.2
Other	2.5	2.5	2.3	2.0	1.9	2.0	2.0	2.0	2.0
Expenditure	22.6	23.2	22.9	22.0	22.8	23.6	23.6	22.8	22.9
Consumption	18.4	19.3	19.1	18.6	19.2	19.9	20.1	19.7	19.7
Other	4.2	3.9	3.8	3.4	3.6	3.7	3.5	3.1	3.2
Net lending	-0.5	0.2	0.1	0.2	-0.2	-0.5	-0.2	0.2	0.5

Source: MoF and own calculations

A second issue to mention is the great disparity of performance across municipalities and County Councils. Firstly, while the municipalities as a whole has shown a surplus over the entire period (even though in 2002-2004 not in line with the 2 per cent of revenue surplus benchmark), County Councils have continuously been in deficit except for 2005 (which was the first time in surplus since 1992!). The main bulk of the local tax increases has come from County Councils. Secondly, while the municipalities as a group has been close to balance or shown surpluses, many individual municipalities have been in financial trouble. For example, in 2003, 40 per cent of the 290 municipalities showed a deficit. However, in 2005 only 17 municipalities and 3 County Councils (of 20) showed deficits (SKL 2006).

*Pro-cyclical policies and implicit bail-out commitment by the central government*

Table 6 shows growth patterns in local government expenditures and revenues over the 2000-2005 period. In 2000 (in fact over the 1998-2000 period), tax bases grew relatively strongly in line with overall growth and employment. At the same time central government transfers increased. Backed by the strong growth in revenues, local government activity expanded and

real consumption increased by 2 per cent on average over the 1998-2002 period. In 2002, consumption growth was particularly strong and the sector recorded a large net lending deficit. Hence, in 2003, a year of weak GDP growth and falling employment in the economy as a whole, measures were taken to curb the growth in consumption while at the same time tax rates were increased by 0.65 percentage points.

**Table 6. Local government finances: revenue and expenditure dynamics**

bn SEK	2000	2001	2002	2003	2004	2005
<b>Taxes and central government grants</b>	420	444	466	494	510	539
Change, %	6.0	5.7	5.0	6.0	3.2	5.7
Tax revenues, adjusted for rules	6.5	5.9	4.4	4.7	4.2	3.5
Tax base	6.3	5.4	4.3	2.4	3.0	3.2
Tax rate changes	0.2	0.5	0.1	2.3	1.1	0.3
Central government grants	4.3	4.8	7.8	11.4	-0.8	16.3
<i>Contribution to income growth</i>	<i>-0.5</i>	<i>-0.2</i>	<i>0.6</i>	<i>1.3</i>	<i>-0.9</i>	<i>2.3</i>
<b>Consumption</b>	411	438	471	495	507	527
Change, %	2.5	6.6	7.5	5.2	2.4	3.9
Price	3.0	4.5	5.4	4.8	1.8	2.3
Volume	-0.5	1.9	2.0	0.4	0.5	1.6
<b>Net lending, % of GDP</b>	0.2	-0.2	-0.5	-0.2	0.2	0.5
<i>GDP growth, nominal</i>	<i>5.8</i>	<i>3.2</i>	<i>3.6</i>	<i>3.7</i>	<i>4.6</i>	<i>3.9</i>

Source: MoF and own calculations

In 2004, the measures to curb the growth in consumption had an increased effect as mirrored by a negative local government employment growth. Even so, tax rates had to be raised again, this time by an additional 0.34 percentage points. The yearly increase in central government grants merely followed nominal GDP growth. Nevertheless, in 2004, the sector showed a surplus again, partially explained by an increased sale of real estate. In the 2005 budget bill, the central government significantly increased the transfers to the communities (also by giving them tax reductions defined as expenditures in the National Accounts) with the aim to support employment. To some extent these “transfers” were instead used to consolidation which reduced the need for further tax increases in the local public sector.

Summing up, thanks to the local government balance requirement, the financial situation of the local governments as a whole seems to be under control. However, the balance requirement has not prevented pro-cyclical budget policies. When income growth has been favourably for cyclical reasons, expenditures have been increased. Consequently, when economic conditions thereafter have deteriorated, it has been necessary to cut consumption (and employment) and increase taxes. In addition, there is evidence of strategic budgeting

whereby local governments have handled the ex ante dimension of the balance requirement by showing up overoptimistic budgets (SOU 2001:76), thereby partially avoiding necessary expenditure cuts or tax increases.

Given the key role of local governments to provide general public services (also regulated by law) it is clear that financial problems quickly feed through to the central government. As central government only allocates annual grants to the municipalities on a discretionary basis, as opposed to following an automatic index formula, questions have been raised on the impact for effective planning at local level. The purpose with the discretionary decisions is to put pressure on local authorities to plan cautiously. On the other hand it makes planning more difficult at local level while in reality the general transfers have been raised to cover for increases in prices and wages. In addition, as pointed out earlier, the central government has supported local governments in times of financial pressure. This implicit bail-out commitment by the central government creates incentives for the local governments to set spending at the limit, leading to expansionary pro-cyclical policies in good times, when revenue growth is healthy, and to rely on additional central government transfers in bad times. This problem of moral hazard may call for a tighter rule but, as in the case of EU, there is a limit to the restrictions that higher levels of governments can impose on lower levels while at the same time respecting their independence<sup>19</sup>. In section 5.3 we will come back to these issues.

## **4. Priorities for reform**

### **4.1 The expenditure ceilings**

#### *Principles for determining the level of the expenditure ceiling*

As we argued in section 3.1 there are two main drawbacks by letting the expenditure ceiling be determined as a fixed share of potential nominal GDP.<sup>20</sup> Firstly, there is no clear link between the expenditure ceiling and the medium-term surplus target, which also means that the expenditure ceiling can be circumvented, once it has been set, by replacing new expenditures with analogous tax reductions. Secondly, it does not take into account structural

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<sup>19</sup> In the EU, the no-bail-out clause included in the Treaty is aimed at mitigating this type of moral hazard.

<sup>20</sup> According to the new government's assessment, the expenditure ceiling as percentage of potential GDP will decrease somewhat over the next few years. However, they still link the expenditure ceiling to potential GDP.

changes of the tax bases caused by for example demographic factors. How can those drawbacks be avoided?

Let us assume that the municipalities stick to the local government balance requirement and that the surplus is obtained in the old-age pension system. Given this, a reasonable minimum requirement is that the expenditure ceiling is set in such away that it contributes to that the central government's cyclically adjusted budget balance is close to balance each year. The first drawback, as mentioned above, can then be avoided by letting the expenditure ceiling be determined by predicted tax revenue ( $R$ ) adjusted for the cycle.<sup>21</sup> This can formally be expressed as<sup>22</sup>

$$(3) \quad E_{t+3}^{Cap} = R_{t+3}(Y_{t+3}) * \frac{Y_{t+3}^*}{Y_{t+3}} + BM_{t+3}$$

where BM is the budget margin.

If the GDP-gap in the forecast of the MoF always is assumed to be closed t+3 (which, so far, often has been the case), no adjustment for the cycle is necessary. Such a formulation of the expenditure ceiling would eliminate incentives to circumvent the expenditure ceiling by *planned* tax reductions/tax expenditures. Of course, it would not prevent the ceiling to be circumvented by *non-planned* tax reductions, if it is not decided that such tax decreases should lead to a downward reduction of the ceiling. However, then some would argue that it also should be possible to raise taxes to be able to increase expenditures which of course would undermine such a rule. Another, solution would be to adjust the ceiling in case new tax expenditures are introduced. See the discussion below.

The second drawback could be avoided by extending this “rule”, letting the ceiling be determined by a demographically contingent forecast of tax revenue ( $R$ ):

$$(4) \quad E_{t+3}^{Cap} = R_{t+3}(Y_{t+3}, D) * \frac{Y_{t+3}^*}{Y_{t+3}} + BM_{t+3}$$

where  $D$  is a vector of demographic variables. Such a formulation of the expenditure ceiling “guarantees” that tax rates do not have to be adjusted due to demographic factors.

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<sup>21</sup> We have here ignored that the ceiling doesn't cover all central government expenditure.

<sup>22</sup> We have here ignored that the expenditure under the ceiling is accounted for in cash terms while the net lending target is defined in national account terms.

The experience is that the local governments have been able to stick to the local government balance requirement partly due to that they have received additional grants from the central government. Given this, one could think about including a “bail out margin” under the expenditure ceiling. However, this would create incentives for the municipalities not to stick to the balance requirement.

### *Integrating tax expenditures into the budget process*<sup>23</sup>

In section 3.1 we argued that the expenditure ceilings have been circumvented by tax measures taken that in the National Accounts are defined as expenditures. However, there are also other types of tax expenditures. In Sweden, tax expenditure calculations have been presented in an appendix to the annual spring budget proposals since the spring of 1996. The spending departments also indicate in the autumn budget bill, based on the calculations in the spring budget bill, the tax expenditures that are linked to the expenditure area in question and if new tax expenditures will arise on account of the proposals presented in the budget.

In this reporting, a tax benefit or tax expenditure is the result of levying tax at a reduced rate in relation to a particular tax norm. In order to identify a tax expenditure, therefore, the actual tax rate charged (the existing tax system) must be compared with the chosen norm. The norm that is used for the Swedish government’s tax expenditure calculations is based primarily on the principle of uniform taxation of economic activities of similar types.<sup>24</sup> This norm means, for example, that all types of income shall be taxed according to uniform principles, and that all consumption of goods and services shall be subject to the same level of VAT. A departure from a uniform tax charge is perceived to be a tax benefit if a particular category of tax-payers enjoys some form of tax relief in relation to the norm<sup>25</sup>.

These tax expenditures are reported by tax area and, in those cases where the tax expenditure is obviously linked to an expenditure area, to that expenditure area. For example, carbon dioxide tax is not levied on domestic flights. The civil aviation sector thus enjoys a tax

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<sup>23</sup> This section follows Boije (2002).

<sup>24</sup> The principle of uniformity was one of the keystones of the 1990/91 tax reform.

<sup>25</sup> A couple of examples can serve to illustrate this point: (i) The standard rate of VAT in Sweden is assumed to be 25 per cent. The reduction in VAT on food from 25 per cent to 12 per cent is therefore treated as a tax benefit in the government’s tax expenditure calculations. (ii) According to the norm, all income from capital shall be taxed at the same general rate of 30 per cent. However, income from private pension schemes is taxed at the lower rate of 15 per cent. Individuals who save through such private pension schemes thus enjoy a tax benefit.

benefit, which is stated under the tax area “Excise duties” and under expenditure area 22 (Transport and communications).

The tax expenditure reporting currently has no formal importance in the budget process. In contrast to spending proposals, tax reduction proposals are neither subject to a limit nor to the same type of careful scrutiny within the budget process as spending proposals. The current purpose of the government’s tax expenditure report is instead to clarify departures, if any, from the principle of uniformity applied to the tax system; another is to highlight any tax benefits that are directly comparable to transfer payments on the expenditure side of the budget.

One proposal that has been discussed, in the light of the latter purpose of the tax expenditure reporting, is to integrate the tax expenditures in the budget process: tax reductions that can be regarded as benefits, i.e. support that could equally well have taken the form of a transfer payment, should always trigger a reduction of the expenditure ceiling. Such a budget rule would entirely remove any incentive to circumvent the expenditure ceiling by proposing tax expenditures instead of new transfers. A rule for the expenditure ceiling, like equation (3), would automatically take care of this. However, this wouldn’t mean that tax expenditure calculations are unnecessary to report. On the contrary, a transparent reporting of tax expenditures and their purpose would promote a more informed discussion of the revenue side of the budget and fiscal policy priorities.<sup>26</sup> Our recommendation is therefore that the government fully reports the purpose of all tax expenditures, which is not the case today.

#### *How to protect the budgeting margin to be used for new expenditure reforms?*

The analyses in section 3.1 showed that the expenditure ceilings have worked well overall to restrict central government expenditures, also leading to a gradual decline in the share of expenditures to GDP. However, the budget margins, which should mainly cover for *unforeseen* swings in expenditures, have to a large extent been used for permanent expenditure reforms. This has gradually eroded the margins; often well before the actual budget year. The small budget margins have promoted the use of creative accounting measures and resulted in new tax expenditures. Even if the appropriate size and the use of the

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<sup>26</sup> It should be noted that there are some technical problems with calculating tax expenditures and also when linking them to a relevant expenditure area. See Boije (2002).

budget margin are not regulated by law, it is our interpretation that the system has not been applied as intended.

The key problem seems to be the lack of clear principles for how the budget margins are to be used. The committee dealing with stabilisation policy issues in case of a Swedish EMU membership (see the report SOU 2002:16) discussed these issues. They argued that the margins, *ex ante*, must be sufficiently large to handle the general uncertainty in forecasts as well as the automatic stabilisers and the possible need for additional discretionary stabilisation policy measures. They also argued that there should be two separate margins; a “cyclical margin” and a “planning margin”. The “cyclical margin” is to be used for automatic stabilisers and discretionary stabilisation policy measures including labour market measures. The “planning margin” is to be used for expenditure reforms. This margin should also encompass structural changes in expenditures, for example related to absenteeism from work due to illness. It could therefore also be negative, that is, require expenditure reductions.

There is of course a trade off between allowing enough degrees of freedom for policy makers while at the same time supporting transparency and accountability. Nevertheless, dividing the budget margin in a cyclical part and planning part would clearly be a step in the right direction, since it in a transparent way would clarify the need of a cyclical buffer and the existing room for permanent reforms. To avoid an asymmetric use of the cyclical margin, it could be formulated in terms of a “buffer fund” where cyclically motivated withdrawals of the fund should be compensated for in a better phase of the cycle.

#### **4.2 The surplus target<sup>27</sup>**

As we illustrated in section 3.2, the medium term surplus target has not been seen as a binding *ex ante* restriction on fiscal policy. The application has not prevented the use of a pro-cyclical policy, for example that the expenditure ceiling is circumvented by the introduction of new tax expenditures when revenues grow faster than expected. Due to this, one may ask how the application of the target can be improved. It seems particularly important to translate the medium-term target into proper *annual* restrictions on the fiscal policy. As stated by the government (see the earlier quotation in section 3.2), this was also the original ambition when the surplus target was introduced, but obviously the annual targets set up have not been consistent with the original ambition.

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<sup>27</sup> This section follows Boije (2005).

Given a predetermined medium-term target, the appropriate targets for the annual actual budget balance should be set with reference to the cyclical state of the economy. This can roughly be done through some measure of the GDP-gap, or alternatively by identifying the type of shock that hits the economy, possibly also taking into account the composition of different tax- and expenditure bases. To simplify things, we have here chosen to discuss the appropriate link between the medium term objective and the annual net lending targets only in terms of the GDP-gap. The principle will be the same using some of the other mentioned approaches. The appropriate link can then formally be expressed as

$$(5) \quad b = \theta + \beta \left( \frac{Y - Y^*}{Y^*} \right) \text{ where } \beta > 0.$$

where  $b$  is the actual budget balance,  $\beta$  is the budget elasticity assumed to capture the effects on the budget balance of the automatic stabilisers (but not discretionary measures),  $(Y - Y^*)$  is the output gap and  $\theta$  denotes the medium-term objective.<sup>28</sup> That is, the actual budget balance must be equal to the medium-term objective plus the budget elasticity times the output gap. This equation is just a generalisation of equation (2). The equation thus indicates what each year's ideal budget balance should be to satisfy the medium-term objective and avoid a pro-cyclical fiscal policy. Of course, this rule is equivalent to stating that the cyclically adjusted budget balance, as measured by the MoF (see Appendix A), *each year* should match the medium-term objective. However, pedagogic and budget transparency reasons as well as communication aspects speak in favour of translating the medium-term objective into yearly targets for the annual actual budget balance, rather than into a target for the cyclically adjusted budget balance.<sup>29</sup>

As the rule is defined by expression (5), fiscal stabilisation depends entirely on the symmetric work of the automatic stabilisers (under the assumption that the budget elasticity only captures the effects of the automatic stabilisers). Thus, it does not admit discretionary fiscal stabilisation policy. In case of large real disturbances (leading to substantial GDP-gaps) not handled by monetary policy and the automatic stabilisers, it might be necessary to take some fiscal stabilisation policy measures. In that case, one should accept temporary deviations

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<sup>28</sup> In practice, it can be hard to econometrically distinguish between automatic stabilisers and discretionary stabilisation policy measures.

<sup>29</sup> Worth noting is that Chile, some years ago, introduced a medium-term objective defined directly in terms of a cyclically adjusted budget balance and that the experiences so far are very good. It should, however, be noticed that a politically independent body, in practice, determines the cyclically adjusted budget balance.

from the medium-term objective (in line with the argumentation in section 2.2). Such measures, however, must be accounted for in a transparent way.<sup>30</sup>

Some might argue that a budget rule based on an uncertain and unobservable variable such as the output gap should be avoided. This does also apply for our suggested principle for how the expenditure ceiling can be determined unless the GDP-gap always is assumed to be closed  $t+3$  (see section 4.1). However, solving the asymmetry problem by applying budget principles with no link at all to the cyclical state of the economy seems to be difficult. The alternative approach based on identifying the type of chock that hits the economy and taking into account composition effects would also entail a great deal of uncertainty. If governments have to adhere to a properly defined medium-term objective at the same time as they should avoid a pro-cyclical fiscal policy, they obviously need to have some idea about the economy's cyclical position. However, since such measures entail uncertainty, the rule should not be too strict. Perhaps one should therefore talk about these rules as “budget principles” or “budget devices” rather than strict rules.<sup>31</sup> The value of such principles lies in the first place in their use as a preventive tool. If they are well established, understood by the public and properly evaluated – perhaps by a politically independent fiscal body – they should serve in the first place to exert “peer pressure”.

#### *How to treat slippages from the target*

There are some other practical issues connected with a rule requiring precise targets for the actual budget balance, besides that of the uncertainty of measuring the cyclical position. Even if the government does everything it can to adhere to the rule, there might be circumstances beyond its control that lead to the yearly required budget balance being missed. One such situation arises if the outcome of the output gap (or the identified ex post chock) deviates from the predicted gap (or the ex ante chock). This must, of course, be taken into account in the ex post evaluation of target fulfilment. Provided the forecasts are unbiased, the calculations are transparent and there is an open evaluation of target fulfilment, such an ex post clause should not provide scope for undetected manipulation of the rule.

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<sup>30</sup> The rule could be extended by taking into account composition effects and the need of discretionary stabilisation policy measures. See Boije (2005).

<sup>31</sup> In the monetary policy literature a rule determines for example the appropriate choice of the key interest rate given a specific objective, where it is assumed that the key interest rate is fully controllable by the central bank. This applies for example to the Taylor rule. In the fiscal policy literature the term rule is used in a broader sense as it does not only refer to a rule for discretionary fiscal policy but also to restrictions on fiscal policy in general, such as expenditure ceilings.

Another relevant question is how the rule should be applied if, due to forecasting errors, the government during a boom runs higher surpluses than the rule requires. Some would argue that the government should then be allowed to run somewhat lower surpluses than required by the rule during the following economic downturn. However, since the forecasts for the coming years are also uncertain, such a strategy would probably not be optimal. Instead, it would increase the risk of the target not being met at all. If forecasts are unbiased, positive and negative random forecasting errors will cancel out over time. Thus, unconscious forecasting errors that cannot be compensated for during the ongoing budget year should be treated as bygones.

A relevant question in this context is what the government should be required to do if it *consciously* deviates from the annual net lending target and the medium-term surplus objective; a question that also has been in focus within the discussion of the SGP. Within the new SGP, a clear difference is made as to what extent slippage is due to economic events outside the control of the government and to what extent it is due to policy while in the latter case there is really no excuse. The Council has also agreed that EMU countries that have not reached close-to-balance positions should take measures that annually improve the structural budget balance with 0.5 per cent of GDP.<sup>32</sup> A similar adjustment factor could, in principle, be included in a rule determining annual targets for the net lending. However, under certain circumstances it may contribute to a pro-cyclical fiscal policy. This, however, seems to be a small cost compared to the cost of unsustainable public finances. Furthermore, in the Swedish case with a national independent monetary policy, this potential cost of pro-cyclicality could, in principle, be limited by an accommodating monetary policy (depending, of course, on the other monetary policy considerations).

#### *On the choice of the optimal level of the surplus target*

As indicated in section 2, one reason given for maintaining a 2 per cent over the cycle surplus is the need to run surpluses up until 2015 when the impact of ageing becomes more severe. However, there is no precise argumentation for why 2 per cent is more optimal than other options. Anecdotal evidence suggest that when the objective was set it was agreed that a surplus was necessary but that the precise figure of 2 per cent rather reflects that it is

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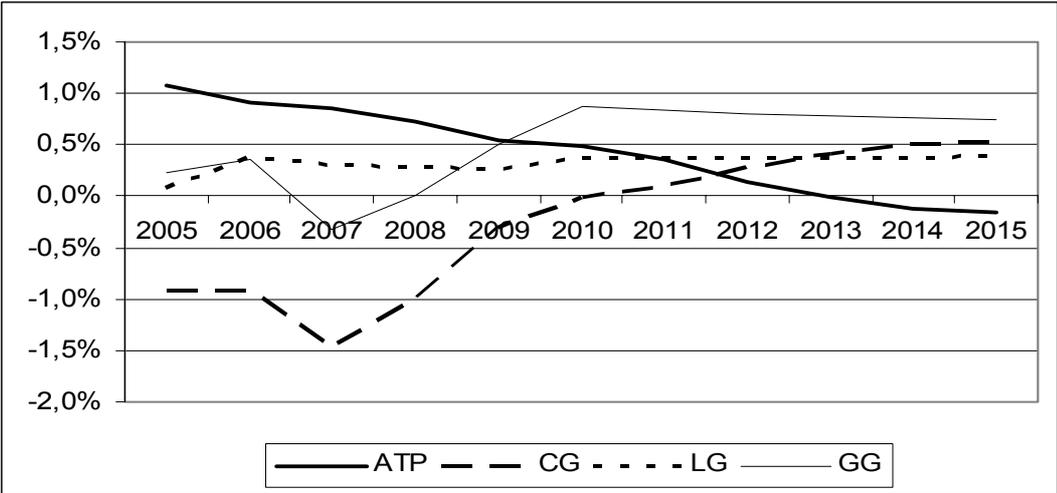
<sup>32</sup> The structural budget balance is here defined as the cyclically adjusted budget balance, net of temporary effects and one-off measures.

consistent with balance at central and local government level and a 2 per cent surplus in the pension system. However, some developments require a second look at the chosen level.

Firstly, following a Eurostat decision, funded pensions schemes have, from March 2007, to be classified outside the general government sector in the national accounts. For Sweden this means that the premium pension fund part of the pension system will not contribute anymore to the general government surplus. The premium pension fund, which is currently building up, will run annual surpluses of about 1 to 1.2 per cent of GDP. One option then would be to keep the "ambition constant" and aim for a pure "technical revision" of the surplus objective implying a downward revision from 2 per cent to about 1 per cent of GDP. Another option would be simply to keep the 2 per cent objective which implicitly would entail an "increased ambition". A third option, would be to keep the relevant surplus figure defined in terms of ESA 95 net lending plus the net lending in the premium pension fund of the pension system, although it probably would create some confusion.

The issue will become slightly more complex when the impact of ageing gradually starts to feed through into net lending outcomes. Figure 3 below shows the Swedish budget position between 2005 and 2015 as predicted in the 2005 Swedish Convergence Programme (the premium pension fund part has been netted out so only the pay-as-you-go part (ATP) is in the general government). It is implicitly assumed in the figure that for the years up to 2015 the surplus objective is continuously achieved via a residual on the revenue side.

**Figure 3. Budget balances in sectors 2005-2015.**



Source: Swedish convergence programme 2005 and own calculations

The net lending in the pension system is expected to go from almost +1 per cent of GDP currently to a deficit of 0.2 per cent in 2015. From this follows that if the current surplus objective is left intact up to 2015, a substantial tightening of the central government balance is required to compensate. This carries the implicit risk of having to run pro-cyclical policies. Also, if such a tightening of the central government budget to compensate does not take place when needed, a time-inconsistency problem may build up over time leading to a loss of credibility of the framework. This gradual weakening in the ATP net lending is an argument for defining the surplus objective only in terms of net lending for the central government and the local public sector (whatever the level of “ambition” chosen). The 1999 pension reform made in principle the pension system actuarially neutral which is an argument for not compensating the gradual weakening in the pension system via a tightening stance in the central government budget.

#### **4.3 The local government balance requirement**

As was shown in section 3.3, the local government balance requirement has on the one hand worked well in keeping overall local government finances at a good track while it has not been able to prevent a pro-cyclical policy in terms of expansionary expenditure reforms in good times compensated by necessary tax increases in bad times. There are also signs of strategic behaviour by local governments, being over-optimistic ex ante counting on additional support from the central government ex post. This calls for improvements of the framework. However, measures to deal with these problems must be weighed against the tradition of local government independence. In any case, reforms with a view to reduce the incentives for pro-cyclical policies seem to be warranted.

In the debate a number of proposals going in this direction have already been presented. In the government report SOU 2001:76 on local government finances it was proposed that 4-year plans should be made covering the political mandate period and that the budget should be balanced on average over this period but with a possibility to budget for deficits in specific years.<sup>33</sup> In the same report, it was also proposed that it should be easier to

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<sup>33</sup> The local government political cycle is the same as for central government with elections on the same day.

refer to "special reasons" in order to allow for planned budget deficits, examples being large restructuring costs or short term capital losses.

Another governmental committee (see the report SOU 2002:16) however did not agree that local governments should be allowed to budget for deficits, except when substantial solidity had been build up as cyclical buffer. They proposed that cyclical swings in local government tax revenues could be smoothed by the central government, for example by letting the local government tax base be calculated on a five year average or by letting the size of the government grants be cyclically determined.<sup>34</sup>

The central organisation for local governments (Sveriges Kommuner och Landsting, SKL) argues for reforms that make it easier for local governments to plan in the medium term and would like to see indexing of central government grants (SKL, 2006). Also SOU 2002:16 saw the discretionary decision process on central grants as a problem for planning at local level and saw also a risk that the discretionary procedure leads to repetitive negotiations between local and central authorities that in the end would risk diluting the financial responsibility at local level.

Overall, we would argue that changes that booth smoothes revenues at local level and improve the medium term planning capacity should be looked at favourably. It would also seem useful to increase the incentives for good behaviour in good times by making it easier than it is today to set up "buffer funds" via surpluses that could be used to budget for deficits in difficult cyclical conditions.

## **5. Summary and conclusions**

It is our view that the rules-based budgetary framework in Sweden has kept its beauty and that it has served well in providing a culture of budgetary prudence and medium-term planning. The overall assessment of the Swedish national rules-based framework must be on a positive note given that:

- The expenditure ceilings have been met in all years since their introduction.
- The surplus objective has, depending on how compliance is assessed, been met ex post.

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<sup>34</sup> In Sweden, the local taxes are in a first step collected by the central government but is in a second step distributed to the local authorities.

- The local government budget balances have been restored.
- Sweden is one of few EU-member countries that with a margin fully comply with the regulations in the SGP.

One reason to its success is the critical surveillance of several national institutions and the relatively extensive media coverage. The memory of the fiscal crisis in the early 1990s has also contributed to this.

However, our assessment point at some shortcomings of the framework. A common problem in all three parts of the framework has, contrary to intentions, been the difficulty of fully avoiding pro-cyclical expansionary policies in good times, leading to pressure for pro-cyclical tightening policies in bad times. In particular:

- The expenditure ceilings have been circumvented by the use of tax expenditures when tax revenue has been favourable and by other accounting measures, not in line with the intentions of the Swedish Budget Act.
- The budget margin has been used for permanent expenditure increases (that have at occasions been pro-cyclical).
- To some extent, depending on how compliance is assessed, the surplus objective has not been met ex ante for a number of years.
- The expenditure ceiling proposals do not seem to have been compatible with the surplus objective given the revenue forecasts.
- The local government balance requirement has been under pressure in weak cyclical conditions forcing higher central government grants and pro-cyclical tax increases. At the same time, there has been little pressure in good times not to use cyclically high revenues for permanent expenditure increases.
- The motive for having the surplus target set to 2 per cent and for including the net lending of the old-age pension system is unclear.

More generally, we have argued that the current framework gives to much space for arbitrary interpretations of the rules and that there are no clear guidelines for assessment. This may, to some extent, reduce the credibility of the framework. However, we acknowledge that there is a delicate balance problem; while rules, principles and guidelines should be clear and promote a sustainable and non pro-cyclical fiscal policy, they should not over identify fiscal policy but

leave enough degrees of freedom for policy makers to deal with the uncertainty of reality in real time. Having said this, we propose the following seven avenues for improvement:

#### Expenditure ceiling

1. Clarify the principles for how the level of the expenditure ceilings is determined and include a direct link to the surplus objective. This requires a clearer link to the cyclical state of the economy and to the demographic development.
2. Integrate more formally tax expenditure calculations in the budget process. The minimum requirement is that the purposes of all tax expenditures are reported.
3. Make clear the principles for how the budget margins are to be set and used.

#### Surplus objective

4. Clarify how the 2 per cent surplus objective is to be assessed and provide principles for action in case of slippages. A more transparent link between the medium-term surplus objective and the annual net lending targets, via some measure of the cyclical state of the economy, is warranted. The cyclical state of the economy could roughly be estimated by the GDP-gap or by more sophisticated methods used to identify the type of shock that hits the economy (including also the composition of different tax- and expenditure bases).
5. Strengthen credibility by explaining more clearly what the appropriate level is and what purpose it is to serve, possibly by relating it explicitly to the budgetary impact of the ageing of the population.
6. Think about reformulating the medium-term surplus target in terms of only central and local government net lending (thus, excluding, the net lending in the old-age pension system).

#### Local government balance requirement

7. Reduce incentives for pro-cyclical policies by reformulating the balance requirement or by smoothing revenues over the cycle.

Some of our suggestions require that a measure of the cyclical position of the economy explicitly is included in the rules, which perhaps some would think is arguable due to the significant measurement problems involved. However, we have argued that applying budget principles with no link at all to the cyclical state of the economy seems to be unwarranted if

governments have to adhere to a properly defined medium-term objective at the same time as they should avoid a pro-cyclical fiscal policy; they obviously then need to have some idea about the economy's cyclical position. However, since measures of the cyclical state of the economy entail large uncertainty, the rules should not be too strict, or should rather be regarded as "budget principles" or "budget devices".

The discussion on the Swedish framework clearly shares many aspects of the debate at EU level on the experience with the SGP rules.<sup>35</sup> However, the application and compliance record at EU level is weak compared to the experience of the Swedish national rules. One conclusion of this is that national owned rules, surveillance by several national institutions and transparent procedures are very helpful for compliance with the SGP rules, which also has been recognised within the discussion of the SGP.

The Swedish budgetary framework has been somewhat of "a baby" of the Social Democratic 1994-2006 government. The new elected right wing government has acknowledged its apparent success and stands behind it. However, it has signalled an intention to have an overview of the framework with possible changes presented in the 2007 Spring budget. Hopefully, this paper can function as an input with some ideas for this process. We also hope that it can provide some insights for countries that still are in the position to introduce or develop its national fiscal rules.

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<sup>35</sup> See, for example, Fischer (2004).

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## Appendix A: Indicators of the CAB used in Sweden<sup>36</sup>

This appendix describes the methods that have been used to calculate the CAB:s as reported in Table 3.

The MoF calculates the CAB on the basis of an estimated output gap and an “aggregated” budget elasticity that is assumed to be 0.7. That means that if the (estimated) output gap changes by 1 percentage point, the cyclical component of net lending as a share of GDP is judged to change by 0.7 percentage points. To estimate the GDP gap for the individual years during the forecast period, the MoF usually assumes that the GDP gap is to be closed in the end of the forecast period (i.e. three years ahead). The formula used for calculating the CAB (as a percentage of GDP) is:<sup>37</sup>

$$(A:1) \quad \frac{S^*}{Y} = \frac{S}{Y} - \hat{\beta} \frac{Y - Y^*}{Y^*}$$

where  $S$  is the actual budget balance,  $S^*$  is the CAB,  $Y$  is GDP,  $Y^*$  is potential GDP and  $(Y - Y^*)/Y^*$  is the output gap expressed in per cent of potential GDP. The aggregate budget elasticity  $\hat{\beta}$  (thus, assessed to be 0.7) is *assumed* to catch the impact of the automatic stabilisers but not the effect on net lending of temporary stabilisation policy measures.<sup>38</sup>

The ESCB method decomposes several tax and expenditure bases into a trend and a cyclical part (using a HP filter).<sup>39</sup> The cyclical component of each tax and expenditure is obtained by multiplying the “gap” that the decomposition results in by an estimated elasticity that shows how the tax or expenditure varies with each “gap”. For instance, if actual private consumption, which is the principal base for indirect taxes (e.g. VAT), is above the estimated trend value in a particular year, this is interpreted to mean that the revenue from indirect taxes in that year is higher than “normal”, i.e. that there is a positive “cyclical component” in the indirect taxes. Consequently, this method does not estimate the CAB on the basis of an

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<sup>36</sup> This section follows Boije and Fischer (2006).

<sup>37</sup> When this equation is used in practice, the output gap is expressed in real terms while the actual budget balance and the CAB is expressed as a share of *nominal* GDP.

<sup>38</sup> In principle, the Commission uses the same approach. However, the Commission estimates the output gap using the commonly agreed production function approach in combination with an aggregated budgetary elasticity estimated on the basis of calculations made by the OECD, which is somewhat lower than 0.6 (see Commission, 2004).

<sup>39</sup> This method can not be regarded to be the Riksbank’s official method.

assessment of the aggregate output gap. The formula used for calculating the CAB (in levels) is:<sup>40</sup>

$$(A:2) \quad S^* = S - \sum_i T_i \varepsilon_{T_i, B_i} \frac{B_i - B_i^*}{B_i^*} + E_U \varepsilon_{E_U, U} \left( \frac{U - U^*}{U^*} \right)$$

where  $T_i$  represents a special tax category (for example, indirect tax revenue),  $B_i$  is the  $i$ :th tax base (for example, private consumption),  $B_i^*$  is the trend value of the  $i$ :th tax base (obtained by a HP-filter),  $\varepsilon_{T_i, B_i}$  is the  $i$ :th tax elasticity (measuring, for example, how indirect taxes respond to a change in private consumption),  $E_U$  is unemployment-related expenditure, the elasticity  $\varepsilon_{E_U, U}$  measures how unemployment-related expenditure respond to a change in unemployment,  $U$  is the number of unemployed and  $U^*$  is its (HP-filtered) trend value.<sup>41</sup>

One advantage of this method compared with the “aggregated” method based on an output gap and aggregated budget elasticity is that, at least in some measure, it takes account of composition effects, i.e. that different kinds of macroeconomic shocks can affect the tax and expenditure bases in different ways and that tax bases are not necessarily linearly related to GDP. The benefit of the “aggregated” method, on the other hand, is that it is somewhat more transparent and the results are directly related to a total measure of economic conditions.

The NIER adjusts the actual net lending for (i) the difference between the actual output and the estimated potential output (the output gap), (ii) the difference between the actual unemployment rate and the estimated equilibrium unemployment rate (the unemployment gap) and (iii) the deviation of principal tax bases from their normal proportion of GDP. The equilibrium base-to-GDP ratios are estimated with help of an HP filter. Tax revenues are assumed to be proportional to their respective tax bases, thus, the tax elasticity is *assumed* to be 1 for all taxes (in contrast to the ESCB method where they are allowed to differ from 1). Other revenue is assumed to be proportional to GDP. Unemployment expenditure is assumed to be proportional to unemployment. Other expenditure, such as public consumption, is assumed to be proportional to nominal potential GDP and thus independent of the cyclical state of the economy. The formula used for calculating the CAB is:<sup>42</sup>

<sup>40</sup> See Bouthevillain (2001) et al for a derivation of this formula.

<sup>41</sup> For simplicity, the same index has been used for the tax and its base.

<sup>42</sup> See Braconier and Forsfält (2004) for a derivation of this formula.

$$(A:3) \quad S^* = S - \sum_i \frac{T_i}{B_i} \left( Y \left( \frac{B_i}{Y} \right) - Y^* \left( \frac{B_i}{Y} \right)^* \right) + \frac{E_U}{U} (U - U^*)$$

This formula states that the difference between the actual budget balance and the CAB depends on the output gap, the unemployment gap and the deviations of base-to-GDP ratios from their equilibrium levels (the composition effect). Worth noting is that this formula, under some conditions, is similar to equation (A:2). In defining the CAB, the NIER makes use of the trend values of the base-to-GDP ratios while the Riksbank (or ESCB) uses the trend values of the bases in levels (thus not related to GDP). The trend value of the base divided by the trend value of GDP is not necessarily the same as the trend value of the base-to-GDP-ratio. Let us assume, however, that this is the case (under most circumstances the discrepancies should be small). The equation (A:3) can then be written as

$$(A:4) \quad S^* = S - \sum_i T_i \frac{B_i - B_i^*}{B_i} + E_U \left( \frac{U - U^*}{U} \right).$$

Under this assumption, the only difference between equations (A:2) and (A:3) is that equation (A:2) includes elasticities allowed to differ from 1 and that the trend values of  $B$  and  $U$  show up in the denominators instead of the actual values. For small tax base and unemployment gaps and for elasticities close to one, these differences should have only a minor impact on the level of the estimated CAB. The NIER's practical implementation, however, gives rise to some other discrepancies which may induce quite large differences in results. Equation (A:3) explicitly makes use of an estimated output gap, while equation (A:2) does not. Furthermore, the NIER applies several sophisticated models and indicators to estimate the unemployment gap, not just an HP filter (the same applies to the estimation of the output gap).

## **Appendix B. Some key features of local government finances**

Local government in Sweden consists of 290 municipalities and 20 county councils. By long tradition they enjoy a strong political and financial independence. While independent, local governments are nevertheless required by law to provide a large part of general public services. For example, municipalities are responsible for the provision of social services including child care, environmental and health protection as well as primary and secondary education. The county councils mainly deal with healthcare. Municipalities and county councils share responsibility for public transport. The municipalities account for 70% of local government expenditure while the county councils cover the remaining 30%. Overall, local government is responsible for roughly 40% of general government primary expenditures and 70% of general government investment and consumption. More than half of the costs are for personnel and local governments employ about 25% of the employees in the economy.

For its financing local governments have the right to levy direct tax. Tax revenues cover roughly two-thirds of total revenues. They are raised through a flat rate tax on income, that is, salaries, unemployment and illness benefits and pensions. The average municipality tax is about 21% and the average county council tax 10.5% making the average local tax about 31.5% (varying across local governments, in 2006 the highest local tax rate is 34.3% while the lowest was 28.9%). Local governments also raise income through fees for some of the services provided.

Most of the remaining revenues consist of general grants and grants directed towards a specific use. The level of the grants does not follow any indexation rule but is decided each year on a discretionary basis. As from 2005, general grants are provided within an “equalisation” system administered by the central government. This consists of an “income equalisation” system and a “cost equalisation” system. On the income side, local governments with low income per capita are compensated by central government general grants (there is also a small co-financing by local governments with very high income per capita). On the cost side there is compensation for structural differences in the cost structure (for example due to differences in demography). The cost equalisation system only redistributes across local governments and there is no financial contribution from central government.

# **Fiscal councils, independent forecasts and the budgetary process: lessons from the Belgian case**

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## **Abstract**

At the end of the eighties, large public deficits and increasing public debt-to-GDP ratios coupled with the regionalization of the state constrained Belgian authorities to establish institutions providing independent inputs, analyses and recommendations in the area of fiscal policy. Although this is difficult to assess empirically, these institutions have undoubtedly contributed to the successful consolidation process of Belgian public finances over the last twelve years. This paper analyses the role of these so-called fiscal councils in the budgetary planning process and emphasizes the part taken by the Federal Planning Bureau in producing independent, politically neutral short-term macroeconomic forecasts and medium-term projections. So far, the short-term macroeconomic forecasts have ensured unbiased macroeconomic assumptions for the drafting of the federal government's budget. The medium-term projections have delivered consistent macro-economic hypotheses for multi-annual budgetary planning and budgetary projections that have helped the government to define realistic medium-term budgetary objectives.

Keywords: Fiscal Institution, Budgetary Process, Forecast Accuracy

JEL classification: C53, E6, H61

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## 1. Introduction

The revised Stability and Growth Pact (SGP) adopted by the Council of the European Union in March 2005 underlined the need to strengthen fiscal governance in the EU Member States through the development of national budgetary rules that should complement the EU framework. The Council acknowledged the important role national institutions could play in that respect. The Council also called for reliable budgetary statistics and realistic, even cautious, macroeconomic forecasts.<sup>3</sup>

These conclusions draw on the now generally accepted view, both by academics and policy makers, that the national institutional framework affects budgetary outcomes: some institutional characteristics lead to tighter budgetary discipline than others (European Commission, 2006). As was shown in a report prepared for the Dutch Ministry of Finance (Hallenberg et al., 2001), budgetary practices differ extensively across Member States. In particular, some governments produce their economic forecasts in-house and leave the decision on what adjustments to make to the Finance Minister, while others use forecasts from independent organizations and establish strict rules on how changes in forecasts lead to changes in annual targets.

Over the last twenty years, specific circumstances constrained Belgian authorities to establish institutions providing independent inputs, analyses and recommendations in the area of fiscal policy. Firstly, the regionalization of the Belgian state at the end of the eighties, in a context of very high budget deficits and a soaring public debt (respectively 7% and 125% of GDP in 1988), forced the government to take action in order to avoid overspending arising from independent regional governments. Consequently, the High Council of Finance (HCF) was reformed in 1989 and one of its new tasks was to monitor the fiscal policy of regional governments and to formulate medium-term budgetary objectives for the federated entities. In 1992, the HCF also received a mandate to assess the convergence programmes. Secondly, as the Maastricht criteria for entry into the European Monetary Union were set in national accounts concepts, the National Accounts Institute (NAI) was created in 1994 in order to ensure the quality and the independency of the main economic statistics and macroeconomic forecasts upon which the budget was based. Following various reports on population ageing and its impact on public finances, a Study Group on Ageing was created in 2001 within the HCF.

The role of the Federal Planning Bureau (FPB) in the budgetary process is manifold but limited to the field of positive economics, as it does not make policy recommendations. The

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<sup>3</sup> The Commission's initial proposal that stability programmes should be based on macroeconomic assumptions provided by the Commission was rejected. Even so, these assumptions should still be used as a benchmark (Buti, 2006).

FPB produces, on behalf of the NAI, the macroeconomic forecasts used by the Belgian federal government for drawing up its budget and prepares, jointly with the National Bank of Belgium, the general government account within the national accounts. Each spring, the FPB also publishes a medium-term economic outlook for the Belgian economy. This report is updated in autumn and serves as a starting point for the elaboration of the stability programme. The FPB also holds the secretariat of the Study Group on Ageing and produces its long-term projections of age-related budgetary expenditures.

The purpose of this paper is to briefly describe the role of fiscal councils in the budgetary planning process in Belgium and to emphasize the part taken by the Federal Planning Bureau in producing independent short-term macroeconomic forecasts and medium-term projections. The importance of independent forecasts in the budgetary process should not be underestimated, as illustrated in Jonung and Larch (2006). These authors show evidence that for several large European countries, official growth forecasts are biased towards optimism and that this forecasting bias, coupled with inertia in the budgetary process, has hampered fiscal consolidation. While short-term forecasts are relatively widespread, the supply of independent medium-term projections is more limited. The FPB has been producing medium-term macroeconomic projections for the Belgian economy since the beginning of the eighties. The tradition to produce a baseline simulation with a medium-term horizon was inherited from the (failed) indicative planning experiments in the seventies.

The paper is organized as follows. In section 2 we introduce the concept of fiscal councils and describe the two main institutions that have to be considered in the Belgian budgetary process. The importance of having independent institutions to produce the official short-term forecasts and medium-term projections is stressed in section 3 and illustrated with an assessment of the quality of the Belgian forecasts and projections. The last section concludes the paper by drawing some lessons from the Belgian experience.

## 2. Role of Fiscal Councils in the Belgian budgetary process

Based on the model of independent central banks, a number of economists have recently suggested that a more or less extensive part of fiscal policy should be entrusted to an independent fiscal agency so as to avoid the injudicious use of discretion by politicians. These proposals are supported by evidence showing that fiscal policy discretion often entails a deficit bias or leads to a procyclical behaviour by policymakers in good times (European Commission, 2006). Political and distributive conflicts, time inconsistency, short-time horizons of policymakers or the membership of a (small) country to a monetary union can all be quoted as possible underlying political or economic reasons for a deficit bias and procyclical fiscal policies (IMF, 2005).

The International Monetary Fund identifies two types of fiscal agencies. The first type, called Independent Fiscal Authorities (IFAs), would receive a mandate comparable to that of independent central banks but on the fiscal side, i.e. to set and enforce long-term fiscal objectives and annual budgetary targets. Although theoretical arguments can be put forward in favour of setting up such institutions, there are to date no IFAs in operation in any country, most likely reflecting the issue of democratic accountability.

A less drastic and more realistic option lies in the setup of Fiscal Councils (FC), which do not receive any specific authority over fiscal policy but undertake analyses and assessments of fiscal developments and policies. These national bodies, functionally independent but primarily financed by public funds, come on top or besides the usual budgetary process.<sup>4</sup> They could provide in particular:

- independent macroeconomic forecasts for evaluating tax revenues and public expenditure;
- public finance forecasts with a focus on fiscal balances;
- impact analyses of shocks or policies;
- policy recommendations such as rules, targets and strategies;
- statements on the conduct of fiscal policy.

The first three items are in the field of what has been called "positive economics", while the remaining two items are in the field of "normative economics".<sup>5</sup>

The complex institutional framework of the Belgian state and the dramatic deterioration of the fiscal stance in the seventies and eighties forced the country to put in place FC-type institutions. The National Accounts Institute (NAI), created by the law of 21 December 1994,

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<sup>4</sup> Private think tanks, private research bodies as well as Central Banks or Directorates of the Ministry of Finance are not within the scope of the definition (European Commission, *op. cit.*).

<sup>5</sup> This dichotomy between positive and normative economics was first introduced by John Neville Keynes (1891) and later on elaborated by Milton Friedman (1966). Positive economics has to do with "what is", while normative economics has to do with "what ought to be". Positive economics is a social science, and as such is subject to the same checks on the basis of evidence as any science. By contrast, normative economics has a moral or ethical aspect, and as such goes beyond what a science can say.

is a special purpose vehicle - it has no staff and no resources – but according to the organic law, it delegates its tasks to three institutions. The National Bank of Belgium (NBB) produces the national and regional accounts, the foreign trade statistics, the financial accounts and the supply and use tables. The Federal Planning Bureau (FPB) produces the macroeconomic short-term forecasts (called the “economic budget”) and the input-output tables, and is jointly responsible with the NBB for the general government account. Statistics Belgium is in charge of collecting the data upon which the above-mentioned statistics are based. Each institution has access to the inside information of the others. Note that only the forecasting activities can, strictly speaking, be considered as typical tasks for a fiscal council, although providing high quality and reliable budgetary statistics is also recognised as an important input for fiscal policy (Council of the EU, 2005). The FPB also publishes, under its own name, a medium-term economic outlook each year in spring. This report is a very detailed macroeconomic projection. It is the only occasion on which the FPB publishes forecasts of the public sector accounts as well as a comprehensive analysis of public finances.<sup>6</sup> These forecasts are updated in autumn as a starting point for the elaboration of the Belgian stability programme.

The High Council of Finance (HCF) is composed of high-level experts: academics, members of the National Bank and representatives of the federal and regional administrations. Their mandate is incompatible with any political office, so as to ensure the independence of the Council. The secretariat is held by the research department of the Ministry of Finance. The “Public sector borrowing requirement” section of the HCF<sup>7</sup> publishes two yearly reports. The first report, published around March, assesses the stability programme of the previous year. The second, released in June/July, analyses the borrowing requirements of each government and makes recommendations on short and especially medium-term budgetary targets (and since 2002, also on long-term targets) for the general government and the different entities. The HCF-recommendations form the basis of cooperation agreements between the federal government and regional governments that set the budgetary targets and act as internal stability programmes. Until 1999, they were integrated in the Belgian convergence programmes and, since then, they have been incorporated in the stability programmes. The Study Group on Ageing produces a yearly report including projections of age-related budgetary expenditures. The FPB holds the secretariat of the Study Group on Ageing and produces its long-term projections. The section "Public sector borrowing requirements" takes these projections into account for its fiscal policy recommendations. With the new law regarding the setup of the Ageing Fund<sup>8</sup>, the section will also advise the government on the amount to be transferred every year to this fund.

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<sup>6</sup> The economic budget does not include forecasts of the general government account.

<sup>7</sup> The HCF also contains a permanent section on "Taxation and social security contributions" and the Study Group on Ageing.

<sup>8</sup> This fund was set up to finance the additional expenses resulting from ageing in the various statutory pension schemes between 2010 and 2030.

The diagram below gives an overview of the main activities of the fiscal councils, distinguishing the positive and normative side, and their link with the budget.

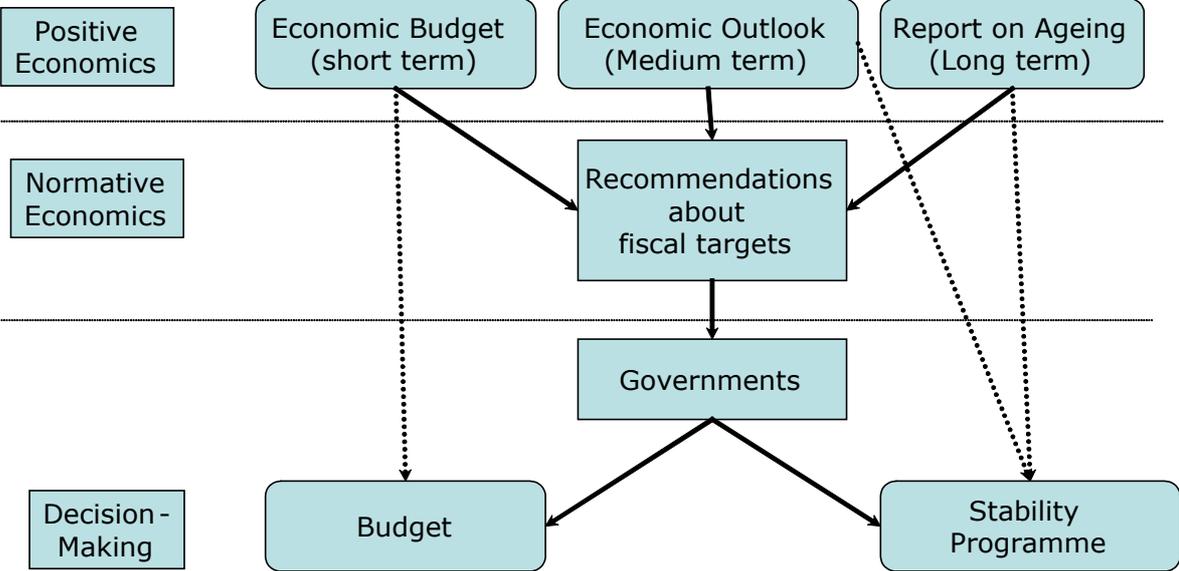


Table 1 summarizes the timing of the main activities of the fiscal councils regarding the budgetary process.<sup>9</sup> The process starts in May with the release of the medium and long-term projections. The recommendations by the HCF follow in June. A provisional short-term macroeconomic forecasting exercise is prepared by the NAI by the end of June and revised in the economic budget in September. The federal budget is presented to the Parliament in October. In the wake of the new budget, the stability programme is updated and extended. The economic budget is reassessed in February and precedes the budgetary control of March.

### 3. Importance of independent institutions and forecasts

As a recent survey on national fiscal institutions in the EU indicates, only three out of twenty-five governments, namely Austria, Belgium and the Netherlands,<sup>10</sup> rely solely on national independent agencies to produce macroeconomic forecasts for the preparation of the budgetary plans (European Commission, 2006). Another survey on budgetary rules and norms in EU Member States reveals that all three countries were on the list of states where respondents thought that growth assumptions were “deliberately cautious”. Countries with cautious growth forecasts also seemed to have higher than expected budget balances as indicated by a positive correlation between growth and budget errors (Hallenberg et al., 2001). Computing an indicator of “degree of optimism about the future” by comparing

<sup>9</sup> As a reminder, the month of release of the European Commission and Eurosystem forecasts are also mentioned.  
<sup>10</sup> In Austria, the Institute of Economic Research (WIFO) provides the forecasts while the Netherlands Bureau for Economic Policy Analysis (CPB) fulfils this task for its government. In the remaining countries, the government is free to base its budgetary plans on its own forecasts.

official GDP growth forecasts and consensus forecasts, Milesi-Ferretti and Moriyama (2004) found that Belgium and Austria had an indicator close to zero and the Netherlands the most negative indicator of all countries, pointing to very cautious official forecasts.

In analysing the track record of budgetary forecasts contained in the stability and convergence programmes, Hallenberg et al. (2004) found that countries with overly optimistic growth assumptions were also those with the largest slippages from budgetary targets. Other studies show evidence of a clear link between budgetary outcomes and growth forecasts. Larch and Salto (2005) and very recently Jonung and Larch (2006) show that official forecasts for (real and potential) GDP are biased towards optimism for Germany, Italy and France<sup>11</sup> and that this forecasting bias, coupled with inertia in the budgetary process, is passed on to the structural deficit. These authors conclude that the bias of official growth forecasts partly explains the poor performance of fiscal consolidation observed in recent years in the euro area.<sup>12</sup> They also stress that, although in budgetary terms an overestimation of potential GDP growth produces *ex post* the same results as active expansionary fiscal policy, the former requires another form of policy response to improve fiscal consolidation. These conclusions led the authors to plead for the establishment of independent forecasting authorities in all EU Member States. The usefulness of their proposal is supported by empirical evidence showing that in the three Member States mentioned above, where official forecasts are produced by independent national agencies, these forecasts show no statistically significant bias. Furthermore these independent national agencies could play a leading role in strengthening national ownership of the budgetary surveillance procedure.

To reduce the risk of bias in the official national growth forecasts, the initial package of the Commission concerning the reform of the SGP contained a proposal to delegate the economic growth projections used in the budgetary plans to the Commission (Deroose and Langedijk, 2005). A comparison of the forecasting performances by Member States and by the European Commission (Hallenberg et al., op. cit.) reveals that GDP forecasts produced by the latter have been more accurate for several countries but notably not for Austria, Belgium and the Netherlands.

#### *Official forecasting procedure in Belgium*

In Belgium the legal status of the institutions involved greatly contributes to the independence of the forecasting authority. The FPB is a public institution and, as any other public institution, has ministers who oversee it and set its budget. However, because of its specific tasks, it is independent in fulfilling them. To earn this independence, the FPB has a policy of

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<sup>11</sup> The United Kingdom is the exception among the 'big four' with unbiased and remarkably accurate forecasts.

<sup>12</sup> Although they confirm the relevance of growth forecasting errors in some EU countries for explaining budgetary slippages, Moulin and Wierds (2006) also point to the non-implementation of ambitious planned restraint in nominal general government expenditure as a source of divergence between budgetary plans and outcomes.

being very transparent: it publishes its forecasts, methods, models and data.<sup>13</sup> It also assesses its own forecasting performance.<sup>14</sup> Staff recruitment is governed by a transparent procedure and the candidates are appointed on the proposal of the Bureau's managing board. Besides the federal government, the Central Economic Council, the National Labour Council and the legislative chambers may apply to the FPB to assess the economic impact of policy measures. Because its reputation as an independent institution and the credibility of its analyses could be undermined, the FPB does not make policy recommendations. Its role is thus limited to the field of positive economics.

The figures contained in the economic budget are discussed and approved by the Board of the NAI and are therefore considered as official NAI forecasts. The Board is composed of the highest civil servant of the Ministry of Economic Affairs, the Governor and a director of the National Bank, the Commissioner of the FPB and his deputy and the Director General and a director of Statistics Belgium. The economic budget also has to be submitted for advice to a committee of experts (called scientific committee), chaired by the Commissioner of the FPB and composed of representatives of the main institutional users of the forecasts. The endorsement of the forecasts by the various independent institutions represented in the Board and in the scientific committee prevents political intervention, as the credibility of all institutions involved is at stake.

Whether the Law of December 1994 (which created the National Accounts Institute) implies a legal requirement for the government to use the economic budget is probably disputable from a juridical point of view. However, up to now, the forecasts have always been adopted by the government. Because the institution has achieved high credibility, not following the forecasts would entail a loss of reputation for the government. In times of uncertainty, the government can be more cautious and include safety margins in the budget, for instance to allow for negative growth surprises or unforeseen rises in interest rates.

#### *Assessing the quality of the economic budget*

The economic budget is released twice a year, once in September of the year  $t-1$  for the preparation of the federal government's budget of the year  $t$  and once in February of the year  $t$  for the budgetary control of the year  $t$ . The quarterly macroeconomic model Modtrim<sup>15</sup> serves as a central tool for producing the economic budget. The model's results, however, are adapted to take into account the most recent business cycle information, for instance stemming from leading indicators.

The economic budget supplies forecasts for a large range of economic variables. Here only

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<sup>13</sup> All available on the website: <http://www.plan.be>. The document describing the economic budget is published twice a year. For a detailed account of the forecasting process see Dobbelaere et. al. (2003).

<sup>14</sup> See for instance: Dobbelaere and Hertveldt (2004).

<sup>15</sup> See Hertveldt and Lebrun (2003) for a detailed description of the model.

two variables, namely real GDP growth and CPI inflation, will be examined, as both series are of primary importance for the users of the economic budget. A choice to make first is to define what is considered as the outcome. For inflation, this is quite straightforward as the monthly published CPI is never revised. GDP growth figures, however, are subject to significant revisions. To avoid that unpredictable factors in the national accounts (such as methodological changes) would affect the analysis, outcomes are defined as the figures published in the first version of the national accounts of the year concerned.

Besides the problem of what should be chosen as outcomes, post-mortem analyses are generally surrounded by other problems. In particular, the limited size of the sample should lead to a cautious interpretation of the results that can be influenced by some outliers. One should also bear in mind that accuracy is only one aspect of quality. Other important quality features are for instance coherence and completeness. A full quality assessment should take into account all these aspects simultaneously.

The most intuitive indicator to evaluate the size of forecast errors is the mean absolute error (MAE), that yields the average difference between forecasts and realisations in percentage points (see Table 2). A look at the declining profile of the MAEs, especially for GDP growth, shows that the additional information that becomes available between the first and the second forecasting round significantly increases the accuracy of FPB projections, which proves the usefulness of the February updating of the economic budget.

Another way to evaluate the accuracy of FPB projections, is to compare them with naive forecasts. Three kinds of naive forecasts have been examined: a random walk (Theil 1), a 10-year moving average growth rate forecast (Theil 2) and an ARIMA projection (Theil 3). Theil coefficients are calculated as the ratio between the root mean square error of the reference forecasts and of the naive forecasts. Table 2 shows that naive forecasts are less accurate than the economic budget in all cases for CPI and in round 2 for GDP. Theil coefficients exceed unity only for Theil 2 and Theil 3 for GDP growth during the first round. As shown in the Graph 1, there has undeniably been one period of systematic over-optimism for the years 2001-2003, a period with successive bad surprises following the technology hype of 1999-2000. This is however not systematically the case over the whole sample. Theil coefficients fall below unity if these specific years are removed from the sample period. In conclusion, our findings confirm the commonly accepted view that over a 4 to 6-quarter horizon, structural model based forecasts outperform naive forecasts.

The size of the forecast errors is one thing, but the nature of those errors is at least as important. An interesting way to check whether systematic forecast errors can be found, is to decompose the mean square error (MSE) into three components: (i) the bias proportion (BP) measures which part of the error is due to systematic over- or underestimation; (ii) the variance proportion (VP) provides the part of the error owing to the misforecasting of the

systematic component of the variability of outcomes; (iii) the covariance proportion (CP) is the part of the errors arising from other, unsystematic factors.<sup>16</sup>

Table 2 shows that the BP is small in all forecasting rounds, which means that FPB forecasts can be considered as unbiased.<sup>17</sup> The VP of first round forecasts, however, is quite large. This should not come as a surprise as the available business cycle related information at that moment does not provide clear indications for the year ahead. Hence, first round forecasts are commonly based on a plausible trend scenario, which is obviously subject to upside and downside risks. If one of those risks or another shock materialises, the variability of the outcomes will be higher than that of the forecasts. In all cases, the CP represents the highest proportion, which leads to the conclusion that the nature of the forecast errors is mainly unsystematic and simply due to the fact that economic variables are stochastic.

For a small, open economy as Belgium yet another question to examine is whether and to what extent the observed forecast errors are due to false exogenous assumptions. The development of foreign export markets is a crucial exogenous variable for forecasting Belgian GDP. The export market hypothesis is typically based on weighted (reflecting the geographical orientation of Belgian exports) import growth figures taken from the most recent short-term forecasts of international organisations (EC, OECD, IMF).

The regression line in Graph 2 shows that there is a clear positive relationship between the forecast errors made in export markets and GDP growth. The fact that the regression line in the graph crosses the intersection of both axes and divides the quadrants in almost equal parts is another indication for the unbiased character of the GDP forecasts. Rewriting history, one can try to examine what would have been the GDP forecast if the correct export market figure was known at the moment of the forecasting exercise. To calculate this in a simplified manner, GDP forecasts were adjusted based on the error in the export market figure and the estimated elasticity between GDP and export markets.<sup>18</sup> Correcting GDP forecasts in that way and comparing them again to the realizations, the absolute forecast error is reduced on average by more than 50%, both in the first and the second round forecasts and for almost all individual years.

#### *Assessing the quality of potential GDP growth projections*

The FPB has been producing medium-term macroeconomic projections for the Belgian economy since the beginning of the eighties. This baseline is a no-policy-change scenario, notably with regard to fiscal and social policies, based on a “neutral” international

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<sup>16</sup> See Gutierrez and Vuchelen (2001).

<sup>17</sup> This is confirmed by other measures, such as the mean forecast error, that is not significantly different from zero at conventional confidence levels.

<sup>18</sup> This elasticity was derived from a model simulation with Modtrim, in response to a shock on the export markets. The average value of the elasticity is 0.2 over the first four quarters after the shock.

environment. Scenario analysis is sometimes performed to illustrate potential risks surrounding the baseline or to analyse the effects of changes in economic policy.<sup>19</sup> The economic outlook for the Belgian economy is published each year in May<sup>20</sup> and presented to the representatives of the social partners within the Central Economic Council. This medium-term outlook takes as a starting point the forecasts for the current year (as published in the economic budget, possibly adapted on the basis of new business cycle information) and covers a five-year period. These projections are updated in October by incorporating the latest short-term forecasts (elaborated for the new budget) and are used as the macroeconomic framework for the Belgian stability programme.

Although the outlook is a very detailed macroeconomic projection covering developments in industry, the labour market, public finances and even energy consumption and associated greenhouse gas emissions, we shall limit our analysis in this section to potential GDP estimates which are crucial to assess the credibility of multi-annual budgetary programmes. Budgetary projections will be examined in the next section.

To check the accuracy of one-year-ahead forecasts of potential GDP growth we follow the methodology used by Jonung and Larch (2006) for other European countries.<sup>21</sup> The results are presented in Graph 3. Following a period of relatively low economic growth for the first half of the eighties, potential GDP growth was clearly underestimated at the end of that decade. Conversely, high growth figures recorded during the period 1987-1990 generated hopes of higher potential growth which did not materialize. The period following the 1993 recession was characterised by more cautious projections and thus a slight underestimation of potential growth, while the end of the nineties and the belief in “the new economy” gave rise to overly optimistic projections. This analysis clearly illustrates the difficulty to separate the trend from the cycle at the end of the sample: a sustained period of economic upswing tends to make the forecaster think that this upswing is permanent, while a prolonged period of slow growth has the opposite effect. However, Belgian potential growth turned out to be quite stable over the past twenty years using ex-post data. In other words and as is shown in Graph 3, projections tended to be too optimistic (pessimistic) in periods of positive (negative) output gaps. These errors in potential GDP growth largely reflect the errors made in estimating future foreign export market trends. Regressing potential GDP growth errors on the difference between actual and projected export market trend growth indicates that for each percentage point error on export market trend growth, the potential GDP growth projection will deviate by half a percentage point from its outcome. These results are in line with the analysis made for the short-term forecasts in the previous section.

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<sup>19</sup> The baseline and variants are produced using the HERMES model (see Bossier et al., 2004).

<sup>20</sup> The exact publication date has evolved slightly in the course of time, as well as the frequency, but at least one outlook has been published each year in spring since 1980.

<sup>21</sup> The methodology is recalled in the footnotes of Table 3.

The statistics in Table 3 show a slight overestimation of Belgian potential GDP growth over the period 1987-2003, but this negative mean error (see column ME) is not statistically different from zero at conventional confidence levels (see column No bias). The forecasting errors clearly exhibit serial correlation (see column No corr), which doesn't come as a surprise considering the explanations given in the previous paragraph. Table 3 also shows that the accuracy of the forecasts (see columns MAE and RMSE) is quite similar to that in France but clearly better than in Germany and Italy, with only the UK performing better.

Potential GDP growth can be split into the respective contributions of employment and productivity. Graph 4 shows the breakdown of the forecasting error on potential GDP into its two determinants. Clearly, trend employment growth has been underestimated in periods of prudent potential GDP forecasts, while it has been overestimated only in periods of growth optimism. The forecasting error on trend productivity growth has been displaying a systematic optimistic bias since the beginning of the nineties.<sup>22</sup> As Graph 5 shows, the decreasing trend in productivity growth revealed by the latest available data was not captured sufficiently in the successive projections.<sup>23</sup> The very volatile nature of productivity growth, as clearly visible on the graph, makes disentangling the cycle from the trend not an easy task.

Also very important to assess the fiscal stance is the output gap which allows to compute the cyclically adjusted budget balance. Graph 6 compares one-year-ahead forecasts of output gap estimates based on the medium-term outlook with the actual output gap estimates.<sup>24</sup> As several empirical studies point out, output gap estimates in real time are highly unreliable.<sup>25</sup> Not surprisingly, output gap forecasts may exhibit large revisions due to the cumulative errors on potential output growth estimates but also on GDP growth estimates/forecasts.<sup>26</sup> The forecasts presented in Graph 6 are not an exception to the rule: as can be judged from the vertical distance between the points and the 45-degree line, output gap forecasting errors are huge in many cases. However, the vast majority of the points are in the first and third quadrant, meaning that the sign of the output gap has been correctly forecasted in most cases. The few points in the fourth quadrant are very close to the X or Y-axis. Points above the 45-degree line imply that cyclical conditions finally turned out to be less favourable than expected, while points below the line indicate the opposite. In "bad times" (negative output gap), the forecasts seem to be unbiased, as the points are evenly distributed around the 45-degree line. In "good times" (positive output gap), there is a tendency to underestimate

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<sup>22</sup> Analysing the medium-term projections of the CPB, Kranendonck and Verbruggen (2006) have found a similar phenomenon for the Netherlands.

<sup>23</sup> For the possible reasons behind the decline in trend productivity gains in Belgium, see Lebrun (2005).

<sup>24</sup> Output gap estimates rely on potential GDP estimates computed as described in the footnotes of Table 3.

<sup>25</sup> For the United States, see for instance Orphanides and van Norden (2002) and for the euro area, see ECB (2005).

<sup>26</sup> As shown by Denis et al. (2006) in an analysis for the EU countries, the revisions of GDP estimates for some countries and the poor quality of GDP forecasts for all countries are the main sources of error for output gap estimates.

cyclical conditions. The periods 1989-1992 and 2000-2001 are two such cases.

### *Examining the budgetary projections and outcomes*

As mentioned previously, the medium-term outlook covers much more than just economic growth projections. Specifically, it provides, within this coherent macroeconomic framework, a very detailed analysis of public finances and budgetary prospects under the hypothesis of “no policy change”. Accordingly, the aim of the exercise is not to provide the best budgetary forecasts anticipating the most likely political decisions, but rather to provide a benchmark scenario against which the fiscal objectives of the government can be assessed, including those contained in the stability programmes. Consequently, it can point to the existence of some room for manoeuvre for new policies or, conversely, to the necessity for taking additional structural measures in order to reach the budgetary objectives. It can also help the government to (re)define its medium-term budgetary objective or contribute to the setup of realistic numerical fiscal rules, especially after elections, when a new coalition programme is being elaborated. Assessing these projections therefore requires a different approach than investigating the track record of multi-annual budgetary plans of the governments, as is done for example in Hallenberg et al. (2004) and Moulin and Wierds (2006) for the EU or Heinemann (2005) for Germany.

Before analysing the successive budgetary projections, it is useful to describe the methodology of “no policy change” used to evaluate public expenditure and revenue. Public expenditure depends only to a limited extent on economic factors (apart from inflation) and thus has a mainly exogenous character. Behavioural equations are used solely for interest payments and unemployment benefits. As far as the authorities at the federal level (including Social Security) and at the federated entities’ level are concerned, the estimation of expenditure and the integration of discretionary decisions are based on a detailed analysis of available annual budgets and their conversion to the ESA definitions. In the medium term, expenditure projections are the result of the translation into the national accounts of the multi-annual projections carried out by the authorities themselves, of a quantification of the planned measures, or, failing that, of hypotheses elaborated by the FPB (such as, for example, extrapolating the trend of the previous years). For the local authorities’ primary expenditure, the method is different. Given the great number of actors involved, it is impossible to take their budgets as a starting point. As a consequence, behaviour observed in the past is extrapolated, while trying to fully integrate the decisions taken, among others, by authorities at other levels. Just as for expenditure, the main non-fiscal revenues are almost entirely exogenous, and their projections reflect the decisions as closely as possible, depending on the accuracy of the information contained in budgets and official announcements. On the other hand, the evolution of fiscal and parafiscal revenues depends both on the macroeconomic context and on the measures taken. Those revenues are therefore calculated endogenously,

while taking into account the characteristics of the tax system (e.g. progressiveness). Where applicable, discretionary measures are incorporated in the projection.

Beside the issue of “no policy change” discussed above, confronting budgetary projections with budgetary outcomes raises another problem: changes over time in accounting concepts modify the outcomes themselves.<sup>27</sup> To prevent that adjustments in accounting methodologies affect the analysis, the “outcomes” were constructed by linking realizations from several data vintages with different accounting concepts. The reason for the discrepancies between projected and observed values is thus essentially twofold: errors on macroeconomic and financial variables and changes in fiscal policy including one-off measures.<sup>28</sup>

Graph 7 presents the “outcome” for the general government balance (in percent of GDP) and the successive projected trajectories starting with the current year and covering a five-year period.<sup>29</sup> Although consolidation of public finances was projected in all exercises during the nineties, the pace at which the deficit decreased was faster than foreseen, while the surpluses projected from 2002 onwards never materialized.

In order to have a somewhat more precise idea of the origin of these differences, we have split up the budget balance into the primary balance and interest payments. The primary balance shows a fairly similar pattern as the overall balance, improving more rapidly than projected during the nineties (except for the 1995 projection), whereas the decrease in the primary balance was not projected before the 2001 projection. The reduction of the deficit was also favoured by the decrease in interest payments. This decline was stronger than expected, especially in the projections made in the mid-nineties.

Table 4 gives the mean difference between the observed and projected cumulated change in the general government balance, the primary balance and interest payments for the different forecasting horizons. The general balance improved faster than projected on the whole sample, as we saw on the graph, but with no cumulated increase for a horizon above t+2. The changes in primary balance turned out to be greater than projected up to two years ahead, but the difference drops to zero at horizon t+4. Looking at the two sub-samples, we see that this decrease is entirely due to the end of the sample, for which further projected increases in primary balances never materialized. The cumulated decrease in interest payments was stronger than projected for all the forecasting horizons and for the two sub-samples.

As an examination of nominal GDP growth errors reveals (results not reported here), nominal growth was somewhat overestimated during the period 1993-2001, which means that the

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<sup>27</sup> The main changes occur in 1993 with revisions to comply with the “Maastricht” definitions and in 2000 with the shift from ESA79 to ESA95. Data vintages before 1988 are reported in Belgian national accounts concepts and are not comparable with data vintages in ESA.

<sup>28</sup> Model misspecifications may of course also play a role.

<sup>29</sup> For the sake of readability, only projections from 1993 onwards have been considered in the analysis.

denominator effect cannot be the reason behind the underestimation of the improvement in budgetary stance. Using the semi-elasticity of the primary fiscal balance to real GDP growth, we can roughly correct the projections of the primary balance for growth errors.<sup>30</sup> Table 5 shows that on the full set of projections, economic growth was slightly overestimated: the difference between observed changes in primary balance and projections is due to changes in fiscal policy. Indeed, during the period between 1993 and 1998 new measures were taken annually, especially on the revenue side, to comply with the Maastricht criteria and subsequently to converge to the close-to-balanced target of the Stability and Growth Pact. Corrected for growth surprises, projections for the changes in primary balance do not seem to have been too optimistic during the period 1999-2004 for a horizon up to two years, while for longer horizons more favourable evolutions were projected. These “virtual surpluses” certainly encouraged the federal government to initiate a tax reform and to allow increases in a number of expenditure items.

#### **4. Conclusion**

Measuring the (full) influence of the Belgian fiscal councils on budgetary outcomes is by nature difficult. However, judging by the indisputable improvement of Belgian public finances over the last twelve years (see Graph 8), the fiscal councils that have been created have proven their usefulness. The recommendations and the assessment of the stability programmes by the High Council of Finance have given rise to a transparent system with clear objectives for the general government and the different entities. This imposed discipline has helped policy-makers to resist pressures to increase expenditure (Bethuyne, 2005). The HCF’s recommendations and assessments have been backed up by independent bodies operating in the field of positive economics. The production by the National Accounts Institute of independent short-term macroeconomic forecasts has ensured unbiased, politically neutral macroeconomic assumptions for the drafting of the federal government’s budget. The medium-term economic outlook published by the Federal Planning Bureau has delivered consistent macroeconomic hypotheses for multi-annual budgetary planning and budgetary projections in a scenario of no policy change, which have helped the High Council of Finance and the government to define realistic medium-term budgetary objectives. Finally, the long-term projections produced by the Study Group on Ageing have assisted the government in integrating age-related budgetary expenditures into the budgetary strategy and in shaping fiscal rules which take into account the increase in expenditure due to population ageing.

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<sup>30</sup> The semi-elasticity is obtained with a simulation using the HERMES model supposing an external growth shock. It is clear that this semi-elasticity is not invariant to the type of shock, but as we saw in the previous section, an important part of GDP growth errors are due to external growth surprises. Specific composition effects are also neglected here.

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## Appendix

**Table 1 - Timing of the Belgium budgetary process and forecasts**

	Belgium	European Commission	Eurosystem
May	Medium and long-term projections	Spring forecasts	
June	HCF report	Integrated Guidelines	Projection
June	Provisional short-term forecast		
August			
September	Economic budget	Interim forecasts	
October	Budget National Reform Programme (NRP)		
November	Stability Programme (SP)	Autumn forecasts	
December			Projection
January		Assessment of SP and NRP	
February	Economic budget updated	Interim forecasts	
March	Budgetary control		
April			

**Table 2 - Key forecast error statistics (1994-2005)<sup>1</sup>**

	Economic growth		CPI inflation	
	round 1	round 2	round 1	round 2
Mean Error	-0.43*	0.02*	0.15*	0.15*
Mean Absolute Error	1.11	0.72	0.60	0.47
Theil 1 (random walk)	0.72	0.51	0.75	0.86
Theil 2 (10-year mov. avg.)	1.68	0.81	0.73	0.56
Theil 3 (ARIMA-forecast)	1.11	0.77	0.69	0.74
Breakdown of Mean Square Error				
BP	10.7%	0.3%	3.9%	6.7%
VP	45.3%	6.3%	38.6%	18.7%
CP	44.1%	93.4%	57.6%	74.7%

<sup>1</sup> Forecast error = outcome – forecast

\* not different from zero at 10% significance level

Source: Federal Planning Bureau, National Accounts Institute

**Table 3 - One-year-ahead forecasting error of potential GDP growth (1987-2003)**

Country	ME	MAE	RMSE	No bias	No corr
Belgium	-0.12	0.38	0.45	0.42	0.00
Germany	-0.39	0.63	0.70	0.01	0.36
France	-0.29	0.34	0.40	0.00	0.73
Italy	-0.55	0.55	0.67	0.00	0.00
UK	-0.05	0.26	0.40	0.62	0.03

Source: Belgium: own calculations based on historical FPB databases; other countries: Jonung and Larch (2006)

Methodology: the forecast of potential GDP growth for the year  $t$  is obtained by HP-filtering the GDP series (historical data plus projected figures) contained in the database of vintage  $t-1$ . "Actual" potential GDP growth is computed by applying recursively (using each time the same sample as for the forecasted estimates) the HP-filter on the latest available vintage of the GDP series. The forecasting error is defined as the "actual" value minus the forecasted value. Thus a positive (negative) error indicates an underestimation (overestimation) of potential GDP.

Notes: ME = mean error  
MAE = mean absolute error  
RMSE = root mean squared error  
No bias = probability for zero mean error (t test with Newey-West standard error for Belgium)  
No corr = probability for uncorrelated errors (LM test with 2 lags)

**Table 4 - Mean difference between observed and projected cumulated change in general government balance and components (in % of GDP)**

	Projections 1993-2004				
	t	t+1	t+2	t+3	t+4
General balance	0.2	0.6	0.7	0.7	0.7
Primary balance	0.2	0.4	0.3	0.1	0.0
Interest payments	0.0	-0.2	-0.4	-0.6	-0.7
Projections 1993-1998					
General balance	0.3	1.1	1.5	1.8	2.9
Primary balance	0.4	0.9	1.0	1.2	2.2
Interest payments	0.1	-0.2	-0.5	-0.6	-0.7
Projections 1999-2004					
General balance	0.1	0.2	0.1	0.1	0.0
Primary balance	0.1	0.1	-0.2	-0.4	-0.7
Interest payments	-0.1	-0.2	-0.3	-0.5	-0.7

Source: own calculations based on historical FPB databases

Note: As we only use the projections from 1993 onwards, the sample considered is reduced by a year with each increase in forecasting horizon. Comparisons between observed and projected values are expressed as a percentage of observed and projected nominal GDP respectively.

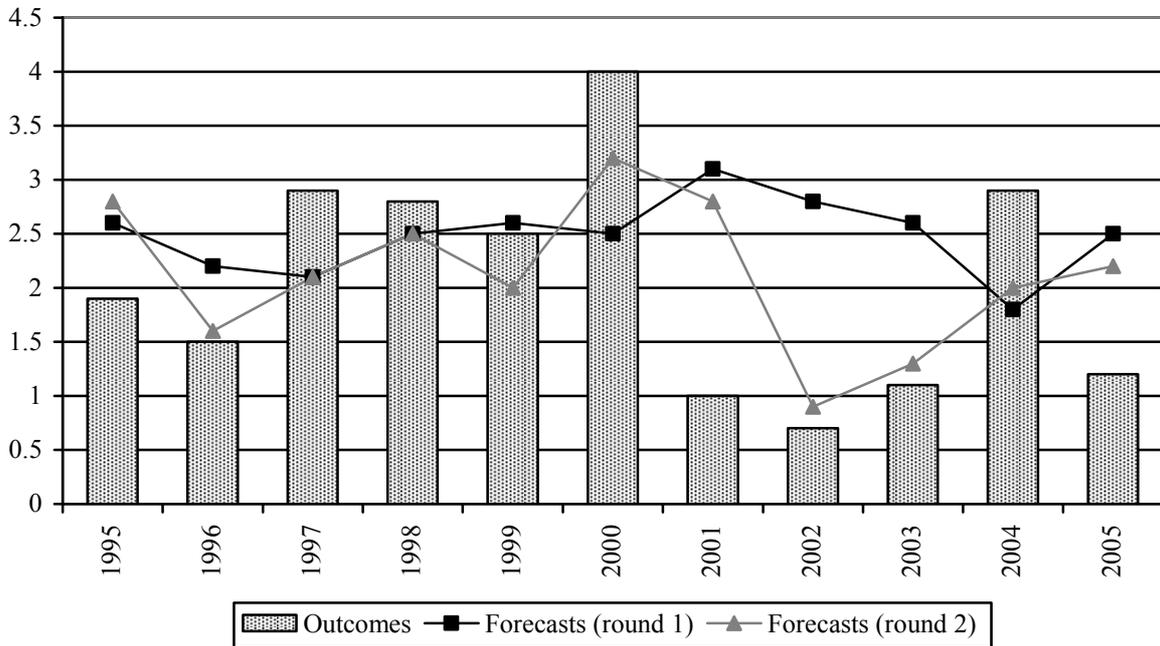
**Table 5 - Mean difference between observed and projected cumulated change in general government primary balance (in % of GDP)**

	Projections 1993-2004				
	t	t+1	t+2	t+3	t+4
Primary balance	0.2	0.4	0.3	0.1	0.0
Real GDP growth (in % points)	0.2	-0.2	-0.6	-0.9	-0.6
Primary balance corrected for growth error	0.2	0.5	0.5	0.4	0.2
Projections 1993-1998					
Primary balance	0.4	0.9	1.0	1.2	2.2
Real GDP growth (in % points)	0.3	0.4	0.1	-0.4	0.6
Primary balance corrected for growth error	0.3	0.8	1.0	1.3	2.0
Projections 1999-2004					
Primary balance	0.1	0.1	-0.2	-0.4	-0.7
Real GDP growth (in % points)	0.1	-0.7	-1.1	-1.1	-0.9
Primary balance corrected for growth error	0.0	0.3	0.1	-0.1	-0.4

Source: own calculations based on historical FPB databases

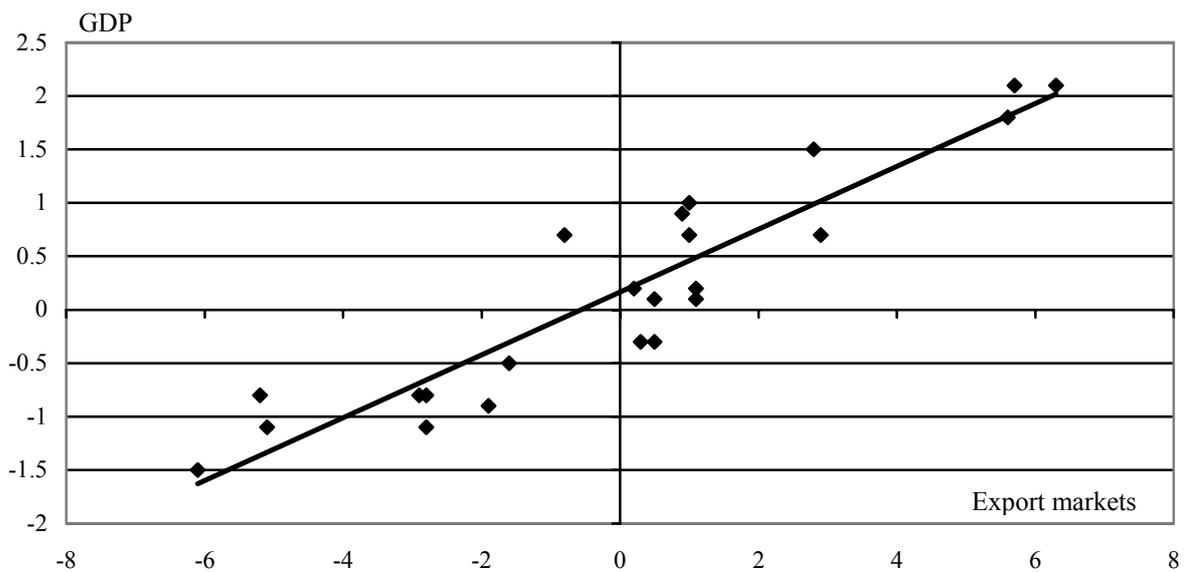
Note: Difference in cumulated change in primary balance corrected for growth error = difference in cumulated change in primary balance – 0.3 \* cumulated error in real GDP growth. The sensitivity of the primary balance (expressed in percentage of GDP) to real GDP growth is obtained by simulating a shock on foreign export markets with the HERMES model and comparing the primary balance in the variant with the one in the baseline, both expressed in percent of GDP respectively of the variant and of the baseline.

**Graph 1 - GDP growth: First round forecasts and outcomes**  
(growth rates in %)



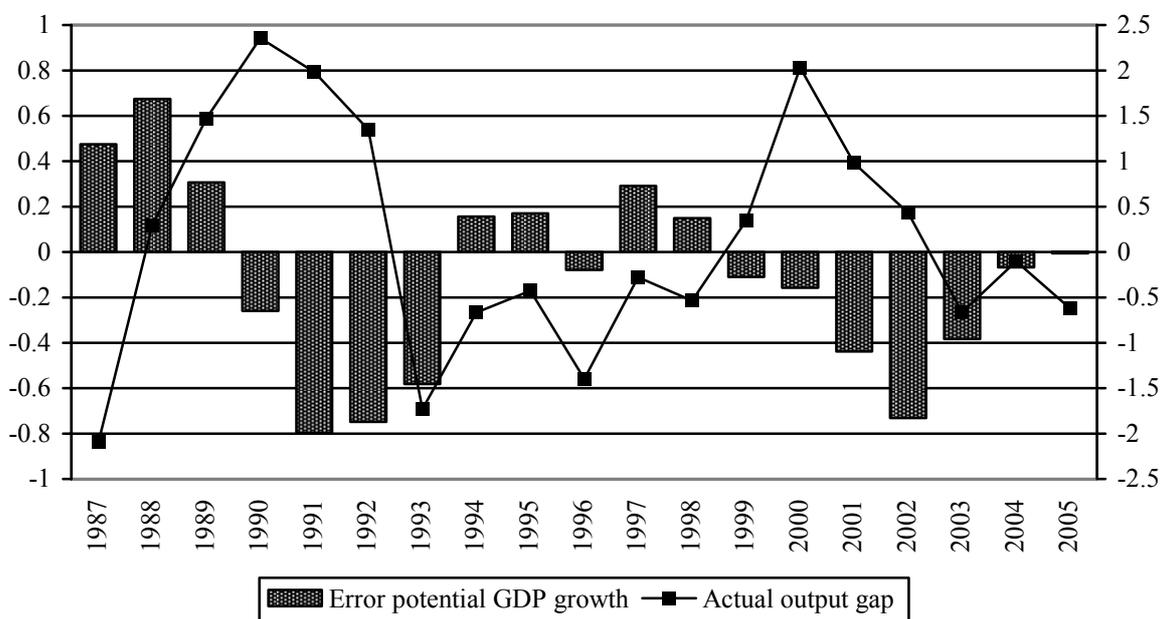
Source: Federal Planning Bureau, National Accounts Institute

**Graph 2 - GDP forecasts and export market assumptions (1994-2005)**  
(growth rate errors in percentage points)



Source: Federal Planning Bureau, National Accounts Institute

**Graph 3 - Potential GDP growth: Forecasting error**  
(in percentage points)



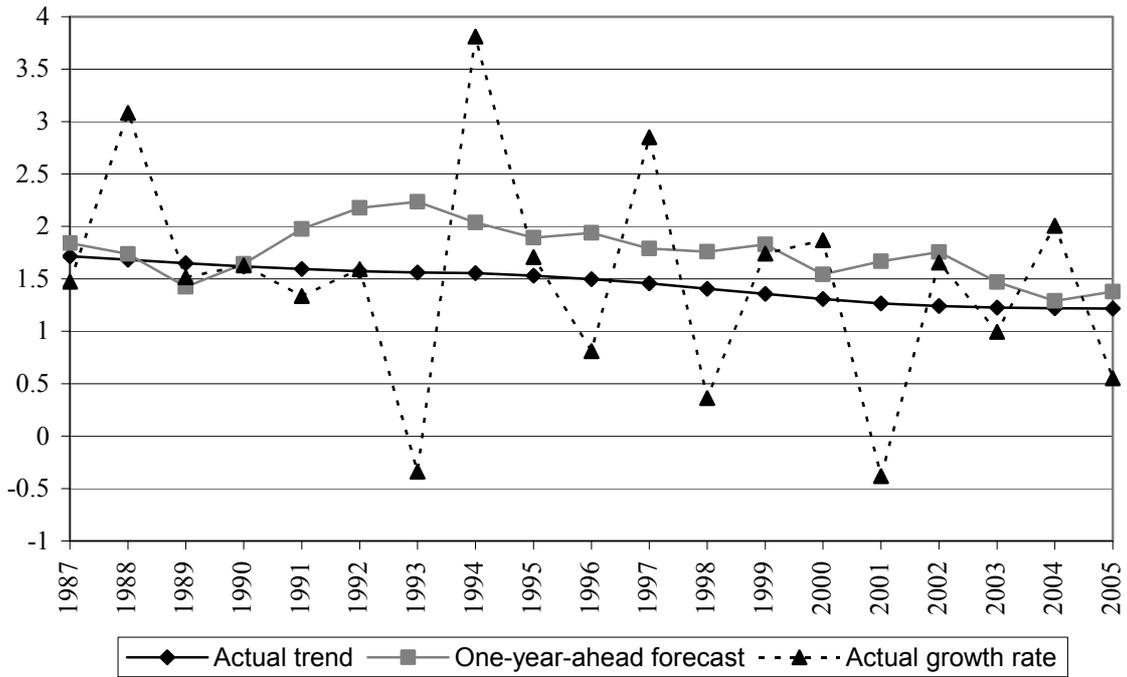
Source: Federal Planning Bureau

**Graph 4 - Potential GDP growth: Contributions to forecasting error**  
(in percentage points)



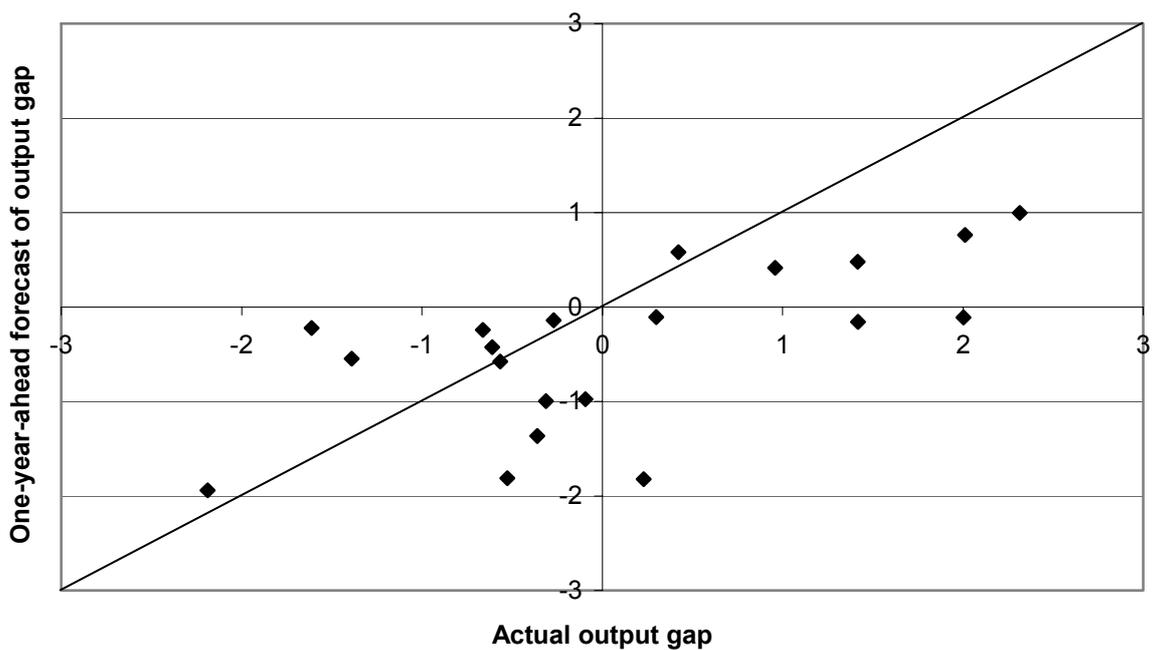
Source: Federal Planning Bureau

**Graph 5 - Trend productivity growth: One-year-ahead forecast versus actual**  
(growth rates in %)



Source: Federal Planning Bureau

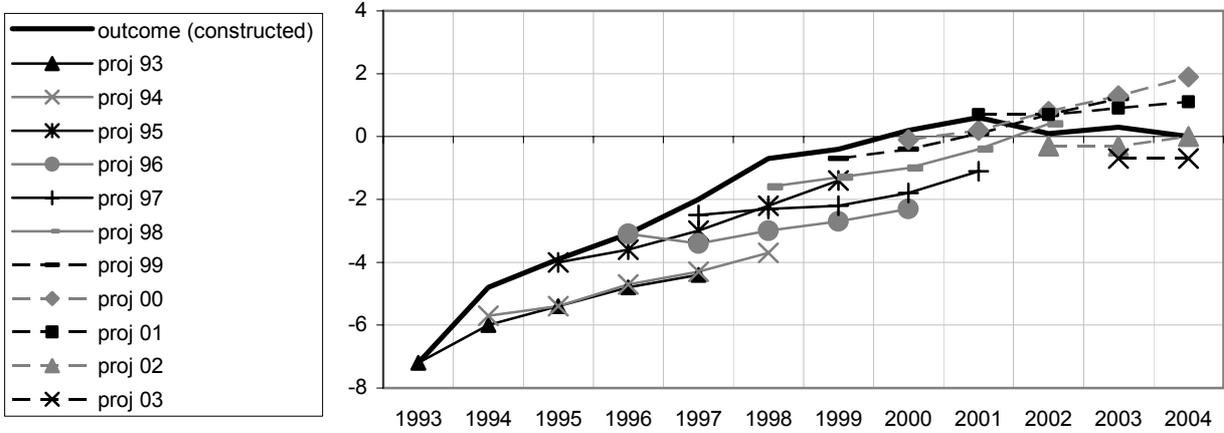
**Graph 6 - Forecast vs. actual output gap (1987-2005)**  
(in % of potential GDP)



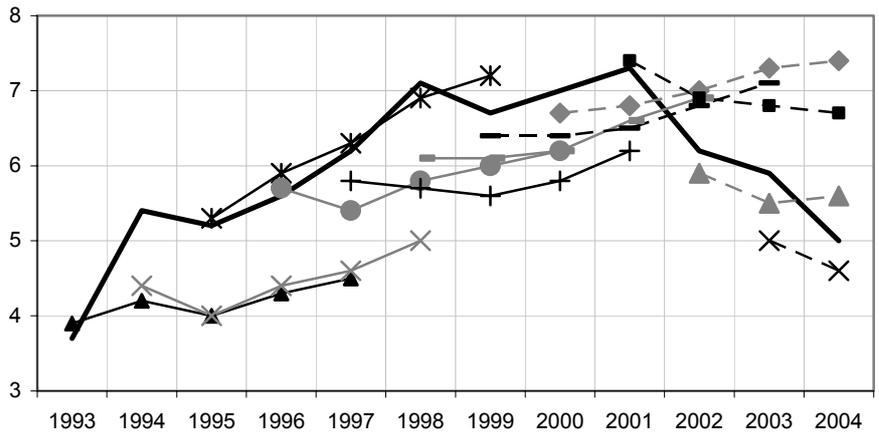
Source: Federal Planning Bureau

**Graph 7 - Projections and outcome**  
(in % of GDP)

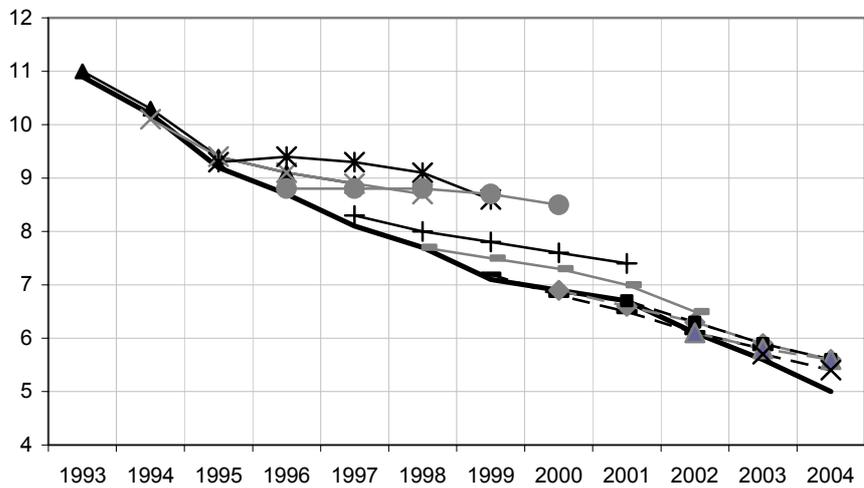
**Budget balance**



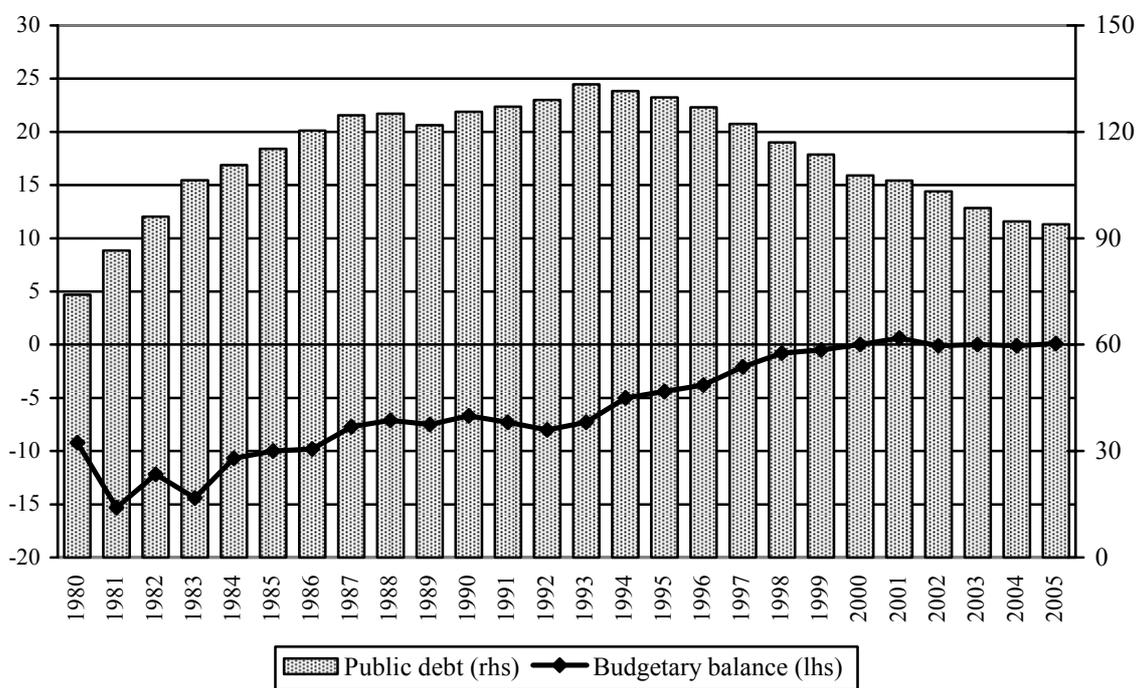
**Primary budget balance**



**Interest payments**



**Graph 8 - Evolution of Belgian public finances**  
(in % of GDP)



Source: National Accounts Institute