

BEYOND THE SGP – FEATURES AND EFFECTS OF EU NATIONAL-LEVEL FISCAL RULES

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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.

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).

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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.¹ 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

¹ 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).

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 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.² The database contains information of the design of

² 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
(continues)

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 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

against which fiscal policy it can be assessed, such rules raise reputation cost for the conduct of unsound policies.

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".³

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

³ 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 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.

Hallerberg (1999) 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 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.

2.2.1 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.

2.2.2 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.

2.2.3 Fiscal governance and budgetary outcomes

A large body of empirical literature has tackled the empirical analysis of the common pool 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 multiannual 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

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"> • Statutory base • Constitutional base • Governor only has to submit a balanced Budget • Legislature has to pass a balanced Budget • Carry over : possibility and number of years to correct
von Hagen, EU-12, 1992	Structural Index	<ul style="list-style-type: none"> • Structure of negotiation within government. General constraint; agenda setting for negotiations; scope of budget norms; structure of negotiations • Structure of the parliamentary process. Amendments: limited; offsetting; cause fall of government; one vote: on expenditure; on total budget size • Informativeness of the budget draft. Inclusion of special funds; budget in one document; transparency; national accounts; government loan • Flexibility of execution. Finance Minister (FM) can: block; put cash limits; approve disbursements; transfer; allow budget changes; carry over
von Hagen, EU-12, 1992	Index of Long Term Planning Constraint	<ul style="list-style-type: none"> • Structure of the parliamentary process. Amendments limited • Informativeness of the budget draft. Inclusion of special funds; budget in one document; transparency; national accounts; government loan • Flexibility of execution. FM can: block; put cash limits; approve disbursements; transfer; allow budget changes; carry over • Long term planning constraint. Target; horizon; nature; commitment
Inter- American Development Bank, 1997	Index of Budgetary Institutions	<ul style="list-style-type: none"> • Constraint on the budget deficit • Procedural rules • Transparency
	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"> • Sub Index of Constraint. Constitutional constraints on deficit, macroeconomic program required; government has: borrowing autonomy; possibility of late adjustments, decides unilaterally spending cuts • “Agenda-setting” Sub Index. Authority of FM vs. spending ministries; legal constraints on congress' authority to amend proposed budget; options after rejection of proposed budget • Transparent procedures sub index. Budget covers other public entities' debt; borrowing autonomy of sub level of government.

Table 1 (continued)**Review of Some Fiscal Governance Indexes**

Author, Country, Year	Index	Elements considered
De Haan, Moessen, Volkerink, EU-15, 1999	Similar indexes as von Hagen, 1992 Indicator of Strength of Budgetary Procedure	<ul style="list-style-type: none"> • Position of the FM. Agenda setting for budget negotiations; structure of negotiations; FM can: block; approve disbursements • Position of legislature. Amendments: limited; offsetting; cause fall of government; one vote: on expenditure; on total budget size • Presence of some kind of constraint. General constraint; degree of commitment • Transparency of the budget. Inclusion of special funds; budget in one document; transparency; national accounts; government loan • Flexibility during execution of the budget. Cash limits; transfers; budget changes; carry over • Relationship with other parts of government. Existence of budget balance constraint in other levels of government; degree of planning autonomy
Hallerberg, Strauch, von Hagen, EU-15, 2001	Connectedness Index Finance Minister Index Parliament Index Finance Ministry- Implementation Index	<ul style="list-style-type: none"> • Stability or convergence programme and budget done by same department • Accounting rules and reporting • Calendar for preparing the annual budget and the stability program • Budget targets conceptually <hr/> <ul style="list-style-type: none"> • Level of discussions within the cabinet • Resolution of disagreements: Finance Minister vs. spending ministers • Possibility that Cabinet overrules FM's decisions <hr/> <ul style="list-style-type: none"> • Can Parliament propose separate budget? • Amendments: allowed; not limited offsetting cause fall of government • Existence of time limit to parliamentary consideration <hr/> <p>Information on whether Finance Minister can impose expenditure and cash limits, approves disbursements, must approve transfers between chapters</p>
Gleich, Central and Eastern European Countries, 2003	Preparation stage Legislative stage Implementation stage	<ul style="list-style-type: none"> • Statutory fiscal rule • Sequence of budgetary decision-making • Compilation of the draft budget • Members of executive responsible for reconciling conflicts over budget bids <hr/> <ul style="list-style-type: none"> • Relative power: upper house vs. lower house • Constraints on the legislature to amend the government's draft budget • Sequence of votes • Relative power of the executive vs. parliament • Authority of the national president <hr/> <ul style="list-style-type: none"> • Flexibility to change budget aggregates during execution • Transfers of expenditures between chapters • Carry-over of unused funds to next fiscal year • Procedure to react to a deterioration of budget deficit

Table 1 (continued)

Review of Some Fiscal Governance Indexes

Author, Country, Year	Index	Elements considered
Filc and Scartascini, Latin America, 2004	Fiscal Rule Index Hierarchical Procedures Index Transparency Index	Fiscal limits; medium term fiscal framework; borrowing limits; reserve funds Within the executive branch; executive-legislative relations Budget document: is comprehensive; covers extra-budgetary funds
Yläoutinen, Central and Eastern European Countries, 2004	See Hallerberg <i>et al.</i> , 2001	
von Hagen, EU-15 and Japan, 2005	Index of Budgeting Institutions	<ul style="list-style-type: none"> • Budget Negotiations. Quantitative constraint; strong agenda setting powers of FM; early fixed quantitative constraints • Parliamentary Stage. Executive strong agenda setting powers, overall constrain on budget; vote on total spending • Informativeness. Budget in one document; inclusion of: special funds, loans to non government; link to national account data; transparency of data • Flexibility of Execution. Budget law binding for government; instruments of FM to avoid overspending; transfers between minister years
von Hagen, EU-15 and Japan, 2005	Fiscal Rule Index	<ul style="list-style-type: none"> • Time horizon • Degree of commitment • Anchoring of the fiscal targets in the coalition agreement • Connection between national budget and Stability Program • Existence of clear rules dealing with shocks to exp • Strength of fiscal minister to enforce budget law
von Hagen, Hallerberg, Strauch, EU-15, 2006	Delegation Index of the Budgetary Process	<ul style="list-style-type: none"> • Executive Planning Stage. General constraint; agenda setting of FM; budget norms; structure negotiations in cabinet • Legislative Approval. Amendment are: limited; offsetting; can lead to fall of government; vote: all expenditure passed in one; on total size of budget • Implementation. FM can: block; put cash limits; approve disbursements; constraint transfer allowance; allow budget law changes; carry over
von Hagen, Hallerberg, Strauch, EU-15, 2006	Stringency Index for Fiscal Rules	<ul style="list-style-type: none"> • Time horizon • Degree of commitment • Nature of plan • Type of multiannual target
Sutherland, Price, Journard, OECD Countries, 2006	Indicator of preferred attributes of fiscal rules for sub-levels of government	<ul style="list-style-type: none"> • Restraining size of the public sector. Expenditure growth control; limit on tax autonomy; budget transparency; ratchet effect • Supporting allocative efficiency. Board budget coverage; board spending targets; uniform rules for investment • Ensuring debt sustainability. Deficit and debt control, deficit and debt monitoring • Coping with shocks. Protection from the cycle; escape clauses; budget balance rigidity; borrowing relief

the commitment approach and that have strengthened their fiscal governance in recent times, mainly by establishing multiannual frameworks.

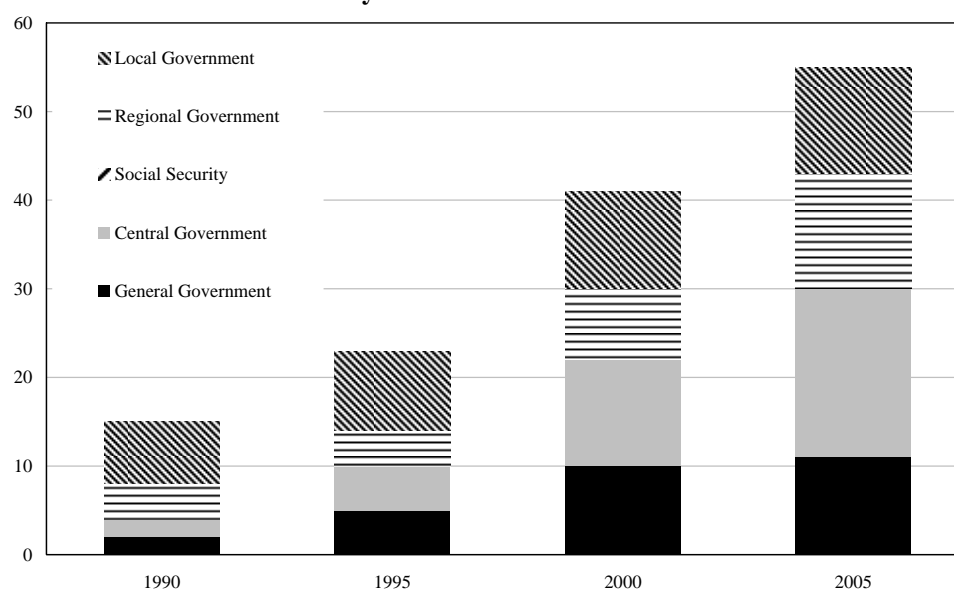
Von Hagen (2005) builds a Fiscal Rule Index summarising information pertaining to numerical fiscal rules, and an Index of Budgeting Institutions, measuring the extent to which other arrangements and practices permit to centralise the budget process.⁴ The analysis considers both EU countries and Japan 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.

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.

⁴ 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.

Figure 1**Number of Numerical Fiscal Rules in Force in the EU Since 1990
by Level of Government**

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 Figure 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

Table 2

**Distribution of Numerical Fiscal Rules in the EU
by Fiscal Aggregate Targeted and Design, 2005**

Budget Balance Rules	Golden rules	Balanced budget rules	Nominal ceiling	Ceiling as a percent of GDP	Rules in structural terms	Total
	5	8	5	1	3	22
Debt Rules	Debt ceiling in nominal terms	Debt ceiling as a percent of GDP	Debt ceiling related to repayment capacity	Other		Total
	5	2	7	1		15
Expenditure Rules	Nominal expenditure ceiling	Real expenditure Ceiling	Expenditure growth rate (nominal)	Expenditure growth rate (real)	Other	Total
	5	2	3	3	2	15
Revenue rules	Tax burden as a percent of GDP	Rule related to tax rates	Allocation of extra revenues	Other		Total
	0	1	3	1		5

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 Figure 2). Most budget balance and debt rules are applied to regional and local governments (see Figure 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

Figure 2

Number of Numerical Fiscal Rules in the EU Since 1990
by Fiscal Aggregate Targeted

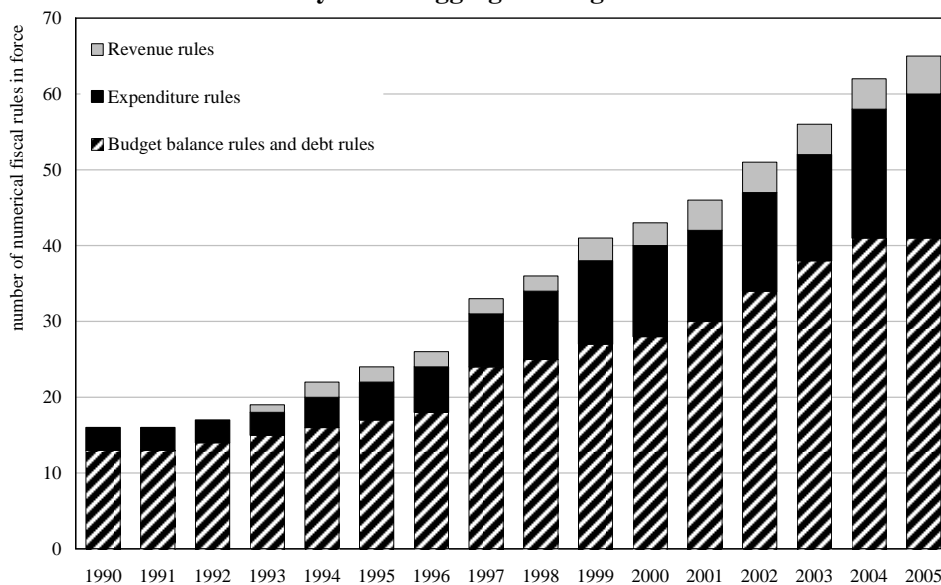


Figure 3

Distribution of Numerical Fiscal Rules in the EU
by Level of Government and Fiscal Aggregate Targeted, 2005

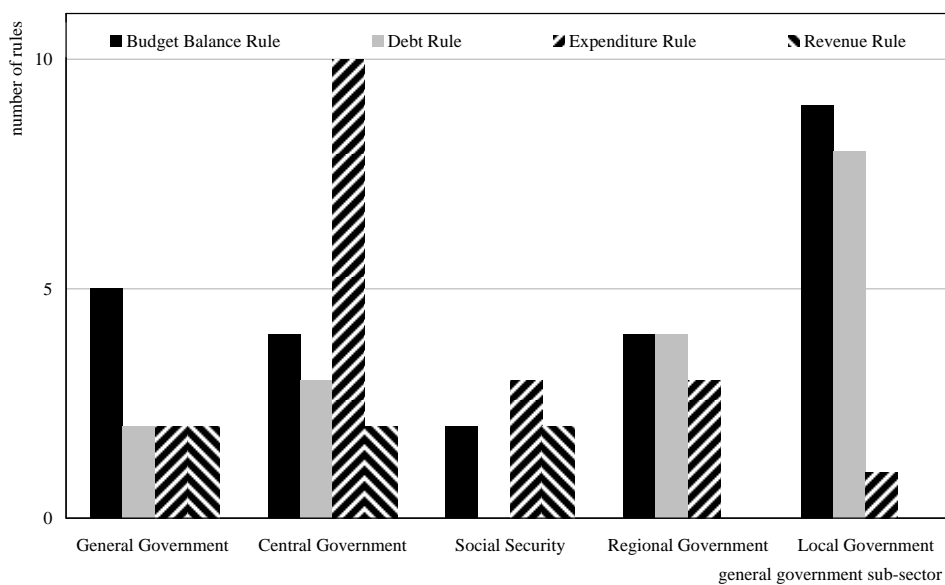
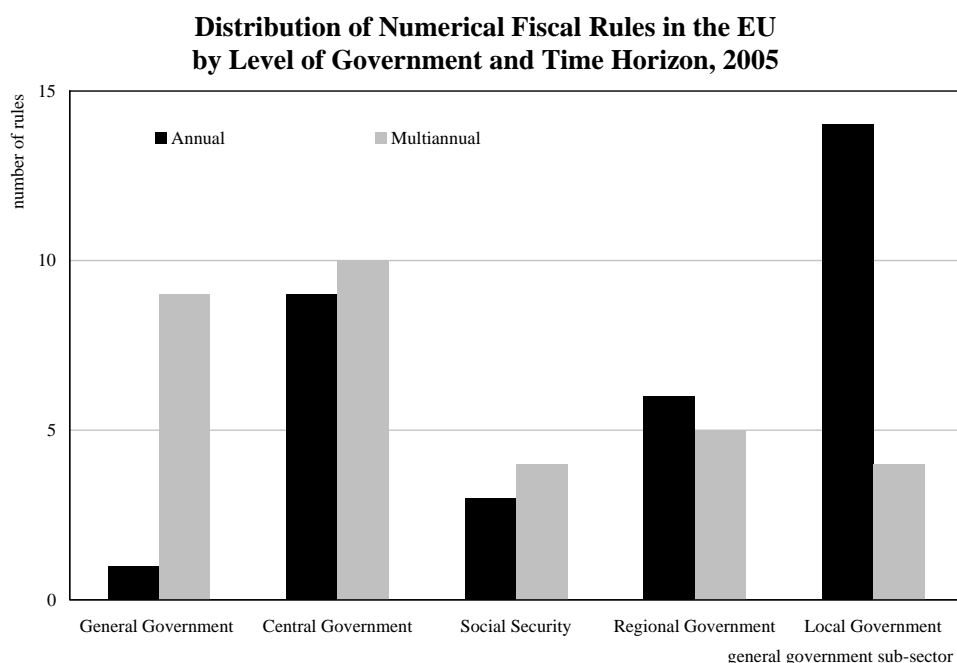


Figure 4

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 multiannual fiscal framework (see Figure 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 Figures 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.

Figure 5

Distribution of Numerical Fiscal Rules in the EU by Level of Government and Statutory Basis of the Rule, 2005

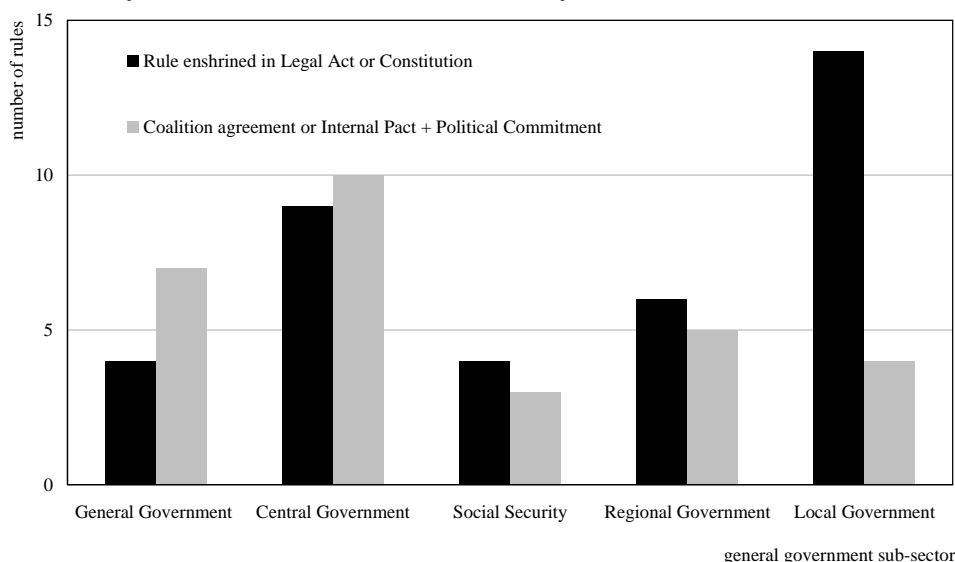


Figure 6

Distribution of Numerical Fiscal Rules in the EU by Level of Government and Enforcement Mechanism of the Rule, 2005

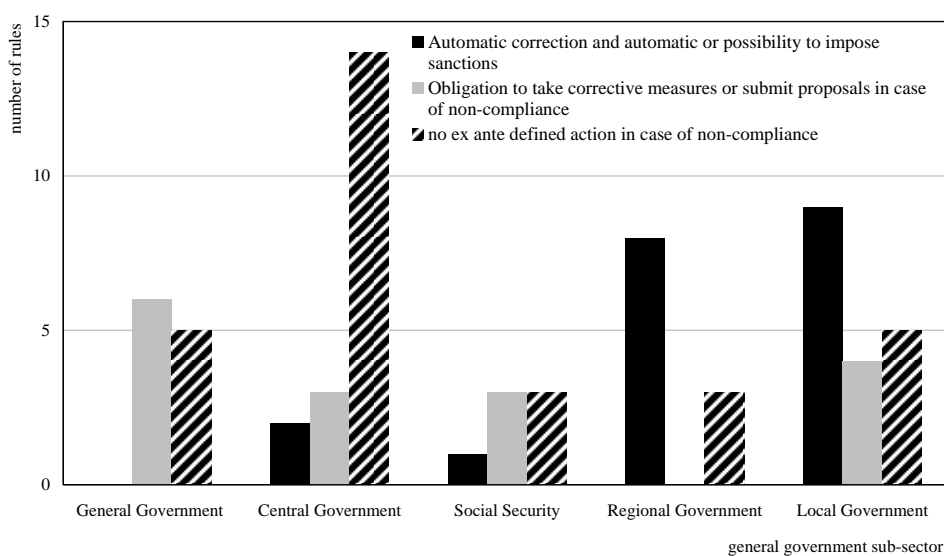
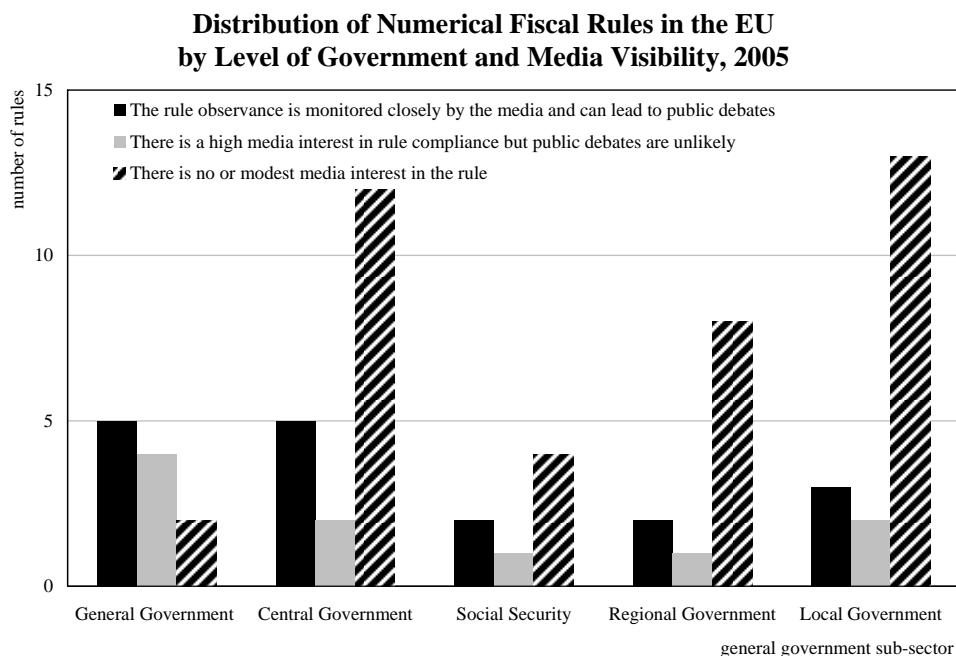


Figure 7

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 Figure 7).

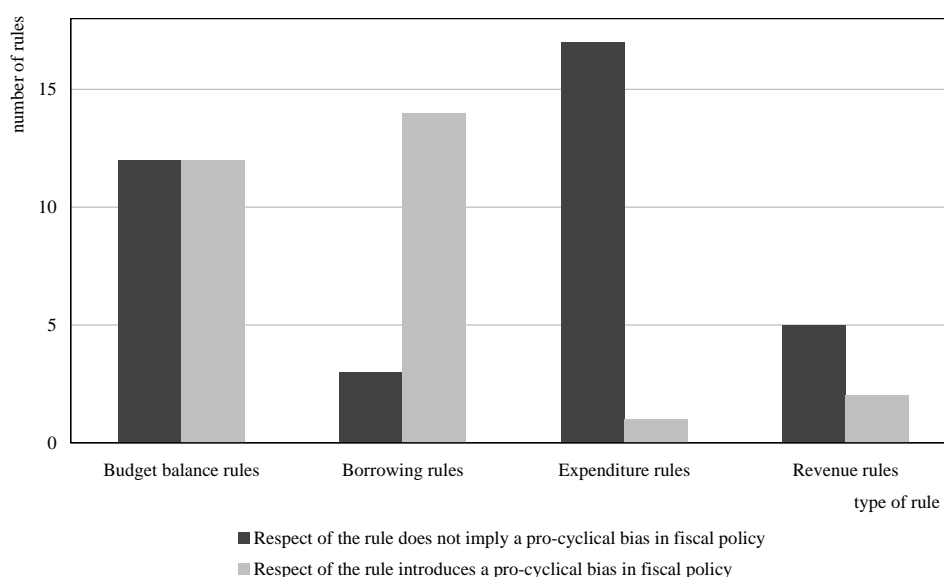
The questionnaire on fiscal rules included explicit questions on the perception of whether each of the rules in place would entail a pro-cyclical bias in the conduct of fiscal policy. The replies (see Figure 8) indicate in the majority of cases that the respect of the rule may imply the conduct of pro 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

Figure 8

Distribution of Numerical Fiscal Rules in the EU by Fiscal Aggregate Targeted and Perceived Impact on Cyclical Stabilisation, 2005



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).

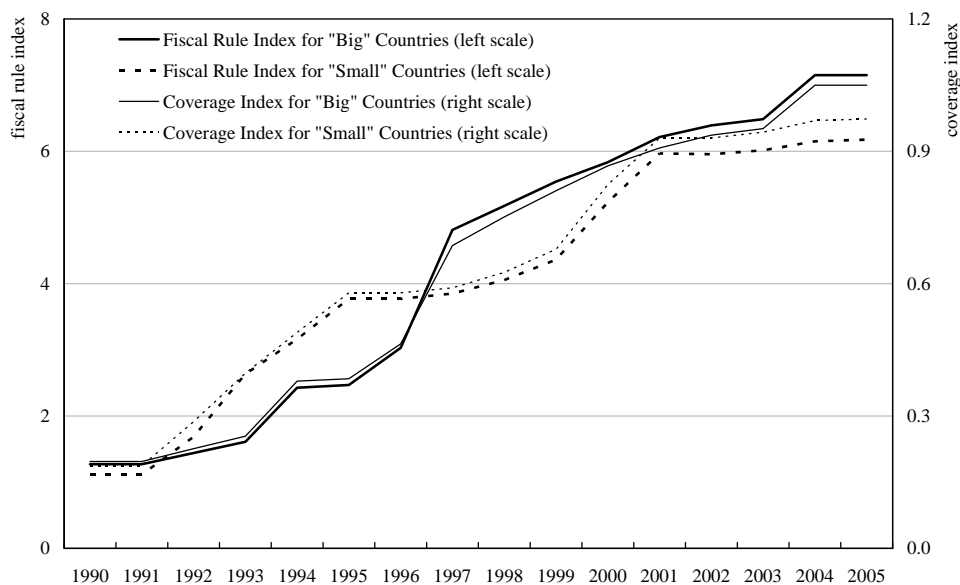
In addition, we calculated a *Fiscal Rule Cyclicity Index* with the aim of providing synthetic information on the likely impact on the stabilisation function of fiscal policy arising from the system of fiscal rules operating in a given country in a given year. This index takes into account the share 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 Figure 9, the Fiscal Rule Index exhibits a comparable evolution in the two groups of countries.

Figure 9**Evolution of the Fiscal Rule Index and the Fiscal Rule Coverage Index in “Big” and “Small” EU 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 Figures 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 (Figure 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 Figure 12). This distribution seems consistent with the fact that the larger political dispersion of governments in

Figure 10

Evolution of the Fiscal Rule Index and the Fiscal Rule Coverage Index in Countries with an Average Deficit Over the 1990-95 Period Below and Above 3 Percent of GDP

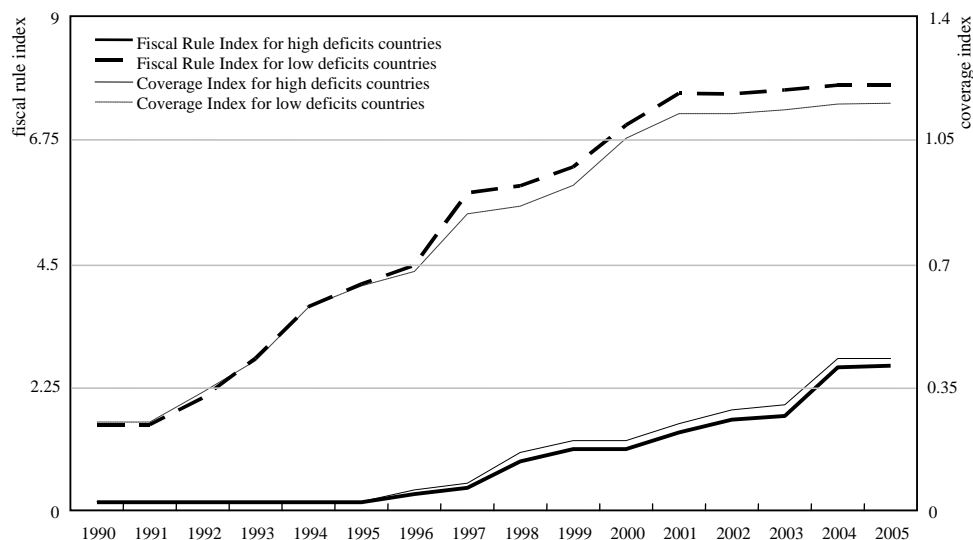


Figure 11

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

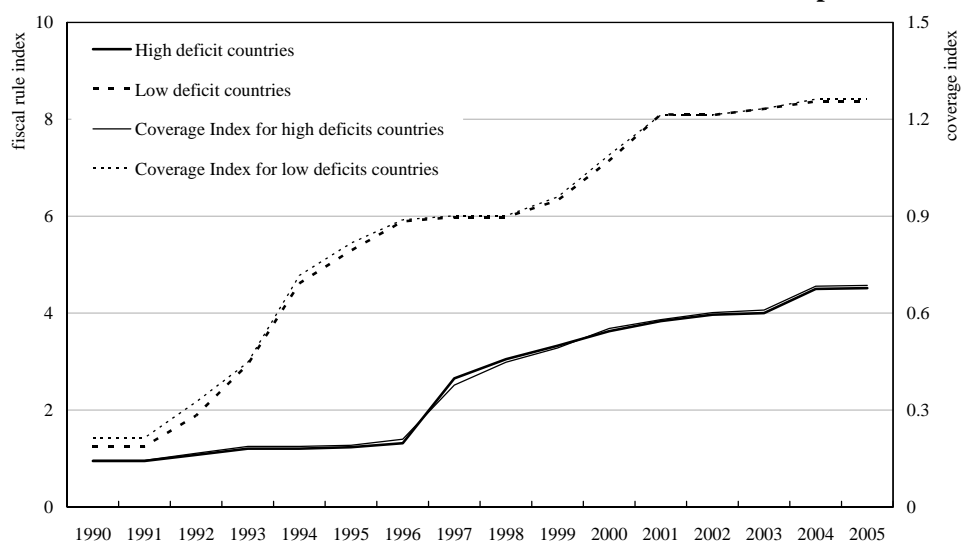
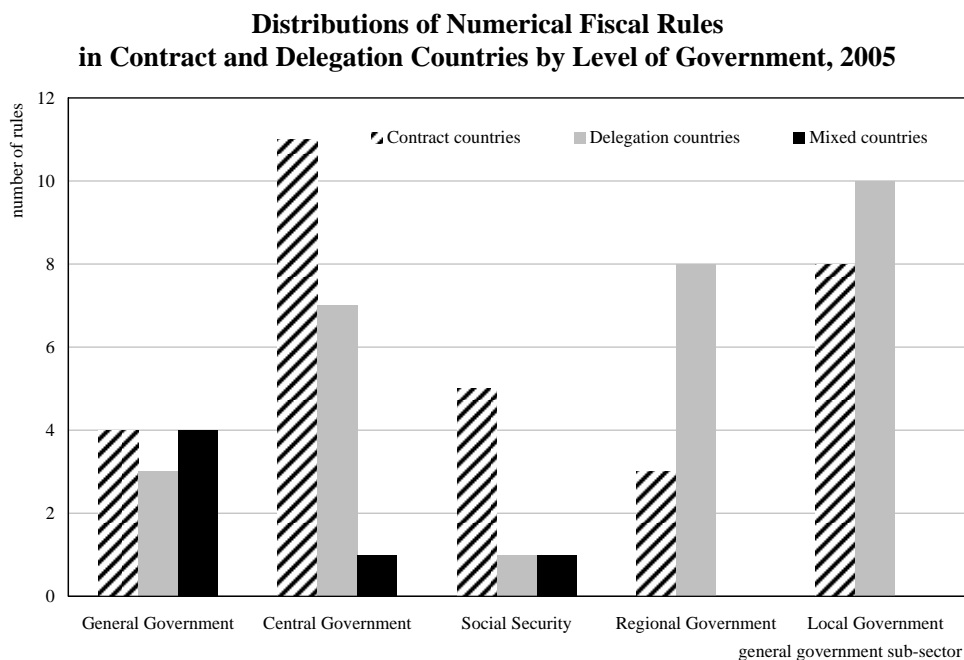


Figure 12



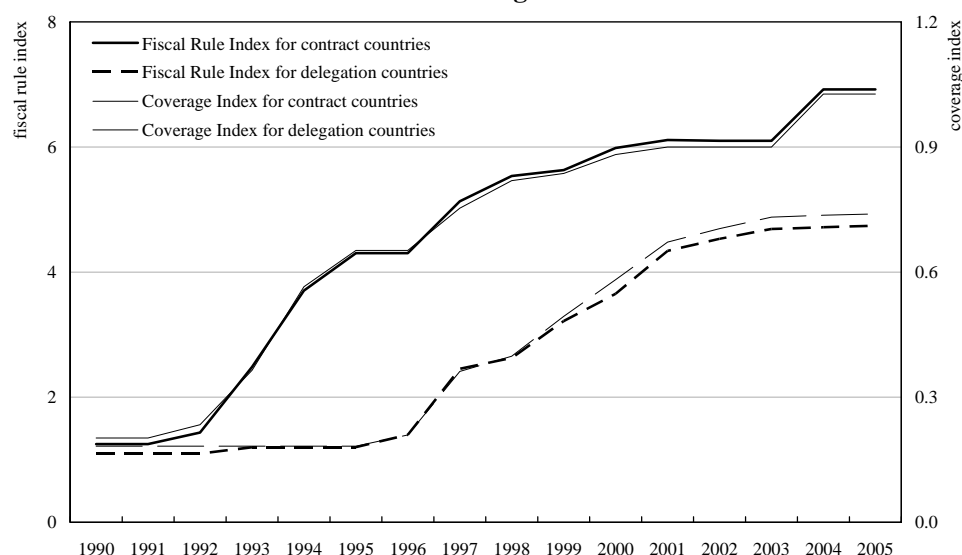
contracts countries is likely to promote fiscal rules (“contracts”) at general government or central level. Stronger reliance of fiscal rules at higher levels of government in contract countries translates into a higher value of the Fiscal Rule Index in this group of countries throughout the whole sample 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 Figure 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.

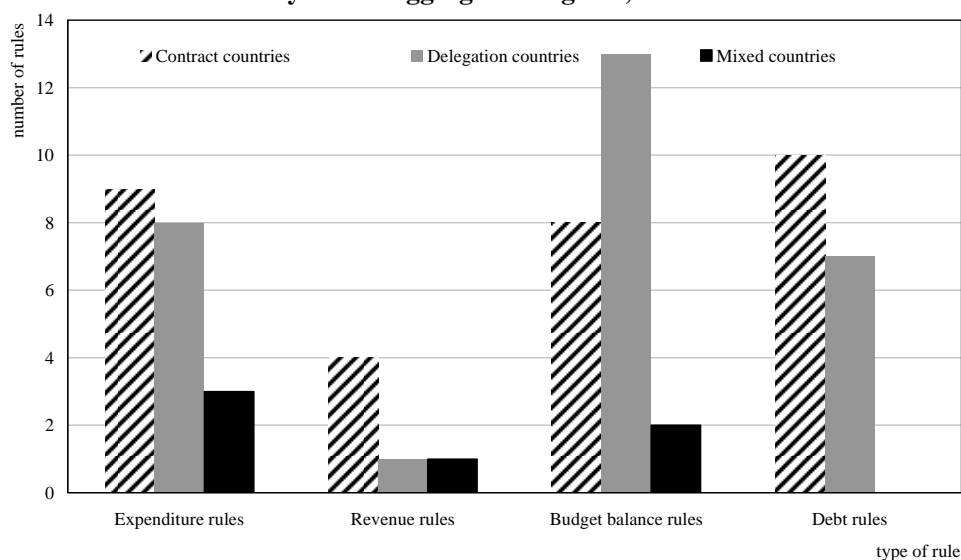
Figure 13

Evolution of the Fiscal Rule Index and the Fiscal Rule Coverage Index in Contract and Delegation Countries



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”.⁵ 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 ten new countries. The dummies

⁵ The classification used is based on von Hagen *et al.* (2001, 2002, 2005) and Yläoutinen (2004).

Figure 14**Distribution of Numerical Fiscal Rules in Contract and Delegation Countries by Fiscal Aggregate Targeted, 2005**

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.

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

Table 3

Determinants of the Value of the Fiscal Rule and Expenditure Rule Indexes

Dependent variable	(1)	(2)	(3)	(4)
Explanatory variables	Fiscal Rule Coverage Index	Expenditure Rule Coverage index	Fiscal Rule Index	Expenditure Rule Index
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)
Number of observations	217	217	217	217
R-squared	0.88	0.92	0.88	0.92

Note: 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.

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

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 per cent) are reported in brackets.

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., Galí 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., Galí 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.⁶ Country fixed effects are aimed at capturing all remaining country-specific 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., Galí 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

⁶ 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 of the fiscal rule index, budgetary variables have limited explanatory power in explaining fiscal rules.

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)
Number of observations	227	227	227	227	227	227
R-squared	0.86	0.86	0.86	0.97	0.97	0.97

Note: 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.

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.⁷

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 (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 *et al.* (2005), we used 10,000 sets of randomly-generated weights to calculate the synthetic indicator in 10,000 different ways.⁸ 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

⁷ 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 $0.2/(1-0.6)=0.33$.

⁸ The random weights are drawn from a uniform distribution between zero and one and then normalised to sum to one.

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 Figure 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 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

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)
No. of obs.	227	227	227	227	227	227
R-squared	0.86	0.86	0.86	0.86	0.86	0.86

Note: 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
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Explanatory variables						
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)
No. of obs.	227	227	227	227	227	227
R-squared	0.97	0.97	0.97	0.97	0.97	0.97

Note: 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.

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; and 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 per cent 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 multiannual 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, Galí 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.⁹ 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 multiannual framework, whether they exclude cyclically-sensitive items...). Second, the necessity to capture the way multiple fiscal rules interact to produce an overall 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

⁹ 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.

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 multiannual 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 Cyclical 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 Cyclical Index. The countries with high (resp., low) values for the index are defined as those with a Fiscal Rule Cyclical 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 Cyclical 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 three 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-cyclical, 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

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 Cyclicality Index	Countries with high values for Cyclicality Index	Countries with low values for Cyclicality Index	Countries with high values for Cyclicality 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)
No. of obs.	91	147	91	147
R-squared	0.88	0.86	0.88	0.86

Note: 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.

(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 Cyclicity 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 per cent 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 Cyclicity 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 Cyclicity 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.

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 per cent 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 Wiert, 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

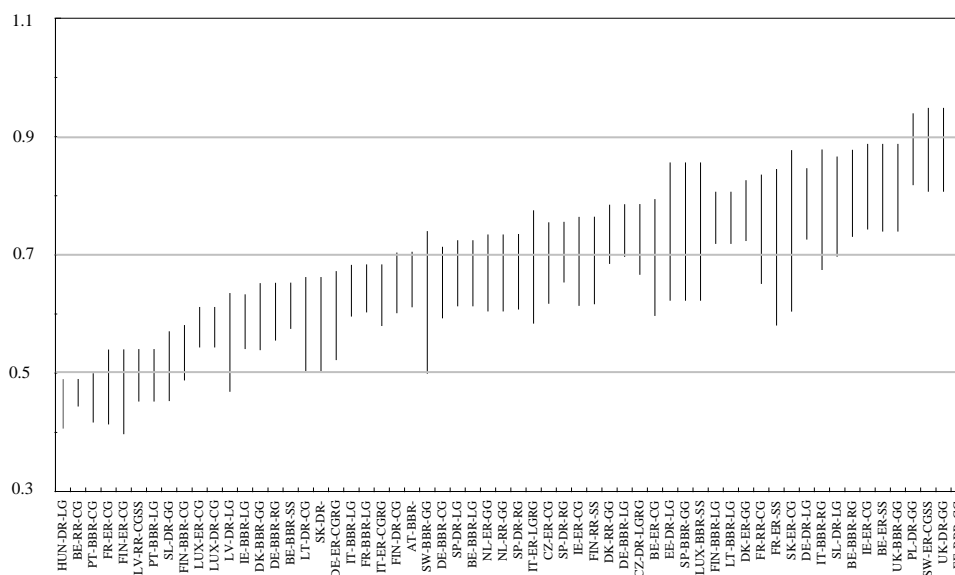
Criterion 4: Enforcement mechanisms of the rule

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

Figure 15

Index of Strength of the Fiscal Rules in Force in the EU, 2005
(ordered according to the average value)



(1) The figure shows, for all the numerical fiscal rules considered in the study, the range containing 98 per cent 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 figure only present the index consistent with the most recent features. Three rules presented in the figure 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 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 *et al.* (2005). 10,000 sets of randomly-generated weights were used to calculate the synthetic indicator in 10,000 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 figure below shows, for all the fiscal rules considered in the study, the range containing 98 per cent of the values of the index of strength of the rule calculated with 10,000 different sets of random weights (we eliminated the 1 per cent lowest and highest values of the synthetic index).

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 cyclical 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 cyclical stability 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 for 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.

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