FISCAL RULES AND FISCAL OUTCOMES IN EMU

THEORY AND EVIDENCE

PETER WIERTS

Printed by Uitgeverij BOX Press

ISBN 978-90-8891-076-0

University of Reading

Centre for Euro-Asian Studies

FISCAL RULES AND FISCAL OUTCOMES IN EMU

THEORY AND EVIDENCE

PETER WIERTS

Thesis submitted for the Degree of Doctor of Philosophy in Economics

The Centre for Euro-Asian Studies

Department of Economics

October 2008

ABSTRACT

This thesis investigates the effects of supranational and national fiscal rules on fiscal outcomes in EMU. We investigate intended effects of the rules as well as circumventing behaviour in the form of shifts towards unconstrained forms of fiscal policy. The study is motivated by the strong increase in the reliance on fiscal rules - both at supranational and national level - during the 1990s and the existing controversy about the effectiveness of fiscal rules. Its contributions include new evidence on the effects of the preventive part and the debt rule of the EU fiscal framework on fiscal outcomes, and the measurement of the institutional design of national fiscal rules and analysis of their effects on fiscal outcomes.

According to theory, fiscal rules can restrain deficit and spending biases, but only if the costs of non-compliance are large enough to counter these biases. These costs can take different forms. A widely held view is that fiscal rules can only be effective if backed by independent enforcement and economically significant penalties in case of non-compliance. Our results on the institutional design of national fiscal rules in EMU however indicate that they are self-enforced, while independent enforcement is also lacking for the EU fiscal rules. We argue that incentives for compliance can nevertheless stem from the specific political and institutional structure within which the rules have been introduced.

Results confirm expected correlations between the institutional design of fiscal rules and fiscal outcomes. Stricter rules constrain fiscal outcomes in the hypothesised manner but also lead to circumventing behaviour. A critical issue concerns the direction of causality between fiscal rules and fiscal outcomes. We interpret fiscal rules in EMU as a reflection of a policy response to rising debt ratios (the EU fiscal rules) and expenditure ratios (national expenditure rules). Given that truly external monitoring and enforcement do not seem feasible in practice, the strength of fiscal rules seems ultimately to be determined by the political commitment to the underlying objective that the rule pursues.

Declaration

I confirm that this is my own work and the use of all material from other sources has been properly and fully acknowledged.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

ACIR – Advisory Council on Intergovernmental Relations

AIC – Akaiki Information Criterion

AUS - Australia

AUT – Austria

BEL - Belgium

BBR – Balanced Budget Rule

CAN - Canada

CFE – Country Fixed Effects

CHE - Switzerland

DNK - Denmark

EC – European Commission

EMU – Economic and Monetary Union

ESP - Spain

EU – European Union

FIN - Finland

FRA - France

GBR - United Kingdom

GDP – Gross Domestic Product

GER - Germany

GRC - Greece

IFC – Independent Fiscal Committee

IMF – International Monetary Fund

IRL - Ireland

ISL - Iceland

ITA - Italy

JPN - Japan

LUX – Luxembourg

MTO – Medium Term Objective

NLD - Netherlands

NOR - Norway

NSM – Number of Spending Ministers

NZL - New Zealand

OECD – Organisation of Economic Cooperation and Development

PRT - Portugal

SGP – Stability and Growth Pact

SWE - Sweden

SCP – Stability and Convergence Programmes

SFA – Stock Flow Adjustment

USA - United States

ACKNOWLEDGEMENTS

There are many people who have supported me during the process of writing this PhD thesis. I thank Yelena Kalyuzhnova for encouraging me to start this project, and Yelena and Kerry Patterson for being excellent supervisors. You backed me when I needed it, and taught me the art of combining academic freedom with disciplined structure and planning. My work benefited from your individual expertise, but also from your coordinated messages on the overall state of my material. I also would like to thank my examiners Michael Artis and Jim Pemberton for their interest and useful comments.

There are two Chapters in this thesis – Chapters 4 and 8 – that have developed from co-authored work by Moulin and Wierts (2006) and Brosens and Wierts (2007). I thank Laurent and Teunis for inspiring discussions, creativity, fun, and a lot of hard work. At the same time I take full responsibility for the redrafted versions as they appear in this thesis.

I am indebted to De Nederlandsche Bank – especially Job Swank and Annemarie van der Zwet - for providing me with the opportunity to continue my line of research after I joined DNB in December 2005, and combine it with day-to-day policy work in the area of fiscal policy. I thank Beata Bierut and Peter van Els for their valuable comments and Cees de Boer for excellent research assistance on the database of Chapter 5.

Part of the inspiration for this thesis comes from my days as a policy advisor in the Dutch Ministry of Finance during 1996-2002. After my first job on the political decision-making procedure that led to the creation of EMU this work could only be based on a political economy approach. I thank Wouter Raab for teaching me to base policy analysis on economic insight as well as political feasibility, and Dirk Schoenmaker and Sander Oosterloo for keeping academic spirits high when we worked on the entirely different topic of financial supervision.

The ideas for the thesis came together during my stay as a Detached National Expert in DG Ecfin of the European Commission during 2003-2005. I am grateful to Elena Flores for giving me the freedom to work on new approaches, such as measuring the institutional design of national fiscal rules and building a database on fiscal plans versus outcomes under the EU fiscal rules. Laurent Moulin and Joaquim Ayuso Casals have done a great job in updating and developing these databases after I had left to Amsterdam. I thank them for sharing the updates with me.

Many other people have provided inspiration through their comments, support, advice, initiative or discussions. I am grateful to Kerstin Bernoth, Frits Bos, Mathijs Gerritsen, Massimo Giuliodori, Dermot Hodson, Heleen Hofmans, Adam Jaworski, Steven Jonk, Christian Kastrop, Sven Langedijk, John Lewis, Sandro Momigliano, Christiane Nickel, Waltraud Schelkle, Wouter Schilperoort, Alessandro Turrini, Cees Ullersma, Ingvild Wold and – last but not least – my colleagues in the ESCB Working Group on Public Finances. Joachim Wehner should be credited for incorporating the approach to measuring national fiscal rules into the OECD budgeting practices and procedures database – his initiative greatly facilitated drafting the 'further research' section that emerges at the end of this work.

Combining work on a thesis with a job and family has not always been easy. I thank my parents Henk and Ina for their support, love, and all the times they have looked after little Mark or Karina while Rosa or I were working on our research.

This PhD is dedicated to my wife Rosa Sarkeyeva. Your courage in leaving your country, family and job in order to develop your talents through PhD research has been a great example for me in starting this project. Your love and support have helped me to finish it.

To Rosa

1 Introduction

1.1 Fiscal rules and fiscal outcomes in EMU

After debt and expenditure ratios to GDP had been on an upward trend since the early 1970s, and economists had analysed these events in terms of deficit and spending biases, it became increasingly common for fiscal policy makers during the 1990s to voluntarily surrender some of their policy discretion by subjecting themselves to fiscal rules. In the European Union (EU), central governments collectively agreed to a set of supranational fiscal rules as part of the process of forming Economic and Monetary Union (EMU). At national level, the use of different types of fiscal rules increased strongly since 1990, from around 30 in 1990 towards around 60 in 2005 (EC, 2006). Whereas before the 1990s, fiscal rules had mainly been used by central governments to constrain the fiscal actions of lower levels of government, the rules that were introduced in the 1990s were of a different type as they were essentially self-imposed by central governments. A particular innovation has been the use of expenditure limits by an increasing number of countries.

The use of fiscal rules may have increased over the past one and a half decade, but the effectiveness of these rules in addressing deficit and spending biases has always remained highly controversial. For example, some authors have calculated that, in the absence of the EU fiscal rules in the early 1990s, debt ratios would have been 8 GDP percentage points higher by 2003 (EC, 2004). It has also been maintained that a rules-based framework that constrains the discretion of policy-makers is an effective way to attack the politically-induced deficit bias (Annet, Decressin and Deppler, 2005). Others have concluded that the EU fiscal rules were effective in influencing fiscal policy outcomes only during a limited period of time around 1996/97 when entry into EMU

was conditional upon compliance with the fiscal rules (Hughes-Hallet and Lewis, 2008), have pointed to efforts to circumvent the rules through the use of creative accounting (Koen and van den Noord, 2006 and Von Hagen and Wolf, 2006) or that the rules have generated incentives for governments to favour off-budget forms of government support that, at least for some time, hide the underlying fiscal cost (Brixi, 2006).

Qualitative overview articles on the experiences with fiscal rules also show differences of opinion. The review of von Hagen (2006) concludes that fiscal rules have sometimes been effective, and sometimes not. In his opinion fiscal rules can work, but only if they are backed by political support and integrated in the yearly budgetary process. Wyposz (2005, p. 70) is more pessimistic when he maintains that: 'The record (on fiscal rules, PW) is not satisfactory; rules are either too lax or too tight and then ignored'. In his opinion the deficit bias can only be solved by handing over fiscal policy to independent fiscal councils, just as the inflation bias has been solved by creating independent central banks. Indeed, a general factor underlying much of the controversy surrounding fiscal policy outcomes seems to be that whereas monetary policy in the Euro area has been generally been credible and successful in stabilising inflation expectations, fiscal policy has often lacked credibility in delivering on its budgetary commitments (OECD, 2005).

Opinions differ not only on the impact of fiscal rules on fiscal outcomes, but also with respect to the conditions under which fiscal rules can be effective. As a result, different authors reach different conclusions, depending on the criteria that they use as a benchmark. For example, on the basis of a comparison of the institutional design of the Stability and Growth Pact (SGP) with the set of desirable criteria as proposed by Inman (1996), De Haan, Berger and Janssen (2004) conclude that the SGP has failed due the lack of independent enforcement of the rules. Buti, Eiffinger and Franco (2003) however compare the institutional design of the SGP with a different set of criteria as

proposed by Kopits and Symanski (1998) and conclude that its design and compliance mechanisms fare reasonably well.

Against the backdrop of these differences in experiences and opinions, this thesis undertakes a systematic investigation on the impact of fiscal rules on fiscal outcomes in EMU. It takes as given that fiscal rules exist, and focuses on how the rules may shape the incentives of fiscal policy makers and thus how the rules may influence fiscal outcomes. The main interest is in the effects of the rules that have been introduced during the 1990s that are essentially self-imposed by the central or general government. The context of EMU is particularly suitable in this respect, as it combines the existence of identical supranational fiscal rules for all countries (that were introduced as a result of the introduction of the single currency) with considerable cross-sectional variation in the use of national fiscal rules. As a result, our research on the EU fiscal rules may detect differences in aggregate fiscal outcomes before and after the introduction of the EU fiscal rules. At the same time, our research on the national fiscal rules may help to explain variation in fiscal outcomes across countries, even if all of them are subject to the same supranational rules.

The overarching research question translates into two subquestions. In order to understand the role played by fiscal rules it should be analysed, first, why fiscal discretion may lead to the existence of deficit and spending biases. Given that a large literature has already addressed this question, the contribution of this thesis will be limited on this aspect. Second, it will be investigated how fiscal rules fiscal rules shape the incentives of policy makers in addressing these biases. This question includes intended effects of fiscal rules in addressing deficit and spending biases, as well as behavioural responses to the rules in the form of circumventing behaviour. By applying such a similar approach to different types of fiscal rules (i.e. both the EU fiscal rules

and national fiscal rules), this research may help to help to explain the controversy surrounding the debate on the effectiveness of fiscal rules, and possibly shed light on the conditions under which fiscal rules may or may not be effective.

By studying the impact of a particular type of political decision-making rule (i.e. a fiscal rule) on a particular type of economic outcome (i.e. fiscal outcomes), this study fits within the field of political economy.[1] This approach has consequences for the scope of this thesis. The interest is in the effect of fiscal rules on fiscal outcomes, and not on the rules per se. The existence and functioning of fiscal rules needs to be modelled and measured but the debate on the evolution of the rules themselves is not the primary subject of study. Hence, a large literature on specific reform proposals to the EU fiscal rules is outside the scope of this study. For an overview of the degree of controversy surrounding the design of the EU fiscal rules, see Fischer, Jonung and Larch (2007), on the 101 Proposals to Reform the Stability and Growth Pact. Similarly, a much shorter literature on specific reform proposals to national fiscal rules is also outside the scope of this study. For debates on the design of national expenditure rules, see the special volume on Fiscal Spending Rules in Wirtschaftspolitische Blätter (2007). Finally, the literature on the effects of fiscal rules that are applied to governments at the subnational level is also relevant, but outside the scope of this study. A crucial aspect of the rules that apply to subnational governments (i.e. regions, local governments) is the existence of a 'higher' level of government that may or may not enforce the rules or step in case of financial difficulties at the 'lower' level of government. This setting raises this issue of hard versus soft budget constraints for subnational governments. For recent discussions on this issue, and the effect of subnational fiscal rules on fiscal discipline

1 See Drazen (2000, p. 9): political economy is about the effects of politics on economic outcomes.

and stabilisation objectives in EU countries, see Bordignon (2006), Rodden (2006) and Wibbels and Rodden (2006).

The title of this thesis indicates that it evaluates the effects of fiscal rules on fiscal outcomes from both a theoretical and an empirical perspective. The remainder of this introduction will briefly introduce the scope of the theoretical perspective of the study (section 1.2) as well as the empirical part (section 1.3). After that, it accounts for the way the thesis is structured and ends with a plan for the thesis as a whole (section 1.4).

1.2 Theory

In this thesis we use the definition of a fiscal rule as proposed by Kopits and Symanski (1998, p. 2): a fiscal rule is 'a permanent constraint on fiscal policy, expressed in terms of a summary indicator of fiscal performance, such as the government budget deficit, borrowing, debt or a major component thereof'. As an introduction to the theoretical approach in this thesis it may be considered why permanently constraining the range of fiscal policy options could ever be welfare improving. In a standard neo-classical setting, where all decision-making power is vested in a single economic entity that maximises a social welfare function (i.e. the idea of a 'benevolent dictator'), the discretionary solution would by definition be socially-optimal, so that fiscal rules could not play a useful role in improving policy outcomes. Hence, as a first step in analysing the effects of fiscal rules on outcomes, elements need to be introduced that recognise the political nature of decision-making in fiscal policy. As pointed out by Drazen (2000), allowing for conflicts of interests may cause the solution to depart from (i.e. be biased away from) the social optimum. With respect to fiscal policy, Tabellini and Alesina (1990) have shown the existence of a deficit bias due to a conflict of interest between

governments that alternate in power, while Shepsle and Weingast (1981) and Weingast *et al.* (1981) have shown the existence of a spending bias due to a conflict of interest between the specific benefits of expenditure and the costs that are levied over the tax-paying population at large.

The present research recognises that conflicts of interest may arise with respect to the macro-economic function of fiscal policy (i.e. to ensure fiscal sustainability and a degree of stabilisation of the economy) as well as with respect to the micro-economic function (which is to ensure and efficient and effective allocation of public resources). Concerning the macro-economic function, the introduction of the euro has changed the setting to one where the decentralised fiscal policies of the individual countries interact with centralised monetary policy. Conflicts of interest may then arise as a result of different objectives that different players pursue, and biased outcomes in the form of suboptimally high budget deficits and interest rates may arise (Chapter 3). Concerning the micro-economic function of fiscal policy, the analysis recognises the existence of spending and deficit biases due to conflicts of interest within the government and between subsequent governments in power. The new element here is that during the 1990s several countries have attempted to self-restrain these biases through the use of fiscal rules at national level (Chapters 6 and 7).

Recognising the political nature of budgetary decision-making is only a first necessary step for analysing the effects of fiscal rules on fiscal outcomes. The second step involves modelling the incentive effects of fiscal rules in addressing these biases. This requires that choices need to be made concerning the level of detail in which fiscal rules are modelled. On this aspect, several earlier studies have assumed that the rules were fully credible (e.g. Beetsma and Uhlig, 1999 and Artis and Buti, 2000). In this study, this assumption cannot be maintained given its focus on fiscal rules for which truly

independent external enforcement is lacking. The analysis therefore explicitly takes the possibility of a probability of enforcement that is smaller than one into account, with respect to both the EU fiscal rules and the national fiscal rules. In addition, as a result of mounting evidence on the existence of creative accounting under budget balance rules the incentives for circumventing behaviour will also be included.

To summarise, the theory of the EU fiscal rules and of national fiscal rules have several elements in common. The starting point is always the political nature of fiscal decision making. Conflicts of interest either between individual countries in EMU or individual spending ministers within the cabinet may lead to the existence of deficit or spending biases: a deficit or level of expenditure that is higher than what would be considered as socially optimal. This framework can then be used to investigate the effects of fiscal rules in addressing these biases. As may perhaps seem obvious, the discussion on the effects of fiscal rules will then concentrate of the incentives for compliance (for example: a fiscal rule with a probability of enforcement of zero will give the same solution as that without a fiscal rule). A less obvious but nevertheless crucial issue will be how these incentives for compliance arise. As will be shown in detail in later Chapters the form in which these incentives arise may actually differ for the EU fiscal rules and national fiscal rules. Finally, it will be investigated for both the EU fiscal rules and national fiscal rules how incentives and opportunities for circumventing may diminish the overall effectiveness of fiscal rules. Again, while the general principle is the same for both types of rules, the way this effect occurs will be shown to depend on the specifics of the rule under consideration.

1.3 Evidence

According to theory, a fiscal rule can be expected to be effective in addressing spending and deficit biases if strong incentives for compliance exist and if loopholes are closed off. Following the work by Inman (1996) the standard view is that such incentives for compliance can be created by independent monitoring, economically significant sanctions and a strong legal basis of the rule (see also literature review in Chapter 2). On this basis, the hypothesis can be formulated that the effectiveness of fiscal rules will depend on their institutional design. In this context, ex ante fiscal rules are defined as fiscal rules which contain an obligation to comply in terms of fiscal plans but not fiscal outcomes (in other words: enforcement on ex post compliance is lacking). Such rules are not expected to be effective, as they can easily be put aside once the planning stage is over. On the other side of the spectrum there are hard fiscal rules that are backed by monitoring and enforcement by an independent institution and economically significant sanctions. Obviously, such rules are expected to be effective, unless they can be circumvented by behavioural responses towards forms of fiscal policy outside the scope of the rule. Perhaps the most interesting class of fiscal rules, for which the degree of controversy may be the highest, are the rules that lie in between the very soft and very hard types of institutional design. Such rules are characterised by an obligation to comply, but they are not backed up by independent enforcement and sanctions.

Having formulated these hypotheses about the different types of fiscal rules, the next step is to measure the institutional design of the fiscal rules that have been put in place in practice. For the EU fiscal rules this is easy, as a considerable amount of research has already addressed this issue; see the literature review in Chapter 2 for details. The bottom line is that the core part of the rules – i.e. the reference values for the deficit and the gross debt ratio – contains obligations which are however not backed by

independent enforcement. When research on this thesis started, much less was known however about the institutional design of national fiscal rules. A questionnaire-based approach has therefore been developed for measuring the key institutional features of national fiscal rules. As will be shown in Chapter 6, results show that national rules are essentially self-enforced, as truly independent monitoring and enforcement are as absent for the national fiscal rules as they are for the EU fiscal rules. The reason that we report this key finding already in this Introduction instead of only in the Conclusions of Chapter 9, is that is raises a new set of questions to which our research should pay attention. Can there still be an effect on fiscal outcomes from the EU fiscal rules as well as national fiscal rules if incentives for compliance do not come from truly external enforcement? Are there any other political or institutional mechanisms at play that can create incentives for compliance?

After having measured the institutional design of fiscal rules, the next step is to investigate whether there is an effect of these fiscal rules on fiscal outcomes. As indicated already the EU fiscal rules are the same for all countries in the Euro area. Our research therefore aims at detecting differences in aggregate fiscal outcomes before and after the introduction of the rules. At the same time, the institutional design of national fiscal rules shows a considerable degree of variation across countries. Our approach aims at testing whether these differences in design help to explain the variation in fiscal outcomes across countries. In doing so, the 'usual' methodological issues need to be taken into account. Obviously, appropriate control variables should be included in the analysis in order to avoid problems of omitted variable bias. Moreover, the fiscal rule should be exogenous to fiscal outcomes or – in case there is an issue of endogeneity - appropriate instrumental variables, if available, should be considered. Such variables should be correlated with the existence and design of the fiscal rule, but themselves not

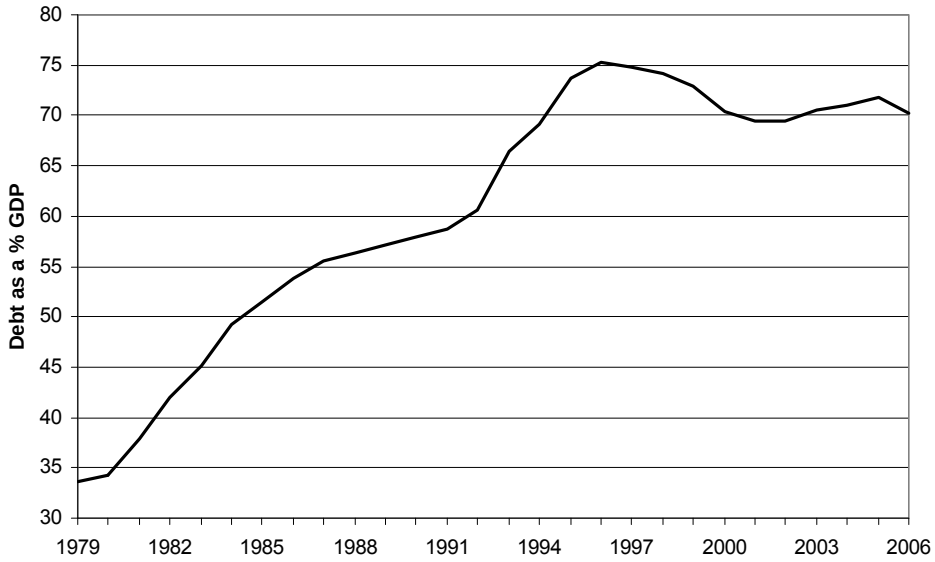
be determined by the dependent variable (i.e. fiscal outcomes). We now further introduce these issues for different types of rules.

Chapter 4 will look at compliance with the so-called Medium Term Objective (MTO) of the EU fiscal rules. This is a clear case of an ex ante type of fiscal rule, as the obligation to aim for a sustainable fiscal position applies to medium term fiscal plans but not to fiscal outcomes. As will be shown in detail in Chapter 4, fiscal plans generally show compliance with the obligation to show progress towards sustainable fiscal positions (for most countries: a movement towards balanced budgets). Fiscal outcomes, on the other hand, showed a rather different path: they went from a small surplus in 2000 to a deficit of just above 3% GDP in 2003, and then started improving again (the data are shown in Figure 4.1 in Chapter 4). From a first look at the data we might therefore be tempted to conclude that the ex ante part of the EU fiscal rules has not been effective in steering fiscal outcomes towards the medium term targets as indicated in the fiscal plans of the countries (which in turn follow from the obligation of the fiscal rules to present programmes that show progress towards sustainable fiscal positions). Before drawing such a conclusion, we should however verify that the divergence between plans and outcomes has not been caused by other variables outside the direct influence of fiscal policy makers. A first obvious variable is the economic cycle, which was at its top in 2000 (when a surplus was reached) and at a low point in 2003 (when the Euro area as a whole broke the 3% GDP limit for the budget balance). Chapter 4 will apply such an approach by decomposing the differences between fiscal plans and outcomes into its constituent parts, i.e. the role played by policy measures versus surprises in the macro-economic scenario. Moreover, it will investigate in detail the source of the budgetary slippage, i.e. whether it is on the revenue or the expenditure side of the budget.

As an introduction to the type of fiscal rules that are the most common in practice in the Euro area- i.e. those for which there is an obligation to comply but are ultimately 'self-enforced' since truly independent monitoring and enforcement are absent – we may consider the effect of the EU fiscal rules of fiscal outcomes. The reference values of 60% GDP for the gross debt ratio and 3% GDP for the deficit entered into force in 1993 and are the same for all Euro area countries – there is no cross sectional variation for the countries in EMU. Therefore, the only feasible option for examining the effect on fiscal outcomes is to investigate whether fiscal behaviour changed from 1993 onwards. As an introduction to the record on these fiscal rules, we consider the development of the ratio of gross debt to GDP in the Euro area as in Figure 1.1. In this respect, a first look at the data shows that debt had obviously been on an upward trend during the decade before the EU fiscal rules came into play in 1993. From that moment on, the ongoing increase in the gross debt ratio first accelerated but eventually gross debt stabilised around 70% of GDP. This first look at the data does not contradict the suggestion that the fiscal rules have been introduced in response to recurrent deficits, as reflected in the increase in the gross debt ratio. More difficult is the question whether fiscal outcomes improved after the rule had been introduced. It may be pointed out that the trend increase in the debt ratio stopped a few years after the rules had been introduced. At the same, the increase in the debt ratio initially accelerated while eventually debt stabilised around a rather high level. More importantly, fiscal outcomes are determined by a range of factors such as political preferences, the economic cycle and the institutional setting. Isolating the effect of fiscal rules on outcomes requires a methodology that controls for all these variables so that the effect of fiscal rules can be measured while keeping all other variables constant. Furthermore, it should be taken into account whether the rule has shifted policy to fiscal forms that do not fall under the scope of the fiscal rule. Chapter 5

on the effects of the EU fiscal rules on debt sustainability will apply such an approach by testing for structural breaks in different forms of fiscal behaviour after the introduction of the EU fiscal rules.

Figure 1.1 Gross debt in the Euro area, 1979-2006

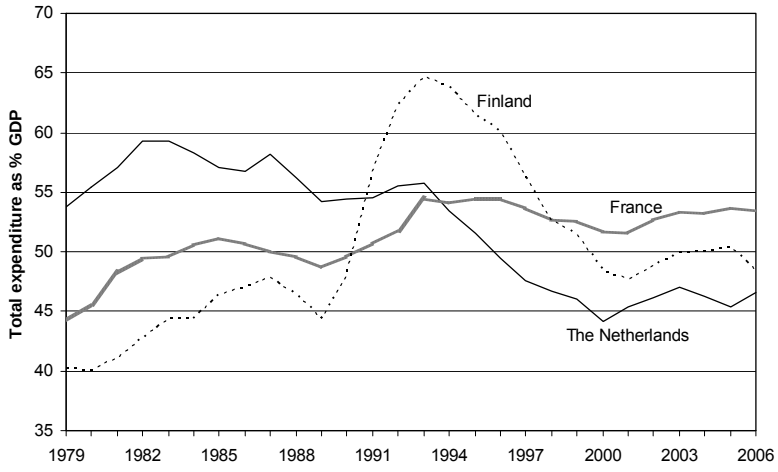


Source: EC Ameco database.

In a similar fashion, the effect of national fiscal rules on fiscal outcomes can be introduced by means of Figure 1.2. It shows the development in expenditure to GDP ratios in three Euro area countries that have introduced national expenditure rules in the 1990s: The Netherlands (introduction in 1994), Finland (1999) and France (1998). Contrary to the EU fiscal rules, qualitative studies on national expenditure rules strongly suggest that there is variation in the institutional design of national expenditure rules. These studies point to the positive experience with the rules in The Netherlands and Finland (EC, 2003) and to disappointing experience in France due to the lack of political commitment and enforcement of the expenditure rules (Moulin, 2004). At first sight, actual expenditure developments do not contradict this view. In the Netherlands,

the expenditure ratio was already on a downward path before the introduction of the rule in 1994, and then embarked on a rather steep decline after the introduction of the rule in 1994. In Finland, the expenditure ratio had been on a steep decline already before the introduction of the rule in 1999, and then stabilised after the introduction of the rule. In France, expenditure had been on an upward trend and remained high after the introduction of the expenditure rule. But again, systematic quantitative evidence on the role played by expenditure rules would need to control for all other variables that may have impacted on fiscal developments, such as the degree of political fragmentation that causes spending biases in the first place. Chapter 7 applies such an approach to the analysis of national spending rules while Chapter 8 analyses the effects of broader indices of all types of national fiscal rules on fiscal outcomes.

Figure 1.2 Total expenditure to GDP ratios in The Netherlands, Finland and France



Source: EC Ameco database.

Our final introductory remarks on the empirical part of this thesis are on the questionnaire-based approach that we developed for measuring the key institutional features of national fiscal rules. As it was uncertain from the outset whether this

approach would deliver meaningful results, a pragmatic decision was taken to limit the scope of the first version of the questionnaire to one specific type of national fiscal rule (i.e. expenditure rules). As first results seemed to be promising, the European Commission has taken the initiative to expand this approach to al types of national fiscal rules in the EU (EC, 2006a). Subsequently, the OECD has included our approach for measuring national fiscal rules in its 2007 OECD Budget Practices and Procedures Survey. As a result, by 2007 data for a large sample of 38 countries have become publicly available on the website of the OECD budget practices and procedures database. Given that these data are cross sectional in nature, it will however still take several years before longer time series will become available from this source.

1.4 A plan for the thesis

Overall, our work aims at investigating the effects of fiscal rules on fiscal outcomes in a more integrated manner than has been done so far, where the focus has often been on the effect of a specific type of rule on a specific type of outcome, and focusing either on the intended effects of the rule or the circumventing behaviour. In line with our general approach, we do not only include the EU fiscal rules within the scope of our study but also national fiscal rules. It is also for the sake of being comprehensive that we investigate not only the intended effects of fiscal rules but also circumventing behaviour. Our general approach moreover explains why we are using different approaches: a review of the literature, economic models and empirical work. Obviously, the purpose of such a comprehensive approach is that we hope that it will enable us to identify common elements that run across the different types of rules. This introduction,

the general literature review in Chapter 2[2] and the concluding Chapter 9 are therefore essential elements of the thesis: they highlight such common themes or messages that follow from our work that apply equally to fiscal rules whether they are applied at national or supranational level. This structure, with common themes highlighted at the beginning and end of the work, also implies that the approaches in the Chapters on individual topics, i.e. Chapters 3 to 8, will be of a different nature. Each of these Chapters intends to make a specific original contribution on one specific issue, on the basis of a methodology that is tailored to the problem at hand. It will probably facilitate the reader in going through this work if he/she keeps in mind that all these different Chapters are tied together by the same single overarching research question and that the overall implications that emerge from the different perspectives will be clustered in Chapter 9. Moreover, even though Chapters 3 to 8 could – in principle – be read in isolation, they still appear in a natural order that builds the argument in several steps.

The balance of this thesis is divided into three parts. The first part serves as a general introduction and consists of Chapters 1 and 2. Following this introductory Chapter, Chapter 2 provides a survey on the political origins of the spending and deficit biases that fiscal rules aim to address. In order to put the discussion on fiscal rules in perspective, it also discusses alternative proposals for addressing deficit and spending biases, such as delegating fiscal policy to independent fiscal councils, decreasing the number of spending ministers, and changing the procedural rules that govern the budget process. It ends with a review on the existing evidence concerning the effects of fiscal rules on outcomes. On this basis, it identifies gaps in the literature where a contribution could be made. Regarding the EU fiscal rules, this implies that we focus less on the well

2 Moreover, Chapters 3 to 8 also contain literature reviews on the specific topics in these Chapters.

know reference value of 3% GDP for the budget balance, as a large literature has already investigated the effects of this rule on fiscal outcomes. Instead, we identify that other relevant parts of the EU fiscal framework have received much less attention. This includes the ex ante rule that obliges countries to submit fiscal plans that show progress towards fiscal sustainability, but without enforcing this obligation in terms of fiscal outcomes; this is a very clear example of an ex ante rule (Chapter 4). It also includes the reference value for the debt ratio of 60% GDP that may have given rise to its own specific behavioural responses (Chapter 5).

The second part of this thesis focuses on the impact of the EU fiscal rules on fiscal outcomes. Chapter 3 demonstrates the rationale of the EU fiscal rules on the basis of a theoretical model of fiscal-monetary interactions in EMU, which focuses on the macro-economic functions of fiscal and monetary policy. It then concentrates on the incentive effects of the fiscal rules in, first, addressing the deficit bias and, second, circumventing the rules. Apart from the 'usual' budget balance rule, we also investigate the effects of the ex ante part of the EU fiscal rules and the debt rule, as indicated already. Chapter 4 and 5 follow naturally, as they investigate the empirical implications of this model concerning the ex ante part of the EU fiscal rules and the debt rule. A novel element of Chapter 4 is that it analyses the source of fiscal slippage by decomposing the differences between fiscal plans and outcomes into a part that can be explained by (lack of) policy effort and macro-economic surprises. The main innovative element in Chapter 5 is that it adjusts the existing methodology for measuring debt sustainability to the context of EMU, by including discrepancies between debt and deficit developments that may reflect efforts to circumvent the fiscal rules.

The third part of this thesis investigates the effect of national fiscal rules on fiscal outcomes. Chapter 6 presents the questionnaire on national fiscal rules and the

methodology for aggregating the institutional features into a single index that can be used in econometric research. It also takes a first look at the institutional design of national fiscal rules in the Euro area, and discusses implications for the subsequent analysis on the effects of these rules on fiscal outcomes. Chapter 7 analyses the effects of a specific national fiscal rule (i.e. expenditure rule) on fiscal (i.e. expenditure) outcomes. An advantage of focusing on a specific type of fiscal rule is that it can be based on a clear theoretical framework of expenditure bias. At the same time, a drawback is that results cannot be generalised to other types of fiscal rules and that data availability for specific types of rules is limited. Chapter 8 therefore takes the alternative approach of investigating the effect of a broad set of political and institutional variables, including the EU fiscal rules and national fiscal rules, on fiscal outcomes. As such, the Chapter gives an overview on the main effects of fiscal rules on fiscal outcomes, on the basis of aggregate indicators of all national fiscal rules and (at last!) an indicator of the degree to which the 3%-limit of the EU fiscal rules is binding. It also put our results on fiscal rules in a broader perspective, as it includes a comparison of the effects of fiscal rules with other options for political and institutional reform for addressing the fiscal deficit bias. Chapter 9 contains the conclusions of our work.

2 Politics, Institutions and Fiscal Rules: Literature Review

2.1 Introduction

The effectiveness of fiscal rules is subject to a substantial degree of controversy, as described in Chapter 1. As a result, several alternative solutions to deficit and spending biases have been proposed in the literature. Still, fiscal rules remain widely used in practice while some alternative solutions as proposed in the literature have not been followed up by implementation, such as the installation of independent fiscal committees or reducing the number of spending ministers in the coalition. Hence, understanding the role played by fiscal rules requires knowledge of these alternative instruments for improving fiscal policy outcomes, their theoretical appeal, as well considerations that have, at least so far, limited their use in practice.

In this Chapter, we therefore survey the literature on different policy options for addressing fiscal deficit and spending biases. Section 2.2 starts with a brief introduction to the political sources of the biases, which will be followed up by more detailed analysis later in Chapter 3 on the EU fiscal rules and Chapters 7 and 8 on national fiscal rules. Section 2.3 reviews solutions that aim at addressing political biases at their source, i.e. to reduce political conflict by delegating authority to independent fiscal committees or bringing down the number of spending ministers. Section 2.4 continues the analysis by surveying solutions that aim at counterbalancing biases rather than removing them. It starts by briefly reviewing the literature on the interaction of fiscal institutions and fiscal outcomes. Proposals in this strand of the literature include strengthening the power of the minister of finance or improving fiscal transparency,

while fiscal rules could also be classified under the more general heading of fiscal institutions. A brief overview of this literature on institutions paves the way for a first more detailed look at fiscal rules in section 2.5. It describes an evolution in research on fiscal rules from the emergence of the standard view that only hard fiscal rules can effectively contain the deficit bias, towards more recent studies that have started to analyse the conditions under which softer forms of governance can be expected to influence fiscal outcomes.

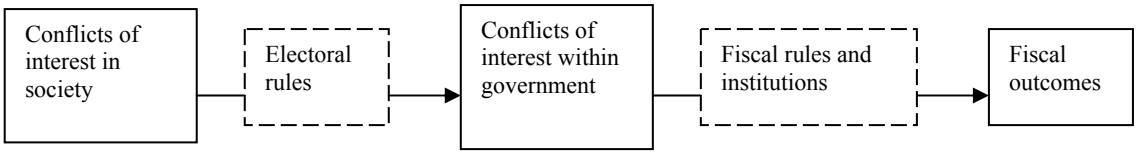
2.2 Political conflict and fiscal outcomes

Traditionally, the rationale for fiscal rules and institutions has been explained by the existence of deficit and spending biases that arise due to political fragmentation within government or between governments that alternate in office. The basic argument is that fragmented decision making increases the perspective on concentrated benefits of fiscal decisions for specific groups or during a specific period of time, while dispersing the costs in the form of general taxation over other groups in society or in time.

From the start of the discussion it should however be noted that recent research shows that the origins of political fragmentation may go beyond political decision-making within the government itself. Persson and Tabellini (2004) argue that the degree of political fragmentation within the government is related to the electoral rules in place (i.e. majoritarian or proportional, to be discussed in more detail below). As a result, their research stresses the impact of electoral rules on fiscal outcomes. But even this is not the final story given that these electoral rules may be endogenous to the degree of fragmentation within society itself (Aghion *et al.*, 2004). These arguments are combined in Figure 2.1 that provides a stylised description of the aggregation of individual

preferences into fiscal outcomes, first through elections and then through decision making within the government. It indicates that – ultimately – fiscal outcomes may be influenced by (i) the degree of political conflict within society and as reflected within the government and (ii) the devices for political conflict resolution, i.e. the rules according to which elections are organised and the fiscal rules and institutions that govern the budget process.

Figure 2.1 Political conflict and fiscal outcomes



In addition to these arguments, it has also been put forward that both fiscal rules and fiscal outcomes may be determined by a third variable of voter preferences (Poterba, 1996). This argument is important, because it would imply that possible correlations between fiscal rules/institutions and fiscal outcomes do not represent causality from rules to outcomes. Such a position would imply that political and institutional variables can only signal underlying preferences within society. For many authors such a position is too extreme, given that the preferences in society could be expected to evolve slowly while empirical research has found specific influences of political and institutional variables on fiscal outcomes. This latter position represents a belief that increased knowledge about and specific reforms to, e.g., electoral rules, fiscal institutions or rules may have an independent effect on fiscal outcomes. In addition, from a more technical angle it is often argued that appropriate instrumental variables are not available for measuring the effect of political and institutional variables on fiscal outcomes so that, indeed, we are left with a belief that there could be a causality from specific institutional

variables to fiscal outcomes. For specific applications of this latter argument on the absence of IV-variables, see e.g. Poterba (1996) on fiscal rules, Perotti and Kontopoulos (2002) on political fragmentation and de Haan et a. (1999) on fiscal institutions. The rest of this section discusses the political origins of fiscal indiscipline on the basis of Figure 2.1, starting with the electoral rules.

2.2.1 Electoral rules

Persson and Tabellini (2004) investigate the impact of electoral rules on fiscal outcomes, distinguishing between majoritarian and proportional elections. In proportional elections, the minimal number of voters to win the elections (50 percent) is larger than in majoritarian elections (i.e. winner takes all), where a party can win with just 25 per cent of the votes (50 percent in 50 percent of the districts). Theory predicts that with proportional elections, politicians are induced to support programmes that benefit large parts of the population, such as public goods or welfare programmes. Their empirical results indeed strongly indicate that majoritarian elections lead to smaller governments and smaller welfare programs. The argument is related to theories that explain spending and deficit biases from political fragmentation given that coalition and minority governments are more likely to emerge under proportional elections, while parliamentary systems are more likely to produce single party majority governments.

2.2.2 Conflict of interest within and between governments

Political fragmentation within governments (‘size fragmentation’) - as reflected e.g. in the number of political parties or spending ministers within the cabinet - and between governments (‘time fragmentation’) are generally seen as the principal political sources

of fiscal biases. Many studies on the effects of fiscal rules or institutions choose to base their analysis only one of these concepts. For example, Hallerberg *et al.* (2007) emphasize size fragmentation, while Debrun and Kumar (2007) base their analysis of fiscal rules on the model of Tabelinni and Alesina (1990) on deficit bias due to time fragmentation. An interesting recent innovation is the study by Krogstrop and Wyplosz (2007) that bases its theoretical analysis of fiscal rules on a combination of size and time fragmentation.

Size fragmentation is expected to influence budgetary outcomes through the common pool problem. The more fragmented is the system of budgetary decision-making, the weaker are the incentives for each participant to internalise the full tax burden of its spending bids so that a suboptimal level of spending results. This argument has been applied to different settings. The original version of the common pool problem as in Shepsle and Weingast (1981) highlights geographically dispersed benefits of public spending. Von Hagen and Harden (1994) model the role played by individual spending ministers, while the argument has also been applied to subnational governments (e.g. Rodden, 2006); in fact it could be applied to any interest group that benefits from targeted expenditures.

These static applications explain expenditure pressures, and not necessarily a tendency towards budget deficits. Velasco (1999) shows how the common pool problem may lead to deficits in the context of a dynamic model. In this model, the common pool of tax resources expands to future generations while these resources can be used by running deficits. In addition political fragmentation may also explain why deficits persist despite general recognition that adjustment is needed. The reason is a 'war of attrition' between e.g. the coalition parties, waiting for each other to concede (Alesina and Drazen, 1991). Moreover, a variant of the common pool problem has been developed that explains the

speedy disappearance of budgetary surpluses due to a voracity effect (Tornell and Lane, 1999; Lane, 2003). In a situation of surpluses, the incentive to act prudently is low within a fragmented political system, as each party knows that if it refrains from using the surplus to implement its desired policy, competing parties will do so.

Time fragmentation refers to the limited time horizon of politicians until the next elections. According to the simplest form of the argument, politicians can win support by the electorate by implementing popular fiscal decisions now (extra spending, lower taxes) while shifting the burden to the future. In doing so they may be able to make use of a form of fiscal illusion on the side of the public, that does not fully understand the nature of the intertemporal budget constraint (Buchanan and Wagner, 1977). If voters are rational or care about the future such an approach will not work, however.[3] Tabellini and Alesina (1990) build a model that includes rational voters and in which a deficit bias may emerge given that the incumbent government may use debt as a strategic variable to influence the policy options of its successor. In the two-period model, the incumbent government can influence policy choices of its successor through the intertemporal budget constraint: a higher deficit and debt will need to be repaid in period two. The incentive to run deficits and leave debt is then larger the lower are the chances for re-election (political instability) and the larger are the differences in policy preferences between alternating parties in power (polarisation).

The empirical evidence indicates that size fragmentation plays a role in causing spending and deficit biases. Roubini and Sachs (1989) were the first to test empirically for the impact of fragmentation on fiscal outcomes while Perotti and Kontopoulus (2002) find that fragmented government, as measured by the number of spending

3 Indeed, Brender and Drazen (2005) find that budget deficits decrease chances for re-election.

ministers, has an impact on expenditure outcomes and to a lesser extent also for the budget balance. The empirical evidence regarding the impact of the frequency of government changes (time fragmentation) and polarisation on the budget balance is however more mixed (see Drazen, 2000, for an overview of the literature). Both Grilli *et al.* (1991) and Hallerberg and Von Hagen (1999) find that time fragmentation matters. However, Ricciuti (2004) finds no evidence that is does (while he does find evidence is support of size fragmentation, confirming earlier results of Perotti and Kontopoulos, 2002). Furthermore, Grilli *et al.* (1991) find no evidence that political polarisation of subsequent governments matters.

2.3 Solutions that remove incentives for political biases

2.3.1 Fiscal committees

Deficit and spending biases arise due to the political nature of fiscal decision-making. As a result, the incentives for biased policies could be removed or softened by taking (part of) the decision-making authority out of the political arena. A number of authors have therefore proposed to solve the deficit bias by delegating fiscal policy authority to independent fiscal committees (Fatás *et al.* 2003, Calmfors, 2003, Wyplosz, 2005; IMF, 2005, provides an overview).

Proposals for independent fiscal committees (IFCs) are theoretically appealing, given that they aim at tackling the deficit bias at its source. They remove policy biases instead of counterbalancing them through fiscal rules. Whereas fiscal rules involve a trade-off between commitment to a constraint and a loss of flexibility for dealing with unforeseen circumstances, IFCs can overcome this trade-off by setting the incentives right and relying on judgement (Wyplosz, 2005). Moreover, proponents point to the analogy with

monetary policy. The inflation bias has been solved by delegating policy authority to independent central banks. Could a similar solution be feasible for fiscal policy? Whereas for monetary policy, independent central banks have become the standard in advanced economies, proposals for IFCs have however not been implemented anywhere in practice. Against this background, we first review different proposals for IFCs and then try to understand why the use of IFCs - as a possible alternative to the use of fiscal rules - has not taken off in recent years.[4]

Table 2.1 compares key elements of proposals for IFCs as brought forward in recent studies.[5] In all proposals, the IFC should consist of independent experts from academia or policy circles. Opinions differ, however, with respect to the ultimate objective that the committee should pursue. In the proposal of Calmfors (2003) the IFC should focus on stabilisation policy, given that in EMU national fiscal policy plays an important role in adjustment to asymmetric macro-economic shocks. In the proposals of Fatás *et al.* (2003) and Wyplosz (2005) maintaining fiscal sustainability is the main objective of the IFC, given that respecting the intertemporal budget constraint is the overriding macro-economic objective in fiscal policy.

In all proposals, objectives are made operational by setting yearly objectives in terms of the budget balance. At the same time, the actual implementation of fiscal policy, i.e. the decision on concrete expenditure and revenue policies for achieving the targets as set by

4 Apart from the independent form of IFCs, the literature also discusses alternative forms of institutions that can provide fiscal analysis or independent projections and macroeconomic assumptions, but that are not given policy responsibility. An overview of these institutions can be found in European Commission (2006).

5 Several other authors have brought forward proposals for fiscal councils as well, see e.g. the references in Calmfors (2003). Given that different proposals overlap, it has been decided to only show the main features of recent proposals.

the IFC, would remain in the hands of the government.[6] A main argument underlying this division of responsibilities is that fiscal policy has redistributive consequences. Therefore, the ultimate decision on specific policies should remain within the political arena. Moreover, this division of responsibilities would help to ensure the democratic legitimacy of fiscal policy. Finally, it should be noted that most proposals for IFCs are meant for implementation at the national level. An exception is the proposal by Fatás *et al.* (2003) that is meant as an alternative to the fiscal rules of the SGP. It therefore proposes the establishment of an IFC at the level of the EU.

The literature on IFCs contains an appealing analogy with monetary policy.[7] The mandate of central banks is to maintain price stability, while possibly also supporting sustainable growth. Similarly, the mandate of IFCs could be to ensure debt sustainability, while providing an adequate degree of short-run cyclical stabilisation. Operational objectives for central banks are defined in terms of ranges for inflation rates, while the target for the IFC could be formulated in terms of the budget balance. Independent central banks have managed to stabilise inflation expectations and conquer the inflation bias. IFCs can therefore be expected to conquer the deficit bias in similar fashion.

6 An exception to this is an alternative proposal by Calmfors (2003) that would allow the IFC to vary tax rates and decide upon expenditure policies, but within ranges as set ex ante by Parliament. This would allow the IFC to respond quickly to changes in economic circumstances, so that the usual timing lags in discretionary fiscal policy could be overcome.

7 Especially recommended is Wyplosz (2005) who has drafted the arguments much better than we could do here.

Table 2.1 Comparing proposals for Fiscal Policy Committees

Proposal	Membership	Objective	Operational objective	Instrument	Accountability	Application at national or EU level?
Fatás et al (2003): Sustainability Council	Independent experts; appointed on part-time basis except for chair	Sustainability	Judge compatibility of national fiscal plans with sustainability objective	- Veto fiscal plans that are not in line with sustainability - Generate political pressure through public opinion and financial market reactions	- Reports to and hearings in European Parliament - Right of European Parliament to dismiss Committee	Euro area
Calmfors (2003): proposal 1	Independent experts, appointed for long term and non renewable terms of office	Stabilisation	Set target for annual budget balance	Obligation for Cabinet and Parliament to achieve targets for the budget balance through specific tax and spending measures. However, the budget bill requires FPC approval	Right of Parliament to dismiss the FPC	National
Calmfors (2003): proposal 2	See above	See above	See above	Parliament delegates to FPC the right to vary certain tax rates or expenditures within predetermined levels	See above	See above
Wyplosz (2005): Fiscal Policy Committee (FPC)	Independent experts appointed for long, non-renewable terms of office	Sustainability	Set debt target and target for annual budget balance	Obligation for Cabinet and Parliament to achieve targets for the budget balance through specific tax and spending measures. However, the budget bill requires FPC approval	FPC accountable to Parliament	National

Source: classification by the author.

So if the case for IFCs is so strong, why have they not been introduced anywhere in practice? The main argument is that IFCs appear contradictory with parliamentary sovereignty with respect to fiscal policy (EC, 2006), although proponents of IFCs argue that these issues can be solved by leaving the execution of fiscal policy in the hands of the fiscal authorities. This is, however, exactly the point where the analogy with monetary policy does not hold any longer. Monetary policy authorities are able to immediately implement decisions they take on the short term interest rate. IFCs, on the contrary, would have to depend on the government to take the necessary measures for achieving the budget balance targets as set by the IFC. At this point, we note that a conflict of interest may actually arise between the IFC and the government or parliament. This issue is very similar to enforcement issues that arise with fiscal rules, and that will be discussed in greater detail in later Chapters of this thesis. What are the incentives for the government to comply with the budget balance as set by the IFC instead of following its own (but biased) policies? What would happen if it turns out ex post that the government did not respect the objectives as set by the IFC? What would happen if the government would refuse to take the necessary measures for bringing down the budget deficit? One possibility as indicated in Table 2.1 is that the IFC may be given the authority to veto the budget. However, the proposals also favour that the IFC should be accountable to Parliament, so that Parliament could dismiss the IFC in case of a conflict of interest. In the absence of incentives for the government and parliament to follow the fiscal objectives as set by the IFC, and given the lack of enforcement mechanisms for a committee of experts with respect to democratically elected politicians, it would seem that there is an essential flaw in proposals for IFCs. Perhaps this argument, which builds on the more general argument that truly independent IFCs would seem incompatible with fundamental democratic principles, would help to

explain why no single country has implemented such a solution, even if it is appealing on theoretical grounds and independence has been the key to solving credibility problems in monetary policy.

2.3.2 Reducing political fragmentation

In theory, the deficit bias could be solved by delegating the decision on the budget balance to an independent committee. In the same vein, spending biases could be solved by eliminating or reducing the degree of fragmentation in the budget process. A proposal made by Perotti and Kontopoulos (2002) goes in this direction. After having shown that fragmentation, as measured by the number of spending ministers in the cabinet, matters for expenditure outcomes, they then propose that reducing the number of spending ministers may be a feasible option for addressing spending biases.

As with proposals on IFCs, the proposal to reduce the number of spending ministers has, to the best of our knowledge, not been implemented in practice. One possible explanation could be that, if - as we have seen before - the degree of political fragmentation within the government results from the electoral rules in place and the degree of fragmentation within society, then it may also be difficult to change the number of spending ministers without changing these underlying variables.[8]

8 An example is the experience of The Netherlands. In the run-up to the elections of November 2006 proposals were made to reduce the number of spending ministers. However, as a result of the negotiations that led to the formation of a coalition government, the number of spending ministers eventually actually increased after the elections.

2.4 Solutions that counteract incentives for political biases

2.4.1 Fiscal institutions

In common pool models fiscal outcomes are determined, first, by the degree of political fragmentation and, second, by the decision-making rule that is used to aggregate conflicting interests into a single budget. The rules according through which the budget is prepared, approved and carried out – in short the fiscal institutions - may therefore act to counteract political biases that are rooted in political fragmentation. This section briefly recalls the rationale for fiscal institutions as well as the empirical evidence.

Von Hagen (1992) is the first to investigate the impact of budgeting procedures on fiscal performance in EU countries. The idea is that the common pool problem may manifest itself during different phases of the budgetary process. When the budget is drafted within the cabinet, biases may arise due to the fact that spending ministers may recognise the full benefits of their own specific spending proposals, but fail to internalise the costs for the tax-paying population at large. During the decision-making procedure on the cabinet proposals in parliament, individual members of parliament may internalise the interests of specific constituencies within society but not the costs of their amendment proposals for society as a whole.[9] Finally, biases may again show up during the implementation phase of the budget, in the way policy reacts to unforeseen events and the way supplementary budgets are drafted, decided upon and implemented.

Several institutional responses are possible for internalising the overall costs of budgetary programmes. These costs could be internalised by giving a strong mandate to

9 Wehner (2006) builds an index of parliamentary capacity for fiscal scrutiny. Results indicate substantial variation in the level of financial scrutiny of government by the legislature among contemporary liberal democracies.

the minister of finance and the prime minister, whose role it is to consider the overall effects of policies. In addition, fiscal rules may be conducive to fiscal discipline given that they put a constraint on fiscal policy outcomes. Moreover, during the parliamentary stage, the role of amendments powers is expected to matter, especially when these powers are not complemented by the obligation to find adequate financing for new spending proposals. Finally, during the execution of the budget, the degree of flexibility as reflected for example in spending limits or no carry over provisions would be expected to play a role. Overall, von Hagen (1992) calculates an index that combines all these elements in one single number, on the basis of an equal weighting of all the individual elements.

Alesina *et al.* (1996) also investigate the hypothesis that institutions matter, but organise their aggregate index of institutions in a different way. Their aggregate index also contains three elements that may be conducive to fiscal discipline. The first is ex ante fiscal constraints. Such constraints may include fiscal rules, but also requirements that the budget should be consistent with a macroeconomic program approved ex ante. The second is top-down hierarchical procedures. These include the position of the minister of finance within the cabinet, but also the type of amendment rules as used in the discussion with parliament. The third is fiscal transparency. Intransparent budgets may allow politicians to strategically manipulate information, so that they can appear fiscally restraint even when their actions are in fact undisciplined.

The empirical evidence that has used aggregate indices of budgetary institutions for explaining budgetary outcomes strongly indicates that institutions matter. By now the same overall conclusions have been reached for different sample periods and different groups of countries. For example, De Haan *et al.* (1999) and Hallerberg *et al.* (2001) focus on EU countries, Gleich (2003), Yläoutinen (2004) and Fabrizio and Mody (2006)

all concentrate on central and eastern European countries while Alesina *et al.* (1996) focus on Latin American countries. Moreover, methodologies have evolved from bivariate analysis as in Von Hagen (1992) to the use of panel studies that employ time variation in the index of institutions and control for a range of variables, as in de Haan *et al.* (1999), Hallerberg *et al.* (2001) and Fabrizio and Mody (2007). In sum, a growing body of empiral evidence has indicated that institutions matter.

Apart from issues concerning the direction of causality between fiscal institutions and fiscal outcomes (as discussed already in section 2.2), another criticism on this direction of research is that it is less clear which institions matter (Poterba, 1996). In the indices used, all institutional elements are equally weighted and are therefore seen as perfect substitutes. In order to address this issue, both De Haan *et al.* (1999) and Fabrizio and Mody (2007) concern the question which subindices matter most, on the basis of separate regressions that include these subindices. The conclusion reached by De Haan *et al.* (1999) is that the position of the legislature, the presence of binding constraints and flexibility during the execution of the budget seem to matter most. Fabrizio and Mody (2007) conclude that, while each individual component of the budget process matters (i.e. budget preparation, authorisation and implementation), the implementation phase seems to matter most, thus showing only partial overlap with earlier findings of De Haan *et al.* (1999).

2.4.2 Fiscal rules

Fiscal rules are part of the institutional setting within which budgets are drafted and implemented. Hence, investigating the effects of fiscal rules on fiscal outcomes can be

seen as a more specific approach than the one that investigates the general effect of fiscal institutions on fiscal outcomes.

Several studies review experience with fiscal rules on the basis of a qualitative description, as in Kopits and Symanski (1998), EC (2003) and Von Hagen (2006). These studies confirm the degree of controversy as mentioned already in Chapter 1. Common themes that return in these studies are that actual experience with different types of fiscal rules shows mixed results, and that fiscal rules can and have at times been circumvented through fiscal gimmicks. As to the conditions for effectiveness, studies indicate that the political support for the rule matters, the institutional design of the rule (even though the opinions differ on the specific features that matter; details will be provided in Chapter 6) and the question of whether or not the rule fits the national political setting (to be discussed in Chapter 7).

The remainder of this section discusses the literature on the effects of fiscal rules that is closely related to the approach in this thesis. We start with the literature on the experience with balanced budget rules in the US. This literature has used measures of differences in institutional design of fiscal rules across the states in the US for estimating the effects of fiscal rules on fiscal outcomes. Results pointed to several institutional aspects that appear to determine the effectiveness of the rules. We then go on to discus the experience of the interaction between institutional design and fiscal outcomes with the EU fiscal rules. Experiences during this period have shifted attention to the conditions under which softer forms of governance can be effective in influencing fiscal outcomes, and the relevance of national institutional arrangements for explaining divergences in fiscal outcomes across countries (Hodson, 2005).

Budget balance rules in the US

One of the conditions for testing for the impact of fiscal rules on fiscal outcomes is that there is variation in the institutional design of fiscal rules across time or sections. In the existing literature, this condition on variation across sections has only been satisfied for the states in the US, where heterogeneity in the design of fiscal rules across states has been captured in the study by the Advisory Council on Intergovernmental Relations (ACIR, 1987). Once the institutional differences in fiscal rules across the states in the US had been measured, economists started analysing the differences and asked whether these differences had consequences for fiscal outcomes. On the basis of the results from the ACIR (1987) study, Bohn and Inman (1996) note that all US states except Vermont operate under some kind of balanced budget requirement, but that these requirements differ in their degree of restrictiveness. See also Poterba (1996): in forty-four states, the governor must at least submit a balanced budget, which is the weakest form of a balanced budget requirement. Thirty-seven states go further and require the legislator to enact a balanced budget. In many of these states, the actual budget may however be in deficit, and the state can borrow to carry this deficit forward to future years. The strictest type of rule, which is implemented by twenty-four out of thirty-seven states that are required to enact a balanced budget, combines the aforementioned requirement with a prohibition to carry the deficit forwards.

With respect to the effects of the rule on the budget balance (i.e. the indicator that is directly constrained by the rule), Poterba (1996), Bohn and Inman (1996) and Alesina and Bayoumi (1996) summarise the existing evidence for the US and all conclude that rules matter. The effect however seems to depend on the institutional design of the rule. A rule is strong when compliance is ex post (instead of only submitting a budget that complies with the rule), when the amendment process is difficult so that the rule cannot

be changed once it starts to bite (e.g. by putting it in the constitution), when enforcement is independent from vested political interests and when penalties of non-compliance are sufficiently large. The legal base of a strong rule should be such that the amendment process of the rule is sufficiently difficult for it to withstand pressures to change the rule once it starts to bite. For a strong rule, if violated, penalties 'must be enforceable and large enough to induce the political bodies setting deficit policies to prefer the balanced budget outcome to a deficit and the associated penaltty' (Inman, 1996, p. 19). The US evidence suggests that these institutional characteristics determine the effect of fiscal rules on fiscal outcomes. See, e.g., Inman (1996, p. 29): 'Only independently enforced, constitutionally-grounded, ex post balanced budget rules are likely to effectively constrain the deficit tendencies within democratic politics'.

Rules can be considered weak if they have the opposite characteristics from strong rules. A characteristic that makes a rule weak is when it requires compliance ex ante but not ex post on realised values. Overall, the existing evidence for the US suggests that weak rules lead to compliance for fiscal plans (ex ante) but not for fiscal outcomes. According to Inman (1996), they therefore create an ongoing stream of negative fiscal 'surprises' that are then attributed by policy makers to factors outside their direct control, such as negative macro-economic surprises.

Moreover, studies for the US conclude that at times there have been attempts to circumvent the rules, but that this has been more of a secondary effect. See, e.g., Poterba (1996, p. 33): 'The state experience suggests that while some cosmetic changes are used to meet balanced budget requirements, these changes are quantitatively less important than tax increases and spending cuts'.

Alesina and Bayoumi (1996) find that, in addition to fostering fiscal discipline, budget balance budget rules have had little costs in terms of increased output volatility. The

reason may be that, even though the rules have limited the response of budget balances to shocks in output, they have also limited the destabilising effect of fiscal indiscipline on budgetary outcomes. As a result, these factors may have cancelled out.

Inman (1996) draws lessons from the experience of the states in the US with balanced budget rules for Europe, drawing on his distinction between strong and weak rules. Table 2.2 reproduces his taxonomy of balanced budget rules (BBR). The focus here is on the corrective part of the EU fiscal framework (i.e. the reference values for the budget balance and the gross debt ratio, and not the preventive part of the EU fiscal framework that actually operates as an ex ante rule, as will be shown in Chapter 4).

Table 2.2 The design of fiscal rules according to Inman (1996)

Specification	**WEAK BBR**	**STRONG BBR**	**Present EMU BBR**
RULE			
Timing for review	Ex Ante	Ex Post	Ex Post
OVERRIDE			
Majority Rule	Allowed	Not Allowed	Not Allowed
ENFORCEMENT			
Acces	Closed	Open	Closed
Enforcer	Partisan	Independent	Partisan
Penalties	Small	Large	Small
AMENDMENT	Easy	Difficult	Difficult

The second row establishes that on the basis of the timing for review, the EU fiscal rules can be considered strong, given that the obligation to comply with the reference values for the budget balance and debt ratio are defined in terms of fiscal outcomes. The third row indicates that the EU fiscal rules cannot be suspended by a simple majority vote of the legislature in case of non compliance, which again can be considered a strong characteristic. The third row summarises the enforcement process. For strong rules,

there is open access to the enforcement process: all potentially affected parties must be able to claim a violation of the rule. This is not the case for the EU fiscal rules, so that they are considered as weak on this aspect. Moreover, strong rules are enforced by an institution that is independent from vested political interests, which is not the case for the EU fiscal rules, given that it is the Council that decides on enforcement. In addition, penalties must be large enough to counterbalance incentives for biased policies. The view by Inman that penalties attached to the EU fiscal rules were small was based on the rules of the EU Treaty, which create the option of sanctions, but do not specify them in great detail, as the SGP would later do. Finally, the legal base of the rule should be such that the amendment process of the rule is sufficiently difficult for it to withstand pressures to change the rule once it starts to bite. In sum, Inman (1996) therefore concluded that: 'While ex post, constitutionally grounded, and difficult to amend, current EMU rules are not enforced, at present, by an open and politically independent review panel using significant penalties. The ability of the EMU's deficit procedure to constrain excessive country borrowing is therefore in doubt.'

The EU fiscal rules: 1992-1997

With these predictions in mind, we now turn to the discussion of fiscal performance under the EU fiscal rules.[10] In doing so three periods should be distinguished. The first starts in 1993, when the reference values for the budget balance and gross debt as laid down in the EU Treaty entered into force. The second is the period after 1999, when additional rules as laid down in the regulations of the Stability and Growth Pact (SGP)

10 As in the whole of this thesis, we focus more on the effect of fiscal rules on fiscal discipline than on the role of fiscal policy in stabilising the economy. See Artis and Onorante (2006) on the (limited) impact of the rules of the SGP on the variability of the economic cycle.

started to apply. The third is the period since 2005, i.e. the period after the regulations of the SGP had been revised. In discussing these episodes, our interest is in the interaction between the institutional design of the rules and fiscal performance.[11]

During the period 1992-1997[12] fiscal policies in the countries that formed the Euro area in 1999 were heavily influenced by the desire to meet the Maastricht criteria for entry into EMU, which include the well-known reference values of 3% GDP for the budget balance and 60% of GDP for the debt ratio. The latter criterion is qualified by the provision that the gross debt ratio should be below 60% GDP or otherwise 'sufficiently diminishing and approaching the reference value at a satisfactory pace' (art. 104 of the EU Treaty).[13] Our reading of the literature on fiscal performance during this period is that there is agreement now on the existence of a 'Maastricht' effect that has lead to additional fiscal consolidation during this period. On the basis of their review of fiscal performance since 1993, Buti and Giudice (2002) conclude that the imposition of the Maastricht budgetary targets has set off a genuine consolidation process. A more recent study of Hughes Hallet and Lewis (2008) compares fiscal performance during the pre-Maastricht phase and the Maastricht period (1993-1997) with that under the SGP. These authors estimate differences in the probabilities that a fiscal consolidation was started, differences in the duration of consolidations, and differences in fiscal behaviour on the basis of fiscal reaction functions. Findings all point to a Maastricht effect: the run up to

11 An overview of the rules of the new SGP can be found in European Commission (2005), while Morris *et al.* (2006) compare the rules of the new Pact with the rules of the old Pact. Moreover all the relevant legal provisions, including Council Regulation 1466/97 on the preventive arm of the SGP and Council Regulation 1467/97 on the corrective arm of the SGP can be found on the website of DG ECFIN: http://ec.europa.eu/economy_finance/sg_pact_fiscal_policy/.

12 The year 1997 and not 1998 is taken is the last year of the 'Maastricht period', given that the decision on entry into EMU was taken in 1998 on the basis of data over 1997. Hence, as from 1998, fiscal outcomes were no longer influenced by the incentive to comply with the Maastricht criteria.

13 This explains why some countries could join EMU with debt to GDP ratios well above 100% GDP.

EMU was associated with longer lived consolidations, reduced probabilities of breaching the 3% limit, and tighter fiscal policies.

The SGP: 1999-2005

The rules of the SGP as it entered into force in 1999 complemented the provisions in the EU Treaty with a preventive arm and a corrective arm. In the original version of the SGP (i.e. before the 2005 reform) all Euro area countries should achieve budgetary positions of close to balance or in surplus over the medium term. The idea is that a balanced budget position will safeguard the sustainability of fiscal policies, and at the same time create room for manoeuvre for the operation of the automatic stabilisers (i.e. allow for an endogenous deterioration of the budget balance without breaking the 3% limit when the output gap turns negative). Under the corrective arm of the SGP, detailed procedural provisions were included that were intended to clarify the procedures towards the application of sanctions in case a country did not correct its excessive deficit in a timely manner. The reason that these provisions were introduced is that several countries (especially Germany) feared that the incentive for compliance with the EU fiscal rules would be gone once countries had entered EMU. Originally, the German government therefore proposed a fully automatic sanction mechanism (Stark, 2001). This proposal turned out not to be feasible, however. As a result, the SGP spelled out a detailed timetable for the decision-making procedure but in the end left discretion with the Council for taking the decisions on enforcement. But still, the SGP aimed at increasing the deterrent effect of the rules, by spelling out procedural steps in case of non-compliance that would ultimately lead to economically significant sanctions as defined in the corrective arm.

In practice it turned out that fiscal outcomes deteriorated during the first years of EMU. The structural primary balance of the Euro area (i.e. the budget balance corrected for interest payments and the effects of the economic cycle) decreased from a surplus of 2.7% GDP in 1997 to 0.6% GDP in 2003. During 2001-2004 six countries – Portugal, Germany, France, The Netherlands and Greece - became formally subject to the excessive deficit procedures for breaking the 3% GDP limit. Moreover, it turned out that several countries were exploring available options for window dressing, by resorting to one off and temporary measures or outright creative accounting (see next section for more details). Obviously, these policies distorted fiscal policy instead of providing the intended structural consolidation. As a result of all these factors, the rules of the SGP – which anyway had always been subject to substantial controversy – became subject of an intensified debate. The short deadlines for corrective action as well as the 'hard' character of the 3% of GDP limit were blamed for inducing tricks rather than structural consolidation (EC, 2004). The rules and procedures of the SGP were seen as too rigid, as they did not take into account the possibility that non compliance was caused by short run costs of structural reforms or so-called productive spending on physical or human capital. In short, it was felt by several key players in the political arena that the trade-off between rules and discretion, which the original SGP has tried to shift towards rules, should be shifted back towards discretion. The critique on such reform was therefore also obvious: if there would be a move towards discretion or flexibility, this would also imply that the role of the rules in counterbalancing the deficit bias could be diminished.

In November 2003 tensions with respect to the rules reached a climax when the Ecofin Council refused to take a decision on the basis of a recommendation by the European Commission to move to a next step in the sanction procedure for Germany and France,

and adopted its own conclusions instead that contained new commitments made by these countries. After the European Commission had brought the case to the court of justice, the court ruled that the Council had not been allowed to take its own decisions outside the scope of the EU Treaty (European Court of Justice, 2004). At the same time it also confirmed the discretion of the Council on whether or not to move forward in the sanction procedures.

Our interpretation of these events is that it they made clear that formal sanctions under the SGP rules were not going to be applied. It therefore marked the starting point of a process that led to the revision of the SGP rules in 2005 that addressed some of the distortive elements in the rules of the SGP, and also provided for additional procedural leeway. With a lower probability of enforcement through financial penalties, attention naturally shifted to the question whether incentives for compliance that could result from other mechanisms. In this context, Hodson (2005, p. 249) interprets economic governance (including fiscal governance) in the Euro area as 'a form of soft economic policy coordination, which, in the absence of binding legal obligation and comprehensive financial penalties, relies on soft sanctions (in the form of peer pressure) and non-coercive methods (in the form of consensus building).[14] Hodson (2005) however concludes that minimum conditions for effective peer pressure were unfulfilled in the Euro are as a whole during 1999-2002. First, Finance Ministers were not willing to use moral force on their own colleagues. Experience rather confirmed that individual Finance Ministers faced incentives to be lenient, in return for being treated leniently themselves. Second, the nature of fiscal policy, where measure of performance (including cyclically adjusted budget balances) can only be measured with substantial

14 See also Hodson and Maher (2004).

margins of errors, made it difficult to assess compliance with precision. Third, non-binding recommendations for corrective action triggered little reaction from national Parliaments or financial markets. At the same time, Hodson (2005) points to differences in domestic fiscal institutions between countries for explaining why some countries did and others did not comply with the rules of the SGP during 1999-2002.

Regarding aggregate fiscal outcomes in the Euro area, several studies confirm a deterioration of fiscal performance after 1997. The comparison of fiscal performance after 1997 with the period 1993-1997 of Hughes Hallet and Lewis (2008) – again on the basis of three different methodologies as mentioned already – indicates that fiscal discipline gradually weakened once countries had been accepted into EMU. They end their study the following observation on the EU fiscal rules: 'The punch line is that to enforce such a rule when there is no physical means of imposing your will, you have to withhold something which the sinner would like but does not yet have. The veiled threat of a fine, which is to take away something the sinner already has, is not credible and will not work in such an environment'. A similar line of argument can be found in the study by de Haan *et al.* (2004) on the question of 'Why has the Stability and Growth Pact failed?'. In pointing to the lack of credible enforcement, these authors refer back to the study by Inman (1996), which had already cast its doubt on the ability of the EU fiscal rules to effectively address the deficit bias given that independent monitoring and enforcement were absent.

In concluding this part on the SGP experience of 1998-2005, we would like to recall that the drafters of the SGP were very well aware that, once inside EMU, countries would have less of an incentive to comply with the rules. In fact, this is exactly the reason why the original SGP created detailed procedures towards the application of sanctions. At the same time, there has never been political support for creating truly

independent enforcement of the rules, given that this would have effectively implied that part of the ultimate responsibility for fiscal policy would have shifted from the national level to an independent enforcement institution. Hence, there is a parallel between truly independent enforcement of fiscal rules and the creation of independent fiscal councils as discussed in section 2.3.1: both may in theory be able to effectively address spending and deficit biases, but that have not been feasible in actual practice because they are at odds with the principle of democratic accountability and control for fiscal policy.

The revised SGP: 2005-2007

After the conflict of November 2003 between the Commission and the Council, those directly involved wanted to avoid new confrontations. In its reform proposals, the European Commission stressed the need for national ownership of the rules, as well as increased flexibility and economic rationale (EC, 2004b). Proposals also took lessons of actual fiscal performance into account, and referred tot the need to avoid procyclical policies as witnessed in the past, and to move away from a short term focus on the 3% limit (which had distorted fiscal behaviour) towards increased attention for debt and fiscal sustainability.

Overall, the reform of the SGP did not fundamentally change the balance of power between the Member States (that remain responsible for national fiscal policy), the Council (that continues to enforce the rules) and the Commission (that is still responsible for fiscal surveillance and initiating the procedures). It did however contain substantial changes to the preventive and the corrective arm of the SGP Regulations. In the preventive arm, medium term fiscal positions (MTO) were made country specific, in

order to take into account differences between countries in the level of debt and structural growth.[15] The new Pact institutionalised the rule that Countries not yet at their MTO should, as a benchmark, show an annual fiscal structural adjustment of 0.5% GDP, while this adjustment should be greater in economic good times. At the same time, exceptions from this adjustment path were allowed in case a country would undertake a major structural reform.

Changes in the preventive arm of the SGP included extensions of the procedural deadlines, and the possibility to repeat steps in the procedure towards sanctions. Many elements were spelled out in great detail, such as a list of 'relevant factors' that need to be considered before a country can be put into the excessive deficit procedure,[16] or a definition of a 'severe economic downturn' that can be used for the same purpose.[17] In sum, many authors have noted that the revision of the SGP has increased flexibility but did not improve enforcement of the rules. Regarding the increase in flexibility, Beetsma and Debrun (2006) show that greater case specific implementation may improve economic welfare as it does not discourage high-quality fiscal measures. At the same time, these authors point out that discretion in the application of the rules also has created room for unsound economic judgement on excessive deficits. On a similar line of argument, Morris *et al.* (2006) argue that a proliferation of escape clauses bears the risk of more lenient enforcement decisions.

15 A discussion on also incorporating implicit liabilities form ageing populations was started but had not led to an agreement.

16 The relevant factors, such as the prevailing cyclical conditions or policies to foster research and development and innovation, can only be taken into account as long as the general government deficit remains close to the deficit value and the excess over the reference value is temporary.

17 The benchmark for a severe economic downturn is a negative annual loss of output during a protracted period of very low annual real GDP growth relative to potential growth.

A different opinion can be found in Schelkle (2007). While she agrees that enforcement has become softer due to the extensions of the procedural deadlines, she also notes that the role of fiscal surveillance has improved under the new rules, and that some parts of the rules have become more precise (such as the requirement of a minimum adjustment effort of 0.5% GDP per year for countries with fiscal imbalances). Following up on the arguments by Hodson and Maher (2004), she argues that soft law better suits fiscal policy coordination than hard law. The measurement of fiscal sustainability and the interplay of fiscal policy with the economic cycle are characterised by large margins of uncertainty, and fiscal policy indicators can never deliver the kind of precision that is needed for the application of hard limits and tight deadlines. Moreover, whereas hard law may not always be strictly implemented, incentives for compliance with soft law may be stronger than it appears at first sight. This argument is supported by an alternative view to the traditional argument that only hard rules foster compliance given that governments fear the fines that are related to non-compliance. In this alternative view, fiscal rules are not imposed on governments by an external body, but governments voluntarily self-commit to fiscal rules, because the outcome generated by the rule is in line with their preferences. Self-commitment to the rule occurs because those in power know that they can at times be under pressure to expand expenditure or increase the deficit beyond a level that they deem optimal. In this sense spending and deficit biases are like an addiction: governments rationally know that the long-term costs outweigh the short-run pleasures, but still the temptation can be too hard to resist. Committing to the rule may help to solve the problem, because it increases the political costs of non-compliance (e.g. being criticised by peers in the Ecofin Council or by expert audiences) and increases the probability that responsible fiscal outcomes emerge.

We note, however, that a question still remains as to whether peer pressure at EU level can be strong enough to foster compliance with the rules. On the basis of results reported by Hodson (2005) we would tend to be a bit more sceptical. Still, the arguments of Schelkle (2007) are very relevant for our study given our finding that national fiscal rules are self-enforced so that they would ultimately be seen as weak in the sense of the Inman (Chapters 1 and 6).[18] We should therefore not rule out the possibility that fiscal rules at national level could possibly be effective given that they reflect the political preferences of those in power, and that the political costs of non-compliance could (possibly) counterbalance spending or deficit biases. Chapter 7 will develop this line of argument further for the case of national expenditure rules, focusing on the political and institutional mechanisms that may foster compliance with the rules instead of financial sanctions.

So far, a first judgement on aggregate fiscal performance in the Euro area under the revised SGP is complicated by the short period of time that has elapsed since, and the fact that the improvement in fiscal outcomes that has occurred since 2005 can largely be attributed to the upturn in the economic cycle that has occurred since. By 2007 all Euro area countries had recorded budget deficits of below or just at 3% GDP, and EDP procedures against Germany, France, The Netherlands and Greece had all been formally abrogated. Moreover, in a context where the EU fiscal rules became less binding, reliance on temporary and one-off measures has declined since 2005. At the same time, the upturn since 2005 has not been used for the required additional consolidation towards sustainable medium term fiscal conditions (EC, 2007a). Overall, a first real test

18 Even if there are still many other relevant differences in the institutional design of national rules across countries that may help to explain differences in fiscal outcomes across countries.

of the revised provisions of the Stability and Growth Pact would therefore probably only occur during the next economic downturn.

In concluding this part we would like to point out that the evolution of the EU fiscal framework has occurred not only through changes in the formal rules that govern the system, but also through its implementation. Monitoring of the implementation of the EU fiscal framework takes place through national medium term fiscal plans. On the basis of assessments as prepared by the European Commission, the Council subsequently delivers assessments on each of the programmes. Wierts *et al.* (2006) provide an overview of the development of fiscal surveillance over the last decade. Whereas compliance with the reference values of the EU Treaty provides for the starting point in fiscal surveillance, the ensuing policy discussion opens the discussion on key aspects of fiscal policy. A range of issues is addressed in surveillance, such as the plausibility of macro-economic assumptions on which national fiscal programmes are based, the credibility of planned adjustment, the effects of temporary measures, separating out the effects of the economic cycle on the fiscal policy position, and assessing long term sustainability of public finances on the basis of long-term scenario's. A comparison of early assessments as made by the European Commission with more recent assessments shows in fact a strong evolution in the way this discussion has been structured. By the year 2000, these assessments concentrated heavily on the question of whether planned fiscal adjustment left sufficient fiscal room for normal cyclical variations without surpassing the 3% GDP limit. By 2006 the credibility of the planned adjustment received much more attention (e.g. whether measures were sufficiently specified), checks on temporary measures and creative accounting had been included, as well as assessments on the long-term sustainability of public finances on the basis of long run economic scenario's and the role played by national fiscal rules

and institutions. Moreover, over the years the process of EU fiscal surveillance has given a strong impetus to the reliability and availability of harmonised fiscal data, even if more progress is certainly needed in this field.[19] In sum, in our opinion part of the value added of the EU fiscal rules is that they have created an infrastructure for ongoing fiscal debates on the basis of structured assessments by the European Commission on key themes in fiscal policy.[20]

Circumventing the EU Fiscal Rules

If fiscal rules counterbalance fiscal deficit biases instead of removing them, then the incentives that have caused the deficit bias in the first place will still be present after the rule has been introduced. It could therefore be expected that rules provide incentives for shifting fiscal policy from constrained to unconstrained or hidden forms of fiscal policy. The nature of this effect implies that direct measures of such behavioural shifts are not available, so that they effect can only be estimated. Experience under the EU fiscal rules has given rise to two possible approaches for doing so: a bottom up approach, in which the publicly available information on individual measures is pooled in a single database, and a top down approach that uses accounting identities for investigating correlations between different forms of fiscal policy. The former provides details on individual measures but is necessarily incomplete. The latter may give a complete overview on the basis of accounting identities, but does not provide information on individual measures that are underneath the aggregate data. The main findings of both approaches are discussed briefly below.

19 See also EC (2005a).

20 National stability and convergence programmes and assessments by the European Commission are available on the website as indicated in footnote 11.

Koen and van den Noord (2006) have pioneered the bottom up approach. They start by clarifying the difference between one-off measures and creative accounting. One-off measures refer to government decisions of a non-recurrent nature. An example is the acceleration of tax intakes, which improves the contemporaneous fiscal position but worsens it in the next year.[21] Creative accounting refers to unorthodox treatment of operations that affect the fiscal balance or public debt but do not improve the net worth of the government. An example is the use of Public Private Partnerships (PPP), in which the government does not own the assets but rather pays for the services provided by a private company, for the mere reason of improving the current fiscal balance.[22]

The data provided by Koen and van den Noord (2006) show three periods of fiscal gimmicks under the EU fiscal rules: a first in the run up to monetary union (when the EU fiscal rules also had their strongest influence on the budget balance and gross debt, as indicated in the previous paragraph), a second one in the form of UMTS licence sales receipts around the turn of the century, and a third one during the SGP period when fiscal performance deteriorated and several countries approached and broke the 3% GDP limit. Their subsequent regression analysis confirms that the odds of gimmickry increase when the deficit exceeds the 3% deficit limit, especially in countries with a weaker institutional setting for addressing the deficit bias otherwise. Moreover, there are some indications that the incentives for creative response were stronger during the Maastricht period, but they are also still present under the SGP period.

21 Other examples include the sale of non financial assets (which are recorded as negative expenditure and hence improve the budget balance) and tax amnesties. In addition, the exceptional government revenues due to the sale of UMTS licenses around the turn of the century were also of a non-recurrent nature.

22 Even though PPP's could very well be justified on the basis of efficiency grounds.

Von Hagen and Wolf (2006) and Buti *et al.* (2006) use the top-down approach to creative accounting. Starting from the statistical identity that links the budget balance to debt developments (which will be explained in more detail in Chapter 5 of this thesis), they investigate the role played by changes in the stock of gross debt that cannot be explained by developments in the flow as measured by the budget balance. This is called the Stock Flow Adjustment (SFA); a positive SFA reflects an increase in the debt ratio that cannot be explained by the budget balance. Von Hagen and Wolf (2006) acknowledge that the SFA does not necessarily represent creative accounting (see next paragraph for details), but argue that still it can be used as a reasonable proxy for it. They find that after the introduction of the EU fiscal rules, a systematic relationship between the budget balance and the SFA can be detected. This suggests that the SFA is used instead of the deficit during the time period when the fiscal rules were in place, and is interpreted as evidence that confirms the vulnerability of fiscal rules to creative accounting.

Buti *et al.* (2006) go one step further as they break down the SFA in its constituent components: (i) differences between the cash and accrual recording bases of transactions. This discrepancy between debt and deficits results from the fact that the debt ratio is recorded on a cash basis while the budget balance is recorded on accrual basis; (ii) differences between the net and gross recording of financial transactions. A discrepancy according to this effect can occur because the budget balance is measured net of financial transactions, while the debt ratio is measured gross of financial assets. The accumulation of financial assets therefore gives rise to a positive SFA (increase in the debt ratio not matched by a decrease in the budget balance) while the decumulation of financial assets implies a negative SFA; (iii) valuation effects and other statistical adjustments.

Buti *et al.* acknowledge that not all components of the SFA necessarily represent creative accounting. They therefore focus on the elements of the SFA that are most likely to be used as a substitute for transactions that influence the budget balance or the debt ratio. The element that is most likely to be used as a substitute for the budget balance is the part of the SFA that is due to differences between cash and accrual measures of the deficit. Empirical results indeed show a statistically significant coefficient on the impact of the measured budget balance on this measure of hidden policy: a 1% GDP increase in the deficit leads to a 0.1% GDP increase in the hidden deficit. The part of the SFA that is most likely to be used to influence the gross debt ratio is financial assets, as a sale of financial assets will reduce the gross debt ratio without increasing the deficit. Again, empirical estimations indeed confirm a negative interaction between the level of gross debt and the accumulation of financial assets. In a related approach that focuses on the balance sheet of the government, Milesi-Ferretti and Moriyama (2004) also find that governments have contained the rise in the public debt ratio, or reduced it, by decumulating financial assets, and that this decumulation was stronger in countries with large public debts. All these results raise questions on the extent to which manipulation with fiscal variables has undone possible intended effects of fiscal consolidation under the EU fiscal rules. Chapter 5 therefore develops and implements a methodology that measures the combined effect of both factors on fiscal sustainability.

2.5 Conclusions

Overall, our review of the literature shows that fiscal outcomes result from a political process that may support specific interests instead of those of society as a whole. The

result may be a bias towards suboptimal spending or deficits. Solutions that tackle the bias at its sources are theoretically appealing but often not feasible in practice given that they contradict the political nature of fiscal decision-making. Fiscal rules cannot tackle the biases at source but only counter them.

Different views have emerged on the issue of why governments would comply with fiscal rules. The evidence on the experience with balanced budget rules in the US suggests that only hard fiscal rules – supported by independent enforcement and economically significant sanctions - can effectively restrain spending and deficit biases. Recent contributions on the experience with soft forms of governance in the EU however point to the possibility that political costs of non-compliance may be large enough to foster compliance, especially if the outcome generated by the fiscal rule reflects the preferences of those in power. This discussion suggests that we should pay close attention to the question of why politicians would comply with the rules instead of following specific interests.

Concerning the EU fiscal rules, a large literature has already investigated the effect of the 3%-limit on fiscal outcomes. Most studies conclude that this rule has had an effect on fiscal outcomes due to its link with the decision on entry into EMU, but not due to its enforcement mechanism. Moreover, the available evidence confirms the incentives for fiscal manipulation in response to the rules. As a result, we should be careful in focusing on topics where value added can be provided. In this respect, it appears that some elements of the EU fiscal rules have received less attention in the existing literature. This includes the obligation to submit fiscal plans that show an adjustment path towards sustainable fiscal positions, but without enforcing it. This represents a clear case of an ex ante fiscal rule according to the typology of Inman (1996). It would therefore be interesting to investigate whether this part of the EU fiscal framework has

institutionalised unpleasant fiscal surprises as has been the case with ex ante fiscal rules in the US. Chapter 4 will provide the details. Another part of the EU fiscal rules that has been less researched is the effect of the reference value for the gross debt ratio of 60% GDP on fiscal outcomes. The underlying idea of this rule is that it should ensure sustainable debt developments. In Chapter 5 we will therefore investigate the extent to which the EU fiscal rules may have fostered debt sustainability in the Euro area. In doing so, we will modify existing methodologies to include behavioural shifts towards unconstrained forms of fiscal policy. Before arriving at these empirical analyses, Chapter 3 will however derive theoretical implications on the effects of these types of rules on fiscal outcomes in the Euro area.

Regarding the national fiscal rules, the literature on the US provides an example as to how the availability of data on the heterogeneity of the design of fiscal rules across sections can give a strong impetus to the study of the impact of fiscal rules on fiscal outcomes. Whereas a relatively large literature has already investigated effects of the EU fiscal rules on fiscal outcomes, much less is know on these issues with respect to national fiscal rules in EMU. We therefore measure the institutional design of national fiscal rules Europe, and use results for investigating the effects of national fiscal rules on fiscal outcomes, as in Chapters 6 to 8.

3 Fiscal Rules in EMU: Rationale and Effectiveness

3.1 Introduction

The previous two Chapters have given a general introduction to our overall research question and the related literature. We proceed by recalling that, from this Chapter onwards, the character of our analysis will change. In Chapters 3 to 8 we intend to make original contributions on the analysis of the effects of the EU fiscal rules (Chapters 3,4 and 5) and national fiscal rules (Chapters 6,7 and 8). This implies that the analysis will become more specific as well as more technical. The reader that is less interested in the detailed analysis is advised to read Chapter 9 first, which contains an overview of the overall conclusions and policy implications that follow from our research.

This Chapter derives theoretical implications that will be tested in the empirical Chapters 4 and 5. We start from a theoretical framework that explains the rationale of the EU fiscal rules, and use it to analyse the effects of different types of fiscal rules on fiscal outcomes. We base our model on the following intuition: whereas national monetary policy may discipline fiscal policy in a national setting, this effect is diluted in EMU, which may strengthen a tendency towards suboptimal deficits. Having formalised this idea, we can then investigate the role played by different types of fiscal rules on fiscal outcomes: a budget balance rule, an ex ante rule and a debt rule.

The remainder of this Chapter is structured as follows. Section 3.2 puts our approach in the context of the existing literature. Section 3.3.1 presents the model for analysing fiscal-monetary policy interactions in EMU. Section 3.3.2 derives how the monetary reaction function may discipline fiscal policy at national level while section 3.3.4 shows how this effect is diluted in EMU. Section 3.4 analyses the effects of fiscal rules in addressing the deficit bias. Section 3.4.1 starts from the case of a fully credible budget

balance rule while assuming away the possibility of creative accounting. Section 3.4.2 analyses the effects of ex ante fiscal rules. Section 3.4.3 concentrates on a budget balance rule, assuming a positive probability of enforcement as well as the possibility of creative accounting. Section 3.4.4, finally, contains the case of a rule on the gross debt ratio, which can be achieved through adjustment in the budget balance or decreases in the stock of financial assets. Section 3.5 concludes by summarising the main implications for the next Chapters.

3.2 Literature review

The introduction of fiscal rules in the European Union (EU) in the early 1990s has been motivated by the specific institutional set-up of monetary union, where monetary policy has been centralised while fiscal policy remains a national competence. The standard argument as to why rules are needed is that unsustainable fiscal policies will complicate the task of the ECB to maintain price stability, as it will put pressure on the monetary authority to increase inflation and to inflate away debt (e.g. Wyplosz, 1997, EC, 2004a). At the same time, EMU has led to a renewed interest in the cyclical stance of budgetary policy over the economic cycle given that monetary policy can only concentrate on area wide aggregates. The philosophy behind the EU fiscal rules is to combine both motives by choosing a medium-budgetary target that is consistent with sustainability while allowing the symmetric operation of the automatic stabilisers without breaking the 3% GDP reference value for the budget balance (Artis and Buti, 2000, EC, 2004a).[23]

23 The philosophy of the automatic stabilisers stems from the idea of tax smoothing as in Barro (1979).

In line with these arguments, macro-economic models of fiscal policy in EMU have focused on the sustainability argument as well as the short-term interaction between fiscal and monetary policy. Beetsma and Uhlig (1999) show why it is rational for national fiscal authorities to enter into a Stability and Growth Pact in EMU when national fiscal policy is subject to a deficit bias, given that EMU creates spillover effects from unsustainable national fiscal policies to the common inflation rate. Buti, Roeger and in't Veld (2001) study short-run interactions between monetary and fiscal policy when fiscal policy is subject to a credible fiscal constraint, focusing on the need for policy reactions to different kinds of shocks. Dixit and Lambertini (2001) provide a supply side variant of the short-run interaction between fiscal and monetary policy in EMU. They assume that fiscal policy can stimulate short-run growth beyond the natural rate by giving a subsidy to firms with monopoly power, and argue that fiscal discretion entirely negates the advantage of monetary commitment.

The intuition that we model in this Chapter is related to these arguments but has – to the best of our knowledge – not yet been formalised: in a setting with national fiscal policy and national monetary policy, the central bank may 'warn' the fiscal authority that, if its fiscal policy becomes more expansionary, the central bank may need to raise interest rates in order to stem off inflationary pressures. For the fiscal authority, the expectation that monetary policy may offset fiscal stimulus may itself discipline fiscal policy, as the fiscal policy authority understands that any attempt to do so will be fruitless. In monetary union, however, with several fiscal authorities and a single monetary authority this disciplinary effect is diluted given that the single monetary authority can only react to national fiscal policy insofar as it influences the area wide aggregate fiscal stance. A

conflict of interest may then arise between national fiscal authorities, whose policies will have spillover effects through the common interest rate.[24]

Against this background of deficit bias, the next step is to study the role of fiscal rules in addressing this bias. This part builds on models of fiscal rules in EMU where the rules have been assumed to be fully credible (Uhlig and Beetsma, 1999; Artis and Buti, 2000; Buti, Roeger and In't Veld, 2001) as well as on work in which enforcement is less strict on large Member States (De Haan et al, 2004) and where fiscal rules can be circumvented through creative accounting (Milesi-Ferreti, 2003). Whereas previous work has concentrated on the effects of budget balance rules, we also include an ex ante rule and a debt rule.

3.3 The rationale for fiscal rules in EMU

3.3.1 The model

In this section, the model of Buti, Roeger and in't Veld (2001) of short-run interaction between fiscal and monetary policy is taken as a starting point for developing the analysis. Instead of focusing on the impact of economic shocks, as in their analysis, it is used here for studying the effects of changes in the structure of fiscal-monetary interactions on equilibrium outcomes, i.e. the change from national fiscal-monetary policy to monetary union and the introduction of fiscal rules while allowing for attempts of circumventing the rules.

---

24 Beetsma and Uhlig (1999) make a similar argument in which each fiscal authority fails to internalise the effects of national debt on the common inflation rate. Differences with their analysis are that this Chapter concentrates on deficit and interest rates (i.e. analysis focuses on the short-run) and that the commitment to price stability is assumed to be credible.

Assume a monetary union of n countries $(i = 1...n)$. For each country i the model consists of a standard demand (IS) equation and a Lucas supply curve that determine the value of the output gap G (defined as the percentage difference between actual and potential GDP) and inflation, π.

$$G_i^D = \varphi_1 d_i - \varphi_2 (i_{EMU} - \pi_i^e) + \varepsilon_1 \tag{3.1}$$

$$G_i^S = \omega(\pi_i - \pi_i^e) + \varepsilon_2 \tag{3.2}$$

Where d is the budget deficit as a percentage of GDP, i_{EMU} is the nominal interest rate for the currency zone as a whole, ε_1 is a demand shock, ε_2 is a supply shock and superscript e is for expectations. The deficit exerts a positive impact on demand and the real interest rate a negative impact.[25] Surprise inflation can temporarily increase output beyond the natural rate because of nominal rigidities (inflation higher than expected will lower the real wage and increase the demand for labour).

The objective functions for fiscal and monetary policy reflect actual experience in EMU as documented for example in the Euro Area economic survey of the OECD (2005): whereas monetary policy has been credible and successful in stabilising inflation expectations, fiscal policy has been less credible in delivering on its budgetary commitments. The model therefore reflects that the traditional problem of time inconsistency in monetary policy, i.e. to increase output beyond potential through surprise inflation (Kydland and Prescot, 1977) has been solved by making the central bank independent and giving it a clear mandate to maintain price stability. In this macro-model, the deficit bias in fiscal policy takes the form of attempts to increase output beyond a level that is seen as sub optimally low, as with monetary policy in the

25 This implies that Ricardian equivalence does not hold except for the case where φ_1 is zero.

earlier literature. Suboptimal low output has been explained by the existence of tax distortions or monopoly power; a deficit bias arises if the government tries to alleviate these signs of structural problems trough macro-economic demand management.

The objective function for the fiscal authorities is given by:

$$L(FA) = (G - G^*)^2 + \alpha(d - d^*)^2 \tag{3.3}$$

Where superscript * indicates target values. The first term represents a stabilisation motive, with *G** referring to the preferred output gap as discussed above. The second term represents a sustainability motive in which d^* is the structural deficit that represents a sustainable fiscal position.[26] This medium-term objective is determined exogenously by the target debt level and the structural growth rate of the economy, according to $d^* = b^* g$ where *b* is debt as a percentage of GDP and *g* is the nominal GDP growth rate. For a given nominal growth rate, this formula gives the value of the deficit that would stabilise the debt to GDP ratio at its target value.[27] In order to simplify the algebra, we assume that $b^* = d^* = 0$ (maintaining d^* would increase the number of variables in the analysis, but without changing the conclusions). All in all, this set-up implies that attempts by the fiscal authority to increase the output gap beyond its natural rate are not costless, as it requires higher deficits that raise sustainability concerns.

---

26 Buti, Roeger and in't Veld (2001) highlight that the medium-term objective should be defined in structural terms and substitute the nominal deficit for the structural deficit according to $d = d^s - \eta G$ where superscript *s* indicates the structural deficit. In this model, we abstract from the usual impact of the cycle on the measured deficit, so that the difference between the structural and the nominal deficit disappears. It should be kept in mind, however, that medium-term objectives are measured in structural terms in the actual practice of the EU fiscal framework.

27 This formula has been used when the EU fiscal rules where first formulated, given that a deficit of 3% GDP stabilises the debt ratio at 60% of GDP if nominal growth is 5%.

The loss function of the monetary authorities reflects its commitment to price stability. The output gap is not included in this loss function, not only since it simplifies the algebra, but also to highlight the emphasis in the analysis on fiscal policy. In principle, however, results in this Chapter would still hold if the output gap was included in the monetary loss functions, provided that its preferred target differs from that of the fiscal authorities.[28]

$$L(MA) = (\pi - \pi^*)^2 \tag{3.4}$$

In order to simplify further, we assume that $\pi^* = 0$. A key feature of this model is that the monetary authority can always choose its interest rate so as to offset any impact of the deficit on inflation.

3.3.2 Fiscal-monetary interactions at national level

The case of a single monetary and fiscal authority can serve as a benchmark for evaluating the changes in the equilibrium outcome of the model that are brought about by the shift to monetary union (i.e. a single monetary authority and multiple fiscal authorities). Assuming that *n*=1, so that the subscript *i* can be dropped, and minimising equation (3.3) with respect to (3.1) gives the reaction function for the deficit: [29]

$$d = \frac{\varphi_1\varphi_2 i - \varphi_1\varphi_2\pi^e + \varphi_1 G^*}{\varphi_1^2 + \alpha} \tag{3.5}$$

28 The original model in Buti *et al*. (2004) also contains an interest rate smoothing motive. Here, we focus immediately on the equilibrium solution that emerges after interest rate smoothing has been completed.

29 Setting demand and supply shocks to zero.

The deficit increases with the interest rate and decreases with expected inflation. The term $\varphi_1 G^*$ represents the effects of the deficit bias

After solving (3.1) and (3.2) for inflation π and minimising the monetary objective function (3.4) with respect to π, the monetary reaction function becomes:

$$i = \frac{\varphi_1 d + (\varphi_2 + \omega)\pi^e}{\varphi_2} \tag{3.6}$$

It shows that the interest rate increases with the deficit and expected inflation.

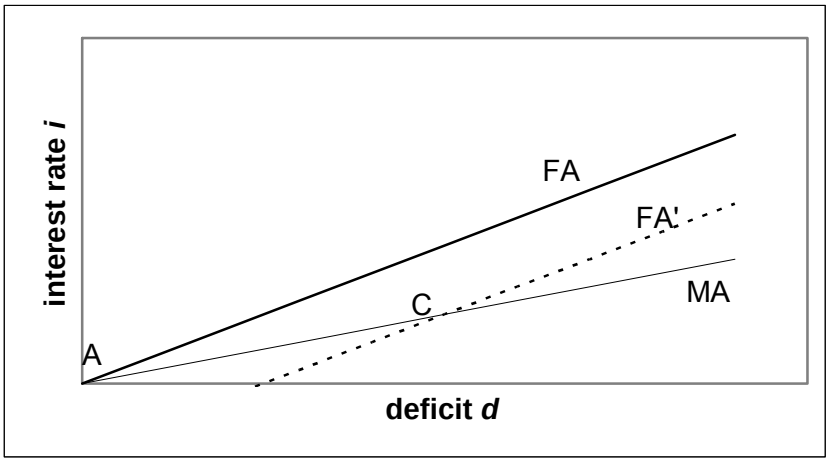
Nash equilibrium

The reaction functions are represented graphically in Figure 3.1.[30] *FA* is the reaction function of the fiscal authority where it has no deficit bias, while *FA'* is the reaction function with a deficit bias. In the Nash equilibrium the fiscal and monetary authorities separately minimise their loss function, taking the reaction of the other as given.[31] The monetary reaction function is given by *MA*. The equilibrium is point *C* where $\pi = G = 0$.

30 In doing so, we use the baseline parameters as used by Buti and Van den Noord (2003), i.e. φ_1=1.0, φ_2=0.5, ω=3.0. Furthermore, we assume that the fiscal authority gives equal weight to stabilisation and sustainability concerns so the α=1. The preferred output gap G^*, which reflects the deficit bias, is assumed to be 1.

31 This best represents actual policy assignments. We do not investigate a co-ordinated solution that would entail minimising a joint loss function of the fiscal and the monetary reaction functions. See Beetsma *et al.* (2001) for comparisons of the Nash solution with policy coordination.

Figure 3.1 National fiscal monetary interactions: effects of a deficit bias



The solutions in equilibrium *C* are given by:

$$d = \frac{\varphi_1}{\alpha} G^* ;\ i = \frac{\varphi_1^2}{\varphi_2 \alpha} G^* ; \text{ and } G = \pi = 0$$

So that:

$$L(FA) = G^{*2} + (\frac{\varphi_1}{\alpha} G^*)^2 ;\ L(MA) = (\frac{\varphi_1^2}{\varphi_2 \alpha})^2$$

Clearly, in equilibrium, any attempt to stimulate *G* towards G^* will fail, while its costs due to a loss of fiscal sustainability are represented by the term $(\frac{\varphi_1}{\alpha} G^*)^2$ in *L(FA)*. Therefore, a rational fiscal authority, knowing that an expansionary fiscal policy would trigger an offsetting increase in interest rates by the central bank, may choose to refrain from such policies in the first place and set its deficit in line with its sustainability motive (i.e. $d^*=0$, given the assumed target level of zero debt). The fiscal reaction function then shifts inward to the origin. In this case, $i=d=G=\pi=L(MA)=0$ and $L(FA)=G^{*2}$. This solution is clearly welfare improving from the perspective of the fiscal authority (and also the monetary authority). This conclusion captures the intuition of section 3.1 that, with national fiscal and monetary policy, the national monetary reaction

function may discipline fiscal policy. The next step is to model how this effect is diluted in EMU.

3.3.3 Fiscal-monetary interactions in EMU

Assume now a monetary union that consists of *n* countries. Before investigating the fiscal-monetary interactions from the perspective of individual countries (fiscal authorities), it is instructive to take the perspective of the common central bank and study the area-wide fiscal-monetary interaction. The loss function of the monetary authority becomes:

$$L(MA) = \pi_{EMU}^2 \tag{3.7}$$

From the perspective of a common central bank that targets area-wide aggregates, the area-wide loss function of the fiscal authorities is:

$$L(FA) = (G_{EMU} - G_{EMU}^*)^2 + \alpha d_{EMU}^2 \tag{3.8}$$

After substituting equations (3.1) and (3.2) into the loss functions (3.7) and (3.8), the reaction functions become:

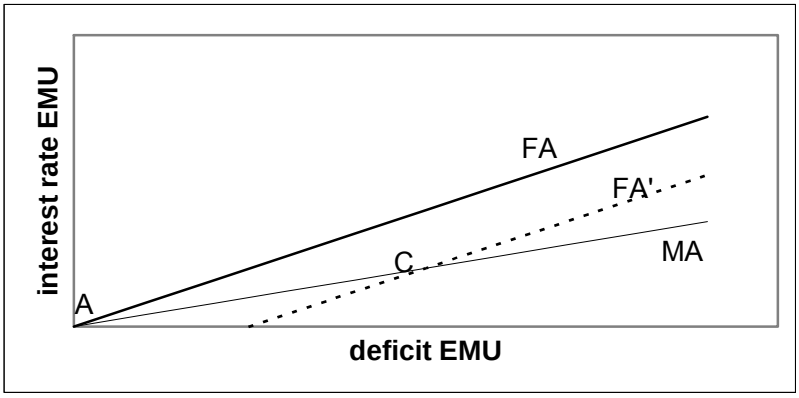
$$i_{EMU} = \frac{\varphi_1 d_{EMU+}(\varphi_2 + \omega)\pi_{EMU}^e}{\varphi_2} \tag{3.9}$$

$$d_{EMU} = \frac{\varphi_1\varphi_2 i_{EMU} - \varphi_1\varphi_2\pi_{EMU}^e + \varphi_1 G_{EMU}^*}{\varphi_1^2 + \alpha} \tag{3.10}$$

Again, the reaction functions and the Nash equilibrium can be illustrated graphically as in Figure 3.2, under zero expected inflation. It shows the range of possible aggregate fiscal reaction functions from the option where no individual country has a deficit bias (*FA*) to where they all have a deficit bias (*FA'*). The range of possible equilibriums is on

the line *A*-*C*. At all points on *A*-*C*, aggregate inflation and the output gap are zero. In this specification, the central bank would be indifferent between the solutions on the line from *A* to *C*[32], while the fiscal authorities would prefer solution *A* on the basis of their sustainability motive. In order to investigate which solution will be the outcome, we need to take the perspective of individual fiscal authorities. In other words: we now take a political economy perspective by recognising possible conflicts of interest between individual fiscal policy makers (i.e. countries) in EMU.

Figure 3.2 Fiscal monetary reactions in EMU: perspective of common central bank



From the perspective of an individual country, the fiscal loss function would still be as in (3.3). At the same time, an individual country *j* would recognise that the central bank targets a weighted average of inflation developments in the common currency area. Thus, assuming that there are in total *n* countries in EMU, then from the perspective of an individual country *j* the loss function of the central bank can be decomposed into a share *c* that it driven by developments in country *j* and a part (1-*c*) that is driven by all other countries *n*-*j*:

$$L(MA) = \pi^2_{EMU} = c\pi^2_j + (1-c)\pi^2_{n-j} \tag{3.11}$$

32 However, in a longer time perspective a deficit bias and the build up of debt could put pressure on the commitment of the central bank to price stability so that it would prefer solution A.

The share c is determined by the economic weight of the country in the currency area, so that $c = \frac{Y_j}{\sum_{i=1}^{n} Y_i}$ is the share of output Y of country j in aggregate output of the currency zone.[33] Minimising again the loss functions gives the reaction functions:

$$d_j = \frac{\varphi_1 \varphi_2 i_{EMU} - \varphi_1 \varphi_2 \pi_j^e + \varphi_1 G_j^*}{\varphi_1^2 + \alpha} \tag{3.12}$$

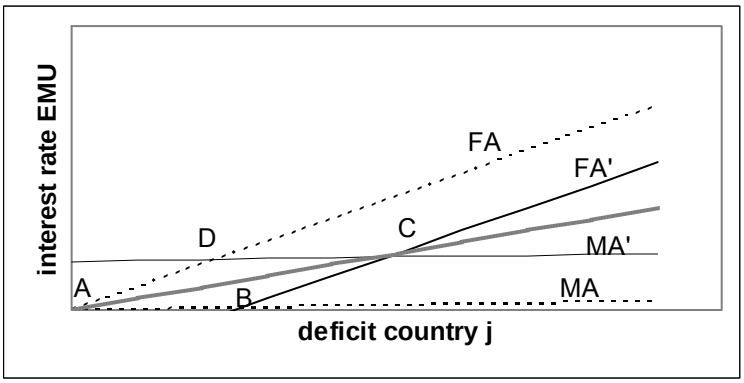
$$i_{EMU} = \left(\frac{\varphi_1}{\varphi_2}\right)\left(c d_j + (1-c) d_{n-j}\right) + \left(1 + \frac{\omega}{\varphi_2}\right)\left(c \pi_j^e + (1-c)\pi_{n-j}^e\right) \tag{3.13}$$

Equation (3.13) shows that the common interest rate is determined not only by fiscal developments in country j, but also by fiscal developments in all other countries of the currency union. In comparison with the case of national fiscal and monetary policy, country j now faces a monetary reaction function in which the common interest rate is much less sensitive to deficit developments in country j (effect is only the share of output of country j in aggregate output of the currency zone) and in which budget deficits in other members, that are exogenous from the perspective of country j, impact on the common interest rate and thereby on the budget deficit in country j. In other words, budget deficits in individual countries cause external effects through their effects on the common interest rate. In Figure 3.3, FA represents the case where country j has no deficit bias, while FA' is the case with a deficit bias. The monetary reaction function with respect to deficits in country j has flattened in line with (3.13). MA represents the case where the average budget deficit in all other countries is zero, while MA' represents the maximum deficit bias in all other countries.

33 If one assumes a monetary union of n countries of equal size then the weight would be 1 divided by n. The weight used in Figure 3.4 is 1/12 given that EMU consisted of 12 countries at the time of writing. Other parameters are the same as in Figure 3.1 and Figure 3.2.

Figure 3.3 also includes the aggregate monetary reaction function for EMU as a whole, on which average inflation and the output gap in the currency area are zero (i.e. the grey line through the origin and point *C*). A crucial point is that the possible equilibrium solutions for country *j* are not necessarily on this line.

Figure 3.3 Fiscal monetary reactions in EMU: perspective of country j



If all other countries show fiscally restraint behaviour (monetary reaction function is *MA*) while country *j* pursues an expansionary strategy (fiscal reaction function is *FA'*), then output and inflation in country *j* will be above zero as in point *B*, with the effect of a small rise in the common interest rate and a small negative output gap and inflation in all other countries. Similarly, if all other countries follow expansionary policies (*MA'*) while country *j* shows fiscal discipline (*FA*), then all other countries will have a small positive output gap at the expensive of a negative output gap in country *j*, as in point *D*.

A rational fiscal authority, knowing that it may end up with a negative output gap if all other countries pursue and expansionary strategy, may decide to pursue an expansionary strategy in the first place. As all countries face an incentive to do so, the equilibrium solution will be C in which deficits and interest rates are sub optimally high, with zero inflation and output gap. This captures the intuition that monetary union may dilute the disciplinary effect of the national monetary reaction function. A conflict of interests

arises given that each individual fiscal authority does not internalise the effects of its fiscal policy on the common interest rate.

3.4 Effects of fiscal rules on outcomes

3.4.1 Credible budget balance rule

The conflict of interest in fiscal policy that is created by EMU can be addressed by imposing a fiscal rule. In the model, the rule should shift the fiscal reaction function back to the origin in Figure 3.4. This can be done by formulating the budget balance rule $d \leq d^* = 0$, and introducing an additional loss related to deficits above $d^* = 0$. The fiscal rule can be modelled as follows:[34]

$$L(FA) = (G_j - G_j^*)^2 + \alpha d_j^2 + I(d_j) p^e \gamma d_j \tag{3.14}$$

I(d) is the indicator function such that *I=1* if the rule is binding (deficit is positive) and zero otherwise, p^e is the probability of enforcement and γ is the size of the fine, defined as a fraction of the deficit and thus increasing with the extent to which the rule is broken. The reaction function for country *j* now becomes:

$$d_j = \frac{\varphi_1 \varphi_2}{\varphi_1^2 + \alpha} i_{EMU} + \frac{\varphi_1}{\varphi_1^2 + \alpha} G_j^* - \frac{I(d_j) p^e \gamma}{2(\varphi_1^2 + \alpha)} - \frac{\varphi_1 \varphi_2}{\varphi_1^2 + \alpha} \pi_j^e \tag{3.15}$$

The second term on right-hand side represents the deficit bias and the third represents the effects of the fiscal rule. The rule enforcer could now set the fine that exactly offsets the deficit bias: $\gamma = \frac{2\varphi_1 G_j^*}{p^e}$. This restores the previous solution in which the deficit,

34 See Milesi-Feretti (2003) that uses a similar approach, but in a different context of a single country and a model of decisions on expenditure and taxation.

interest rate, output gap and inflation are all zero. In other words: a credible fiscal rule backed by enforcement and sufficiently high sanctions can offset the deficit bias.

3.4.2 Ex ante fiscal rule

Ex ante fiscal rules create an obligation to comply in terms of fiscal plans but not in terms of fiscal outcomes. The preventive arm of the SGP can be thought of in this way: it creates an obligation for countries to present medium term fiscal plans that show progress towards a sustainable fiscal position. Given that this provision is not part of the corrective arm of the SGP (which focuses on the 3% limit for the budget balance) it does not enforce this obligation through the sanction procedures of the fiscal rules.

The effects of an ex ante fiscal rule can be investigated by modelling two separate stages in the fiscal process: the planning stage and the implementation stage. Our model can be thought of a describing the planning stage as well as the implementation stage. With an ex ante fiscal rule, the probability of enforcement p^e is one during the planning stage. This recreates the solution of the previous paragraph in which the fiscal bias is addressed, in the sense that fiscal plans show compliance with the fiscal rule (in exactly the same way as shown already in the previous section). During the implementation stage the only difference is that p^e is now zero in equation 3.15**.** Obviously, this reproduces the solution without a fiscal rule. This captures the idea that ex ante rules institutionalise a continuous stream of fiscal surprises. Through this effect the rule distorts fiscal plans, which could be expected to show an upward bias in comparison with fiscal outcomes. In practice, the divergence between plans may however be attributed to ‘bad luck’, e.g. given that economic growth did not materialise as foreseen in the economic scenario that underlies fiscal plans.

3.4.3 Budget balance rule with circumventing

In addition to non-enforcement, hidden non-compliance is another strategy through which the rules can de facto be broken. A strategy of circumventing can be modelled by assuming that the budget deficit can be decomposed into a part that can be measured d^m and a part creative accounting ca that cannot be observed by the surveillance and enforcement agencies due to asymmetric information:

$$d^{total} = d^{m} + ca \tag{3.16}$$

Creative accounting thus allows the government to substitute a measured deficit with unmeasured creative accounting. Following Milesi-Feretti (2003), a straightforward way of modelling creative accounting is to assume that the fiscal authority only takes direct costs into account that occur when creative accounting is detected.[35] In this set-up creative accounting, if detected with expected probability p^d, is added to the measured deficit and sanctions apply. The fiscal loss function now becomes:

$$L(FA) = (G_j - G_j^*)^2 + \alpha(d_j^m + ca_j)^2 + I(d_j^m + p^d ca_j)p^e\gamma(d^m + p^d ca_j) \tag{3.17}$$

Assuming a probability of detection smaller than one ($p^d < 1$), if follows immediately that creative accounting lowers the probability of being fined in comparison with fiscal policy through a higher measured deficit (see the last term on the right-hand side of (3.17)). It is therefore optimal to set the measured deficit to zero and to circumvent the rule to some extent by creative accounting, so that fiscal authority chooses to do some 'real' fiscal adjustment and some creative accounting. The reaction function now becomes:

35 A possible extension is to also take wider costs into account, e.g. economic distortions related to a loss of transparency.

$$d_j^{total} = ca_j = \frac{\varphi_1\varphi_2}{\varphi_1^2+\alpha} i_{EMU} + \frac{\varphi_1}{\varphi_1^2+\alpha} G_j^* - \frac{I(d_j^m + p^d ca_j) p^e \gamma p^d}{2(\varphi_1^2+\alpha)} - \frac{\varphi_1\varphi_2}{\varphi_1^2+\alpha}\pi_j^e \qquad (3.18)$$

The third term on the right-hand side of (3.18) shows that, whereas lack of enforcement and sanctions decrease the effectiveness of the rules by lowering p^e and γ, creative accounting decreases its effectiveness when p^d is smaller than one. Solutions range from a probability of detection of zero which would make the rule entirely ineffective to a probability of detection of one which would, by definition, eliminate any hidden non-compliance and reproduce the case of a fiscal rule without creative accounting as in (3.15). All intermediary solutions imply some offsetting of the effectiveness of the fiscal rule. Milesi-Feretti (2003) argues that p^d is a function of the degree of transparency of the budget, so that the effectiveness of the fiscal rule increases with the degree of budgetary transparency.

3.4.4 Debt rule with circumventing

We now turn to the case of a debt rule such as the reference value of 60% GDP for the gross debt ratio. In principle it may not matter much for the analysis whether we focus on the deficit or the debt ratio, as long as the deficit corresponds to the change in the debt ratio. This is why in the beginning of this Chapter we introduced a short-cut for the sustainability motive in the loss function (3.3) of the fiscal reaction function: we immediately inserted the deficit that would stabilise the debt ratio at its target value instead of the debt ratio, in order to reduce the number of variables in our analyses (the only difference would have been that we would have introduced the lagged debt ratio as an additional explanatory variable in the solutions for the deficit; all else remains the same).

However, changes in the gross debt ratio do not always correspond to the budget balance. As was explained in Chapter 2 of this thesis, the Stock Flow Adjustment (SFA) represents increases in the gross debt ratio that cannot be accounted for by the deficit. The most relevant part of the SFA that does not impact on the deficit, but can however be used as a policy instrument for influencing gross debt ratio, is financial assets.[36] It should be noted from the start that changes in financial assets do not represent creative accounting, given that it is not explicitly forbidden in the EU fiscal rules to reduce gross debt by selling financial assets. Still, a possible shift from (gross) debt adjustment by means of a lower deficit towards debt adjustment through management of financial assets can be regarded as an unintended behavioural effect of the fiscal rules. In any effect, it would not improve the net worth of the government, given that the decrease in the gross debt ratio is matched by an equally large decrease in financial assets.

In order to formalise these effects, we first introduce some definitions. The net debt ratio n of country j at time t is simply the gross debt ratio b minus financial assets a:

$$n_{j,t} = b_{j,t} - a_{j,t} \tag{3.19}$$

At the same time, the deficit d corresponds to the change in the net debt ratio n:

$$n_{j,t} = n_{j,t-1} + d_{j,t} \tag{3.20}$$

From (3.19) and (3.20) it follows that the gross debt ratio can be influenced trough the deficit or changes in the stock of financial assets: $b_{j,t} = n_{j,t-1} + d_{j,t} + a_{j,t}$.With these definitions in mind we can now reformulate the fiscal loss function for our country j, as in equation (3.21). As before, the first term on the right hand side of (3.21) represents

36 This implies that we abstract from differences in the timing of the recording of deficit (on accrual basis) and debt (cash basis) and valuation effects. As indicated in Chapter 2, the former has mainly been used as a substitute for the budget balance, while the latter is largely outside the control of the policy authorities.

the stabilisation motive, which includes a deficit bias as represented by G^*. The second term represents the sustainability motive. We no longer present our shortcut of putting the deficit, but now directly include the *net* debt ratio here. Net debt instead of gross debt is included given that only a decrease in net debt represents an improvement of the net worth of the government (a decrease in gross debt that is matched by an equally large decrease in financial assets does not improve net worth). The third element represents the fiscal rule on the gross debt ratio *b*. As before, we assume a threshold variable as set by the rule of zero, in order to limit the number of parameters in the analysis (this simplification does not change the conclusions). The fourth variable on the right hand sight captures the fact that it is not costless for the government to adjust its stock of financial assets without limit: its 'desired' stock of financial assets is determined by variables other than the fiscal rule. Portfolio considerations play a role here (desired fraction of investment in cash, loans, bonds, holding in companies, and so forth), just as the stakes the government wants to hold in private companies, reflecting political preferences. We assume that the utility loss increases in quadratic fashion in the difference between the stock of financial assets and the desired level of financial assets a^*:

$$L(FA) = (G_{j,t} - G_j^*)^2 + \alpha n_{j,t}^2 + I(b_{j,t}) p^e \gamma b_{j,t} + \beta (a_{j,t} - a_j^*)^2 \tag{3.21}$$

Inserting the definitions for the net debt ratio and the gross ratio, and equation (3.1) for the output gap, and minimising with respect to the choice variables of the deficit *d* and financial assets *a* gives the solutions:

$$d_{j,t} = \frac{\varphi_1 \varphi_2}{\varphi_1^2 + \alpha} i_{EMU,t} + \frac{\varphi_1}{\varphi_1^2 + \alpha} G_j^* - \frac{\alpha}{\varphi_1^2 + \alpha} n_{j,t-1} - \frac{I(b_{t,j}) p^e \gamma}{2(\varphi_1^2 + \alpha)} - \frac{\varphi_1 \varphi_2}{\varphi_1^2 + \alpha} \pi_{j,t}^e \tag{3.22}$$

$$a_{j,t} = a_j^* - \frac{I(b_{j,t})p^e\gamma}{2\beta} \tag{3.23}$$

The solution for the deficit is very similar as before, except that the lagged net debt ratio is added as an explanatory variable that captures the sustainability motive (the higher the initial debt ratio, the lower should be the deficit). A stronger fiscal rule on the debt ratio, as measured by a higher probability of enforcement p^e and the size of the fine γ decreases the deficit (which lowers the debt ratio). At the same time, making the rule stricter will also lead to a decrease in the stock of financial assets, and thereby lower gross debt through this channel. The size of this behavioural effect depends on parameter β that describes the weight given to loss related to a suboptimal level of financial assets (the higher is β, the less financial assets will be used complying with the debt rule).

As with the budget balance, the analysis confirms that circumventing may limit the effectiveness of the fiscal rule. At the same time, different rules induce different types forms of circumventing, i.e. creative accounting with the budget balance for a budget balance rule and the strategic use of financial assets for a debt rule.[37] In fact, the specific form in which circumventing takes place could be expected not to be fixed in actual practice: as soon as one form is detected in fiscal surveillance, fiscal authorities may search for new forms of circumventing (Koen and van den Noord, 2006).

37 As another example, Chapter 7 will investigate how tax expenditures can be used for circumventing an expenditure rule.

3.5 Conclusions

This Chapter has investigated how a deficit bias may emerge due to the specific institutional set-up in EMU, and has analysed possible effects of different types of fiscal rules on fiscal outcomes. Our analysis has gone beyond the usual focus on the effects of budget balance rules and fiscal outcomes, and also comprises the effects of ex ante fiscal rules and debt rules.

In the model, EMU creates a conflict of interest between national fiscal decision makers, given that monetary policy can only react to the aggregate fiscal policy stance for the Euro area as a whole. From the perspective of an individual country, this implies that EMU has diluted the monetary policy response in comparison with the case of national fiscal and monetary policy. In the model, the result will be suboptimally high deficits and interest rates.

From the perspective of EMU as a whole, the optimal solution would be that all countries commit to fiscal discipline. We investigate how different types of fiscal rules affect fiscal outcomes where fiscal policy is subject to a deficit bias due to the institutional set-up of EMU. A credible fiscal rule, backed by enforcement and economically significant sanctions, and without the possibility of circumventing, could be designed in such a way that it exactly offsets the incentives for biased policies. Ex ante fiscal rules, which are characterised by an obligation to comply during the planning stage, but not during the implementation stage, would show compliance in terms of plans but not outcomes. A budget balance rule that can be circumvented by creative accounting diminishes the effectiveness of the rule. The extent to which it does so depends on the probability that creative accounting is detected; if this probability is zero the solution without a fiscal rule is recreated. A rule on the gross debt ratio can be achieved either through fiscal adjustment through the budget balance or changes in

financial assets. Its predicted effect is a combination of adjustment through the budget balance and financial assets, where the balance between the two depends on the social costs of a suboptimal level of financial assets. To the extent that adjustment takes place through changes in financial assets, this will lower the gross debt ratio but without improving net worth of the government.

Chapters 4 and 5 will investigate the implications of the model for the fiscal rules that have received less attention in the empirical literature: the ex ante part (Chapter 4) and the debt rule (Chapter 5) of the EU fiscal framework.

4 Fiscal Plans versus Outcomes under the EU Fiscal Rules

4.1 Introduction

As we showed in the previous Chapter, within EMU countries have a common interest in fiscal discipline, in order to avoid suboptimally high interest rates and fiscal deficits. At the same time, individual countries may face incentives to free-ride on fiscally disciplined policies by others, given that EMU has diluted the monetary response to expansionary policies within a single country. This may have consequences for the fiscal behaviour of individual countries. When meeting at supranational level, pressure is exerted on individual countries to show commitment to the rules of the common fiscal framework. At the same time, countries may subsequently attach less weight to delivering on these policy commitments when it comes to implementing the fiscal plans at national level. This Chapter investigates the relevance of these hypotheses by comparing fiscal plans as submitted under the EU fiscal rules - that are subject to ex ante monitoring in the Ecofin Council - with the subsequent implementation of these plans at national level. In doing so, we correct for the impact of macro-economic surprises on the outcome.

Another way of viewing the exercise in this Chapter is that it investigates compliance by Euro area countries with the preventive part of the EU fiscal framework. The key element is the obligation to submit fiscal plans that show progress towards sustainable medium term budgetary positions, which in practice imply budgetary positions of close

to balance for most countries.[38] At the same time, ex post enforcement on compliance with the preventative part of the framework is lacking. It is therefore a clear example of an ex ante fiscal rule. We investigate empirically the implication of the model of the previous Chapter that this set-up may have institutionalised the occurrence of a systematic divergence between fiscal plans and outcomes.

The existing literature on this topic is relatively small. The experience of the US states with ex ante fiscal rules has been summarised by Inman (1996, p. 14): 'With ex ante budget balance rules state officials appear to overestimate revenues and underestimate expenditures to ensure budget balance at the beginning of the fiscal year, only to discover to their 'surprise' that projections are not realised'. Regarding the experience with the EU fiscal rules, EC (2002) noted that the planned date for achieving the objective laid down in the original Stability and Growth Pact of a medium-term budgetary position of close-to-balance or in surplus became a moving target. Strauch *et al.* (2004) have linked forecast biases for the budget balance to the cyclical position and differences in forms of fiscal governance across countries. Jonung and Larch (2006) have pointed to the role of biased growth forecasts in explaining budgetary slippages - and hence made the case for delegating the preparation of macroeconomic forecasts underlying budgetary projections to independent institutions.

As indicated also in the Introduction to this thesis, we are interested in the degree to which the policy intentions in the fiscal plans have been followed up by implementation, while controlling for other variables that may have impacted on fiscal outcomes. Controlling for other variables is highly relevant, given that politicians have

38 After the reform of the SGP in 2005 medium-term objectives have been made country-specific; in practice most countries however still choose medium-term objectives close to a position of a balanced budget.

often blamed worse than projected outcomes to bad luck, due to the fact that economic growth turned out to be lower than expected. The usual approach for doing so is to include control variables in the regression, as will also be done in Chapters 5, 7 and 8 of this thesis. In this Chapter we however use a different methodology. Instead of running regressions, we take an accounting perspective and derive a decomposition of the differences between fiscal plans and outcomes into its constituent parts. This allows us to investigates the source of budgetary slippage by addressing simple but yet unanswered questions: (i) which part of the budgetary slippages can be attributed to the revenue or the expenditure side of the budget?; and (ii) which part of the slippages can be attributed to a lack of implementation of planned measures and which part is due to forecast biases in macro-economic variables such as economic growth or inflation? In sum, the key issue is the extent to which policy commitments ex ante have been followed up by policy effort in implementation.

In order to answer these questions, we have created an original database of national fiscal plans and outcomes under the SGP, and have recalculated all variables so that they match our decomposition. Our database contains figures on the macroeconomic assumptions (real GDP growth and inflation) underlying the projections, and on the expenditure and revenue projections and outcomes expressed in terms of percentage of GDP, but also in nominal terms. This allows us to assess the reasons for the failure to respect the budgetary targets.

The remainder of this Chapter is organised as follows. Section 4.2 summarises the role of medium term fiscal plans, as submitted by Euro area countries in their so-called Stability Programmes, in the process of EU fiscal surveillance. Section 4.3 describes our database in more detail and explains the difference in character between fiscal projections from independent external sources and the national budget (our database

uses the second source). Section 4.4 analyses the fiscal plans of the stability programmes. Section 4.5 contains a broad comparison between fiscal plans and outcomes for the budget balance. A first decomposition is made by investigating the extent to which differences can be attributed to the expenditure or the revenue side of the budget. Section 4.6 provides a further decomposition of the part of the differences explained by macro-economic surprises and (lack of) policy effort. Section 4.7 concludes.

4.2 The role played by Stability and Convergence Programmes

In order to ensure that countries achieve or maintain sustainable budgetary positions, and to avoid the occurrence of excessive deficits, the Stability and Growth Pact (SGP) follows a strategy based on preventive and corrective elements. The corrective part consists of the excessive deficit procedure, governed by Article 104 of the Maastricht Treaty. This article spells out the enforcement procedures to be followed in case countries break the reference values of 3% of GDP for the deficit and 60% of GDP for the gross debt ratio. The analysis in this Chapter however concentrates on the preventive part arm of the Pact. It is based on Article 99 of the Treaty, and codified in Council Regulation (EC) No. 1466/97 as amended by Council Regulation (EC) No. 1055/05. This Regulation stipulates that Euro area countries have to submit to the Council and the Commission Stability Programmes, in which they set out their national medium-term budgetary strategy and objectives.[39] Such programmes have been prepared for the first time in 1998 and have been updated annually. The SGP foresees

39 EU Member States outside the euro area submit (updated) Convergence Programmes; these are outside the scope of this Chapter.

that the Council has to deliver an opinion on these Programmes, on the basis of a recommendation from the Commission and after consultation of the Economic and Financial Committee.[40]

The original SGP, which was in force up to the 2005 reform (the revised SGP entered into force in July 2005), stated that Euro area countries should target in their stability programmes the attainment of a budgetary position close to balance or in surplus. This was intended to enable countries to respect the 3% of GDP ceiling in all circumstances, apart from unusually severe economic downturns or other exceptional conditions, and to ensure a rapid decline in debt ratios. In practice, Stability and Convergence Programmes present information on the adjustment path towards a budgetary position close-to-balance or in surplus and the expected path of the general government debt ratio. They also provide information on the main assumptions about expected economic developments (growth, employment, inflation and other important economic variables) and a in some cases description of budgetary and other economic policy measures being taken and/or proposed to achieve the objectives of the Programme.[41]

4.3 Fiscal plans and political biases

Until recently, empirical research on fiscal policy behaviour was largely based on ex post data of fiscal outcomes. In reality, fiscal policy however takes place in stages: the planning stage, that contains the preparation of the budget proposal, and the implementation stage in which taxes are collected and the money is spent. During the

40 Current and past programmes as well as Council opinions can be found on http://ec.europa.eu/economy_finance/sg_pact_fiscal_policy/sg_programmes9147_en.htm

41 Convergence Programmes also present the medium-term monetary policy objectives and the relationship of those objectives to price and exchange rate Stability.

implementation stage, plans as presented ex ante may not always be fully realised. Tax and expenditure measures may not always be fully implemented, e.g. due to political difficulties in implementation and due to resistance by special interest groups. Moreover, the economic scenario that underlies the budget usually unfolds different than expected. This feeds back into fiscal performance due to the elasticity of tax revenue to underlying tax bases and endogenous responses on the expenditure side (e.g. expenditures on social transfers).

As a result of all these factors, research may progress by explicitly distinguishing the planning stage and the implementation stage in fiscal policy. Two approaches have recently been followed for doing so. A first uses fiscal projections as prepared by international organisations such as the OECD, the IMF, the ESCB and the European Commission. The aim of these forecasts is to give an unbiased prediction of fiscal policy.[42] As a result, the forecasters of these institutions prepare their own independent macro scenario which may deviate from the scenarios used in the national budgets. Moreover, these forecasts only take measures into account that have been specified in sufficient detail and are likely to pass the Parliamentary process. In principle this process should filter out any political biases, and help to asses in a neutral way how fiscal policy implementation differs from available forecasts of fiscal projections. Examples of studies that use these data for estimating fiscal reaction functions include Golinelli and Momigliano (2006) on the real-time determinants of fiscal policies in the Euro area and Beetsma and Giuliodori (2008) on the fiscal response to economic shocks.

42 The evidence however shows that the fiscal forecasts of the IMF, the OECD and the EC can be slightly biased for some countries. See Artis and Marcellino (1999).

A second approach for distinguishing between plans and implementation is to rely on fiscal plans as presented in the budget. From the preceding discussion it already follows that such plans may not necessarily be the best available predictor of fiscal outcomes. Instead, using this data source would be more appropriate if the interest is in the political biases that may distort fiscal policy, and the role played by fiscal rules and/or institutions in addressing these biases. Indeed, some studies have already pointed out that the growth forecasts of the macro-economic scenario of the budget have been deliberately overoptimistic in some cases (Larch and Salto, 2003, Milesi-Feretti and Moriyama, 2004, and Jonung and Larch, 2006).

For the purpose of our study, we would obviously need to take the second data source. The introduction of the EU fiscal rules has actually facilitated such an approach given that the rules required fiscal data to be measured in a transparent and comparable way. The introduction of the SGP in 1999 moreover required more detailed and forward-looking assessments by the European Commission, and hence the availability of harmonised data. As indicated already, the SGP regulation requires that EU countries submit stability and convergence programmes in which they provide their medium-term plans for the main budgetary variables (deficit, debt, expenditure, revenue) as well as the macroeconomic assumptions that underlie these medium-term plans (see also the introductory Chapter in Wierts *et al.*, 2006, p. 6).

The study by Strauch *et al.* (2004) has – to the best of our knowledge - been the first to use forecast data from the national fiscal plans that have been submitted under the EU fiscal rules. This study however focuses on the budget balance and not on expenditure and revenue. An advantage of limiting the analysis to the budget balance is that longer time series are available, as data on the budget balance have been reported since the start of the EU fiscal framework in the early 1990s. At the same time, this database

would not be suitable for the kind of detailed decomposition that we are interested in, which would require data on expenditure and revenue. We have therefore built a new database that pools the data from fiscal plans that have become available since 1998, when the first programmes were submitted under the rules of the SGP.

Yet another motivation for building the database as used in this Chapter stems from our experience in observing and participating in the yearly process of fiscal surveillance. When following the discussions on the national fiscal plans, it turned out that the same issues recurred year after year. Discussions often showed some disappointment on the lack of realisation of projections of previous years, lack of specification of measures that would be necessary for achieving the mostly ambitious planned path of fiscal consolidation, worries about the fact that the adjustment was backloaded to future years, and discussion on the extent to which growth assumptions underlying the fiscal plans were plausible. These discussions however took place on the basis of one specific medium term fiscal plan for one country at the time. It was therefore felt that pooling the available data from the plans of all countries and for all years would provide more systematic evidence on these issues.

The database was built up from the hard copies of the national stability and convergence programmes, starting from the plans submitted end 1998 and ending with the programmes of the 2006/07 surveillance round. In these programmes, all variables are reported as a percentage of GDP. In order to be able to make the decomposition that will be discussed in section 4.6, all variables were also rewritten in levels, using planned GDP as reported in the programmes. The main available variables are total expenditure, interest payments, revenue, debt, inflation, real and nominal GDP. Moreover, standard budgetary sensitivities as used by the European Commission for calculating cyclically adjusted budget balance were also added in order to be able to approximate the effect of

positive or negative growth surprises on revenue and expenditure in levels. The structure of the dataset is somewhat different from usual panel data sets: in addition to data for units (countries) and time, each variable also is available for different planning horizons from *t+1* up to *t+3*. The database was completed by adding data on fiscal and macro-economic outcomes from the European Commission Ameco database. The database consists of 324 observations for every variable, i.e. 12 countries times 9 programmes times a 3 years time horizon. For most variables, the actual number of observations is somewhat less due to missing observations.

4.4 Fiscal plans

In this section, we investigate the budgetary projections of Euro area countries in their Stability Programmes as submitted over the period 1998-2006. Apart from investigating average plans for all countries during all years, results are also shown for countries whose initial budget deficits are close to the 3% of GDP reference value for excessive deficits. These countries may be under more pressure to show an ambitious strategy of fiscal consolidation. In order to neutralise base effects and the possible influence of statistical revisions, the analysis focuses on the projected *changes* in the budgetary aggregates. Apart from average fiscal plans, 95% confidence intervals around these averages are also reported.

Results are summarised in Table 4.1. On average, countries have projected an improvement in the general government balance by about 0.3% of GDP per year until year *t+3* and 0.8% of GDP in cumulative terms over a three-year period. As regards the composition of the adjustment, countries have typically planned expenditure-based fiscal consolidations. On average, Euro area countries have projected a decline in the

expenditure-to-GDP ratio of about 0.6 % of GDP per year and 1.8% of GDP in cumulative terms. Just over half of the budgetary margins thus generated has, on average, been planned to be allocated to a reduction in the revenue-to-GDP ratio (-0.9% of GDP over the three year period), which leaves the rests (i.e. 0.8% of GDP, as indicated already) as an improvement in the budget balance. The planned adjustment has been somewhat backloaded, with the planned adjustments in the first year of 0.2% of GDP being somewhat lower than those in the second and third year of 0.3% of GDP.

Table 4.1 Medium fiscal plans Euro area countries (unweighted averages 1998-2006)

Percentage point of GDP	**T - T+1**	**T - T+2**	**T – T+3**
All Euro area countries and Programmes			
Planned change in the government balance ratio	0.2	0.5	0.8
	(0.0;0.3)	(0.3;0.7)	(0.5;1.0)
Planned change in the expenditure ratio	-0.5	-1.2	-1.8
	(-0.7;-0.3)	(-1.4;-1.0)	(-2.0;-1.6)
Planned change in the revenue ratio	-0.3	-0.7	-0.9
	(-0.5;-0.2)	(-1.0;-0.5)	(-1.2;-0.7)
Only Euro area countries in deficit (starting point for the deficit above 2% of GDP)			
Planned change in the government balance ratio	0.7	1.3	2.0
	(0.4;1.0)	(1.0;1.6)	(1.6;2.3)
Planned change in the expenditure ratio	-0.7	-1.5	-2.4
	(-1.0;-0.5)	(-1.8;-1.3)	(-2.7;-2.1)
Planned change in the revenue ratio	0.0	-0.3	-0.3
	(-0.3;0.3)	(-0.6;0.1)	(-0.8;0.1)

Source: convergence programmes and EC, Ameco Database.
Note: the figures in brackets are 95% confidence intervals around the averages.

Results for countries with high initial deficits differ in that they have planned much larger improvements in the budget balance of almost 0.7% GDP per year and 2.0% of GDP over the three year period. For these countries, almost all of the projected decline

in expenditure to GDP ratios is attributed to a reduction in the deficit, so that the projected decline in the revenue tot GDP ratio is more modest (i.e. 0.3% GDP over a three year period).

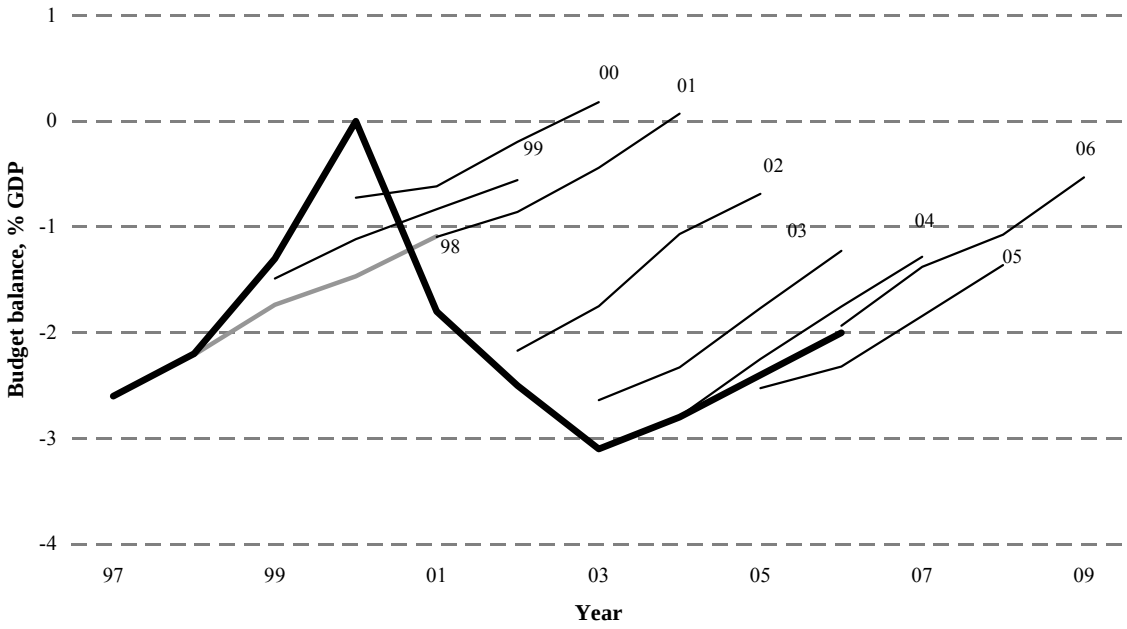
Overall, the planned expenditure based fiscal adjustment strategies have been in line with normative prescriptions that would follow from the literature on fiscal consolidation. This literature suggests that fiscal consolidations based on expenditure cuts (especially on government wages and social transfers), as compared to those based on revenue increases, are more likely to be permanent and to have medium-term expansionary effects (e.g. Alesina and Ardagna, 1998). Similarly, the strategy of allocating part of the ambitious expenditure cuts to an improvement in the budget balance, and another part to decreases in the revenue to GDP ratios would also typically have been welcomed by many economists as it would address sustainability issues linked to high debt ratios while at the same time reducing tax to GDP ratios. Finally, medium-term fiscal plans generally complied with the requirement of the SGP to move towards a budgetary position of 'close to balance or in surplus' (as required by the 'old' SGP) or country-specific medium-term fiscal objectives as the have been defined under the new SGP.

4.5 Plans versus outcomes

An overview of the record of fiscal plans versus outcomes in the Euro area is provided in Figure 4.1. It shows the actual development in the general government balance in the Euro area (the dark line) as well as the budgetary projections for the successive stability programmes (the small lines). The first vintage was submitted in December 1998 and includes budgetary projections for the period 1999-2002; the 9th vintage, submitted in

December 2006, covers the period 2006-2009. The figure shows that stability programmes have always projected a development towards the achievement of a budgetary position of close to balance or in surplus. It also shows that, due to sizeable deviations from planned adjustment paths, the date at which the target was to be achieved was repeatedly postponed. In subsequent Stability Programmes, the adjustment path gradually shifted and on average no progress was made. Moreover, in line with economic developments, budgetary outcomes improved up to the year 2000 and again after 2003.

Figure 4.1 Fiscal plans versus outcomes (Euro area 1998 – 2006)



Source: Stability programmes and EC, Ameco Database.

Table 4.2 shows the developments of the ratio of general government expenditure, revenue and the budget balance to GDP for the Euro area as a whole over the period considered. Contrasting with the decreases in expenditure and revenue projected in the

Stability and Convergence Programmes, the actual shares of expenditure and revenue over GDP have remained remarkably stable since 1998. This preliminary look at the data already hints at large discrepancies between fiscal plans and outcomes, with actual fiscal policy being subject to substantial inertia in comparison to plans.

Table 4.2 Expenditure, revenues and budget balance, Euro area, 1998-2006

Percentage point of GDP	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
Total GG expenditure	48.5	48.2	46.3	47.3	47.7	48.2	47.6	47.6	47.4
Total GG revenues	46.3	46.8	46.3	45.5	45.1	45.1	44.8	45.1	45.8
Net borrowing (-)	-2.2	-1.3	0.0	-1.8	-2.5	-3.0	-2.8	-2.5	-1.6

Source: EC.
Note: the net lending (borrowing) includes one-off proceeds relative to UMTS licenses.

Table 4.3 provides the data for the shortfall for the budget balance, and divides it into the contributions made by the revenue and the expenditure side of the budget. The first line of the table reports the difference between the projected and observed change in the budget balance, measured as a ratio to GDP. The second and third lines report the difference between the projected and observed changes in the ratios of general government expenditure and revenue to GDP. The data show that the main source for the failure to achieve the envisaged improvement in the general government balance is the inability to achieve the targeted decline in the expenditure-to-GDP ratio. While Euro area countries had on average projected a decline in the expenditure-to-GDP ratio by about 1.8 % of GDP over a 3-year horizon (see Table 4.1), the shortfall of 1.5 % of GDP implies that on average only 16% (i.e. 0.3 over 1.8) of the targeted reduction has actually been implemented. The discrepancy between the projected and observed

change in the expenditure-to-GDP ratio has moreover had a tendency to increase steadily with the time-horizon considered. Slippages for the group of high deficit countries, which showed more ambitious fiscal plans, are even higher.

To a lesser degree, the suggestion of inertia also implies to the revenue side of the budget, where fiscal plans indicated a cumulative decline of 0.9 % of GDP over the 3-year horizon. The shortfall of 0.5% of GDP indicated that less than half of the targeted reduction average has been achieved (in other words: both expenditure and revenue turned out to be higher than planned). For countries with larger initial deficits shortfalls are again higher.

Table 4.3 Decomposition of the fiscal shortfall (unweighted averages 1998-2006)

Percentage point of GDP	**T - T+1**	**T - T+2**	**T – T+3**
All Euro area countries and Programmes			
Gap between the observed and	-0.1	-0.4	-0.9
planned change in the balance-to-GDP ratio	(-0.3;0.1)	(-0.7;-0.1)	(-1.3;-0.5)
Gap between the observed and	0.3	0.8	1.5
planned change in the expenditure-to-GDP ratio	(0.1;0.5)	(0.5;1.1)	(1.1;1.9)
Gap between the observed and	0.2	0.5	0.5
planned change in the revenue-to-GDP ratio	(0.0;0.4)	(0.1;0.7)	(0.2;0.8)
Only Euro area countries in deficit (starting point for the deficit above 2% of GDP)			
Gap between the planned and	-0.2	-0.6	-1.1
observed change in the balance-to-GDP ratio	(-0.5;-0.2)	(-1.2;-0.1	(-1.8;-0.4)
Gap between the planned and	0.5	1.0	1.8
observed change in the expenditure-to-GDP ratio	(0.1;0.8)	(0.4;1.6)	(1.0;2.6)
Gap between the planned and	0.3	0.4	0.7
observed change in the revenue-to-GDP ratio	(-0.0;0.6)	(-0.0;0.9)	(0.2;1.3)

Source: calculations on the basis of convergence programmes and EC, Ameco Database.
Note: the figures in brackets are 95% confidence intervals around the averages.

In addition to this first broad comparison of fiscal plans and outcomes, Table 4.4 reviews how macro-economic assumptions underlying the budget have fared in comparison to projections. Section 4.3 already referred to several studies that have pointed to the existence of overoptimistic growth forecasts. On this point, Milesi-Feretti and Moriyama (2004) argue that opportunistic governments may try to avoid the costs of improving budgetary positions by using more favourable growth assumptions so that the negative outcome can later be blamed on bad luck. Our results indeed indicated that real GDP growth has on average been significantly overestimated, especially for the later years covered by the programmes. At the same time, inflation turned out to be higher than projected.[43] Our main interest is however not in the macro-scenario on which the fiscal plans are based, but in the extent to which the policy measures that are implicit in the programmes have been implemented. Given that fiscal plans are formulated as a ratio over GDP, the fact that GDP turned out to be different from estimated implies that the ratio will also change, even if plans are fully implemented. The next section presents our methodology for correcting for this effect.

Table 4.4 Forecast errors real growth and inflation (unweighted averages 1998-2006)

Percentage points	**T - T+1**	**T - T+2**	**T – T+3**
All Euro area countries and Programmes			
Gap between observed and projected real GDP growth	0.2 (-1.0;0.4)	-0.3 (-0.8;0.2)	-0.9 (-1.7;-0.2)
Gap between observed and planned GDP deflator	0.3 (0.1;0.6)	0.7 (0.4;1.0)	1.3 (0.8;1.8)

Source: calculations on the basis of stability programmes and EC, Ameco Database.
Note: the figures in brackets are 95% confidence intervals around the averages.

43 Note that the gap between observed and projected inflation has been larger than the shortfall in real GDP growth. This implies that nominal GDP growth has been somewhat higher than projected.

4.6 Why fiscal plans were missed – a decomposition

In this section, we investigate the reasons for the non-achievement of the projected decline in the general government balance in more detail. A failure to achieve a planned reduction in the ratios of expenditure and revenue to GDP can result from two effects. First, it can be due to the fact that expenditure or revenue in nominal terms was higher than planned (the numerator effect). Second, it can be result from a forecast error of nominal GDP growth, which itself can be decomposed into forecast errors in real GDP growth and inflation. If real growth turns out to be lower than projected, the expenditure and revenue ratios turns out to be higher than expected even if expenditure and revenue targets in nominal terms (in level) are fully adhered to (the denominator effect).

In order to examine the extent to which the failure to achieve the planned reductions in the ratios of expenditure and revenue to GDP are due to developments in nominal expenditure or to macro-economic assumptions, the following decomposition is made, where *B* is the general government balance, *G* nominal general government expenditure, *R* nominal revenues and *Y* nominal GDP. Subscript *t* is for time measured in years and *h* for planning horizon (*h=0...3*):

$$\left(\frac{B_{t+h}}{Y_{t+h}}-\frac{B_t}{Y_t}\right)=\left(\frac{R_{t+h}}{Y_{t+h}}-\frac{R_t}{Y_t}\right)-\left(\frac{G_{t+h}}{Y_{t+h}}-\frac{G_t}{Y_t}\right) \tag{4.1}$$

The second term on the right hand side of the equation, corresponding to the change in the expenditure ratio, is decomposed as follows:[44]

44 The formula is derived as follows:

$$\frac{G_{t+h}}{Y_{t+h}}-\frac{G_t}{Y_t}=\frac{G_{t+h}Y_t-G_tY_{t+h}}{Y_{t+h}Y_t}=\frac{G_{t+h}Y_t-G_tY_{t+h}+G_tY_t-G_tY_t}{Y_{t+h}Y_t}=$$

$$\frac{(G_{t+h}-G_t)Y_t+G_tY_t-G_tY_{t+h}}{Y_{t+h}Y_t}=\frac{G_{t+h}-G_t}{Y_{t+h}}-\frac{G_t(Y_{t+h}-Y_t)}{Y_{t+h}Y_t}$$

$$\left(\frac{G_{t+h}}{Y_{t+h}}-\frac{G_t}{Y_t}\right)=\left(\frac{G_{t+h}-G_t}{Y_{t+h}}\right)-\left(\frac{G_t}{Y_{t+h}}\right)\left(\frac{Y_{t+h}-Y_t}{Y_t}\right) \tag{4.2}$$

And equally for the revenue ratio:

$$\left(\frac{R_{t+h}}{Y_{t+h}}-\frac{R_t}{Y_t}\right)=\left(\frac{R_{t+h}-R_t}{Y_{t+h}}\right)-\left(\frac{R_t}{Y_{t+h}}\right)\left(\frac{Y_{t+h}-Y_t}{Y_t}\right) \tag{4.3}$$

The first term on the right hand side of (4.2) and (4.3) represents the increase in nominal expenditure and revenue between year t and year $t+h$, expressed as a percentage of the observed nominal GDP at the end of the period considered. The second term is the denominator effect on the government expenditure and revenue ratios. By applying the same decomposition to budgetary plans and outcomes, expressed as a percentage of the observed GDP at the end of the period, the failure to respect plans can be attributed to both sources of slippage.

In a further step, we will also investigate the causes of slippages in expenditure and revenue in nominal terms. First, we investigate the impact of forecast errors in interest payments on expenditure slippages in nominal terms. Second, we approximate the effect of forecast errors for real growth on expenditure and revenue developments in nominal terms, using standard elasticities as used by the European Commission for calculating cyclically-adjusted budget balances. This is especially relevant for developments in nominal revenue given that estimates of the elasticity of revenue to real growth are usually around one, reflecting the co-movement between tax revenues and the economic cycle (note that on the basis of this variable alone we would have expected to observe lower than planned revenue instead of higher revenue as observed in Table 4.3, given that real growth turned out to be lower than projected). Finally, we will also approximate the effect of higher than expected inflation on nominal expenditure and revenue, assuming a full pass-through on the expenditure side and the revenue side.

Once these adjustments have been made the impact of policy measures on fiscal slippages – for which no direct measures are available so that they can only be approximated - is calculated as a residual.

4.6.1 Expenditure

Results according to equation (4.2) are presented in Table 4.5**.** It shows that the slippages of expenditure in nominal terms are somewhat larger than the slippage as a percentage of GDP, so that the denominator effect is slightly negative. This last finding is in line with results reported in Table 4.4, where it was shown that the effect of real growth being lower than projected was somewhat smaller than the effect of inflation being higher than projected (so that nominal growth turned out to be higher than projected despite too optimistic assumptions for real growth). The message emerging from the data is therefore that the failure to achieve the planned decline in the expenditure-to-GDP ratio is due to the inability to reach nominal expenditure targets.

Table 4.5 Decomposition of expenditure slippages (unweighted averages 1998-2006)

Percentage point of GDP	**T - T+1**	**T – T+2**	**T – T+3**
All Euro area countries and Programmes			
Gap between the planned and observed change in the expenditure-to-GDP ratio	0.3 (0.1;0.5)	0.8 (0.5;1.1)	1.5 (1.1;1.9)
Effect of larger-than-planned increase in nominal expenditure	0.5 (0.2;0.7)	1.0 (0.7;1.3)	1.8 (1.3;2.3)
Denominator effect	-0.1 (-0.2;0.1)	-0.1 (-0.4;0.2)	-0.1 (-0.5;0.4)

Source: calculations on the basis of stability programmes and EC, Ameco Database.
Note: figures do not always fully add up due to rounding.

These results suggest that the failure by Euro area countries to achieve the envisaged budgetary consolidation reflects difficulties to implement planned ambitious expenditure cuts. However, although government expenditure is the part of government finances that the government controls most, it should be taken into account that developments in nominal general government expenditure can be affected by macroeconomic developments: lower than expected interest rates imply, ceteris paribus, a lower increase in interest payments and would limit the expenditure slippage; lower–than-expected real GDP growth generally triggers larger increases in cyclically-sensitive expenditure items (e.g. unemployment and some categories of social benefits) and would explain part of the expenditure shortfall; finally, higher-than-expected inflation can be expected to put pressure on nominal expenditure, since in most Euro area countries social benefits and wages of public employees are indexed on prices.

Our database allows to control, albeit in an imperfect way, for these factors. First, it contains data on projected and observed interest payments. We can therefore calculate the contribution of unforeseen developments in interest payments to the discrepancy between the planned and observed change in nominal expenditure. Second, it contains information on projected and observed real GDP growth. Using the standard budgetary sensitivity of government expenditure to the cycle, it is possible to calculate a proxy for the effect of real GDP growth shortfalls on government expenditure.[45] Third, since our

[45] In the calculation, we are using the sensitivity of government expenditure to cyclical fluctuations, which is used by the Commission for the calculation of the cyclical component of the general government budget balance. The cyclically-adjusted balance (CAB) is obtained by subtracting the cyclical component from the budget balance to GDP ratio. The calculation of the cyclical component requires a measure of the link between the budget and the cyclical position of the economy. This measure is referred to as a 'budgetary sensitivity' parameter. It provides a proxy of the effect on the budget associated of a given change in cyclical conditions, as measured by the output gap. The budget sensitivity is given by the difference between the sensitivities of revenues and of expenditures. Note that in our calculation, we apply the budgetary sensitivity of expenditure not to an indicator measuring the cyclical position of the economy (the output gap), but to a shortfall in real GDP growth. We therefore implicitly make the assumption that a shortfall in real GDP growth does not affect potential growth. Although experience has

database contains information on the planned and observed changes in GDP deflators, it is possible to estimate the possible contribution of unexpected changes in prices for developments in general government expenditure. In this respect, we make the assumption of a full (and immediate) indexation of government expenditure on prices.

The results of the analysis are summarised in Table 4.6. As expected on the basis of the environment of low interest rates since the launch of the euro, they show that developments in interest expenditure have contributed to a lower-than-planned increase in general government expenditure. This variable thereby serves to limit the gap between planned and observed increases in nominal expenditure. The two other factors play in the opposite direction. The contribution of growth shortfalls is negative and marginal, reflecting the low sensitivity of government expenditure to cyclical developments (0.1 on average in the EU). The contribution of inflation is more relevant (this partly reflects the assumption of a full and immediate indexation of expenditure on prices). On average over a 3-year horizon and in the countries considered, the discrepancy between planned and observed increases in nominal expenditure would have been about 10% larger without the decline in interest expenditure. It could have been about 5% lower if macroeconomic developments had been in line with plans, and, assuming full and immediate indexation of government expenditure on prices, about 30% lower if inflation developments had been in line with plans.

Overall, the failure to adhere to expenditure plans in nominal terms does not reflect the impact particularly unfavourable economic developments (interest rates, growth and inflation). Assuming that the impact of policy measures, for which no direct data are

---

shown that potential growth is sensitive to actual growth developments, we considered that our calculation could still be considered a reasonable proxy of the effect of growth surprises on nominal expenditure.

available, can be calculated as the residual, it turns out that by far the largest part of the slippages on the expenditure side can be explained by lack of implementation: a failure to implement the measures that would have been needed for achieving the projected decreases in expenditure ratios.

Table 4.6 Further decomposing slippages in nominal expenditure (unweighted averages 1998-2006)

Percentage point of GDP	**T - T+1**	**T – T+2**	**T – T+3**
All Euro area countries and Programmes			
Effect of larger-than-planned increase in nominal expenditure	0.5 (0.2;0.7)	1.0 (0.7;1.3)	1.8 (1.3;2.3)
(1) Contribution of lower-than-expected interest payments	-0.0 (-0.1;-0.0)	-0.1 (-0.2;-0.0)	-0.2 (-0.3;-0.1)
(2) Contribution of lower-than-expected real GDP growth	0.0 (-0.0;0.1)	0.0 (-0.0;0.1)	0.1 (0.0;0.2)
(3) Contribution of higher-than expected inflation (full indexation)	0.0 (-0.0;0.1)	0.3 (0.1;0.4)	0.6 (0.3;0.8)
Residual	0.5	0.8	1.3

Source: calculations on the basis of stability programmes and EC, Ameco Database (see footnote 1).
Note: the figures in brackets are 95% confidence intervals around the averages.

4.6.2 Revenue

Results for the decomposition according to equation (4.3) into a denominator effect and revenue in nominal terms are presented in Table 4.7. As with expenditure, the denominator effect is slightly negative (due to inflation being overestimated so that nominal growth turned out to be higher than projected). The development of revenue in nominal terms therefore explains that planned decreases in revenue to GDP ratios have not been implemented.

As indicated, taking into account the effect of forecast errors in real growth is particularly relevant for the revenue side of the budget, given the cyclical sensitivity of revenues. This is reflected by the fact that standard budgetary sensitivities, which are usually around 0.1 for expenditure, are mostly around 0.4 for revenue. As shown in Table 4.8, the impact of real growth being lower than projected would seemed to have limited the extent to which expenditure have been higher than projected.

Table 4.7 Decomposition of revenue (unweighted averages 1998-2006)

	T - T+1	T - T+2	T – T+3
All Euro area countries and Programmes			
Gap between the observed and planned change in the revenue-to-GDP ratio	0.2 (0.0;0.4)	0.5 (0.1;0.7)	0.5 (0.2;0.8)
Effect of larger-than-planned increase in nominal revenue	0.3 (0.1;0.5)	0.6 (0.2;0.9)	0.7 (0.2;1.2)
Denominator effect	-0.1 (-0.2;0.1)	-0.1 (-0.4;0.2)	-0.1 (-0.5;0.4)

Source: calculations on the basis of stability programmes and EC, Ameco Database.
Note: figures do not add up due to rounding.

At the same time, higher than expected inflation may have boosted revenues and therefore may have boosted revenues in nominal terms. The final row in Table 4.8 shows, again, the part of the differences between plans and outcomes that cannot be explained by macro-economic surprises. This residual suggests that a lack of implementation of planned tax cuts explains to a large extent why revenue turned out to be higher than projected. As with expenditure, lack of implementation of planned measures seems to be a highly relevant factor for explaining differences between fiscal plans and outcomes on the revenue side. In fact, it could be that the lack of implementation on the expenditure side and on the revenue side are correlated: in case

expenditure does not decrease as planned, there is less room for tax cuts while at the same time decreasing the budget balance as was planned.

Table 4.8 Further decomposing slippages in nominal revenue (unweighted averages 1998-2006)

Percentage point of GDP	**T - T+1**	**T - T+2**	**T – T+3**
All Euro area countries and Programmes			
Effect of larger-than-planned increase in nominal revenue	0.3 (0.1;0.5)	0.6 (0.2;0.9)	0.7 (0.2;1.2)
(1) Contribution of lower-than-expected real GDP growth	-0.0 (-0.2;0.1)	-0.1 (-0.4;0.1)	-0.4 (-0.7;-0.1)
(2) Contribution of high-than expected inflation (full indexation)	0.1 (-0.0;0.2)	0.3 (0.1;0.4)	0.5 (0.3;0.8)
Residual	0.2	0.4	0.6

Source: calculations on the basis of stability programmes and EC, Ameco Database (see footnote 1).
Note: the figures in brackets are 95% confidence intervals around the averages.

4.7 Conclusions

Overall, empirical results in this Chapter are in line with the implication of the model of the previous Chapter that the ex ante fiscal rules lead to compliance in terms of fiscal plans but not in terms of fiscal outcomes. In line with the common interest in fiscal discipline, and the obligations of the agreed fiscal rules of the SGP, countries have presented ambitious medium term plans of expenditure based fiscal consolidation. A detailed comparison of these plans with fiscal outcomes - that corrects for the impact of macro-economic variables on the budget - however shows that the failure to achieve the planned cuts in expenditure and revenue can mostly be attributed to a lack of implementation of measures that were implicit in the medium-term fiscal plans. Moreover, one of the main perceived advantages to place fiscal policy in a medium-term perspective, i.e. to ensure compensation of possible slippages or overspending in a

given year in the following years, did not materialise in the EU. Given that the probability of enforcement of ex ante fiscal rules is very low, the rule does not provide costs of non compliance that are sufficiently high to ensure implementation of ambitious medium term fiscal plans.

Whereas fiscal plans promise substantial changes in expenditure and revenue ratios, actual fiscal developments are much more stable. There are no visible signs of a learning effect in the sense that more recent stability programmes would target a more realistic fiscal adjustment pattern. As such, these results for the Euro are in line with findings by Inman (1996) for the implementation of ex ante budget balance rules in the states of the US, which have had the effect of institutionalising ex post 'surprises' in implementation.

The medium term fiscal programmes as investigated in this Chapter are subject to a recurrent yearly process of fiscal surveillance by the European Commission and the Ecofin Council. Thus far, these discussions have largely taking a forward looking perspective, while focusing on single plans for individual countries. As a pragmatic suggestion, findings in this Chapter show the relevance of balancing this discussion with a backward looking assessment of past performance with respect to plans, and including the sources of the slippages in the analysis. The database and methodology used in this Chapter could possible be a useful starting point for further developing such an analysis.[46]

[46] In response to our analysis, and on the basis of a follow up study that updated the database as presented in the original version of this Chapter (EC, 2007), the European Commission has actually taken this recommendation into account. In its Communication on the report Public Finances in EMU it proposes (EC, 2007a, p. 9): 'When assessing Stability and Convergence Programmes (SCPs), the Commission will strengthen its analysis of the track record in respecting the budgetary targets of the previous SCPs, focusing on developments in government expenditure.'

At the same time, the theory as presented in Chapter 3, and the empirical results of this Chapter can only lead us to conclude that the lack of credibility of the stability programmes follows directly from the incentives provided by the rules based framework itself: the obligation to comply ex ante but not ex post. Restoring the credibility of these programmes would therefore require matching levels of enforcement on both the planning and the implementation stage of fiscal policy.

5 The Sustainability of Euro Area Debt: a Re-assessment

5.1 Introduction

The previous Chapter assessed compliance with the ex ante part of the EU fiscal rules by comparing fiscal plans with fiscal outcomes, and concluded that discrepancies have been large. However, the fact that fiscal policy makers have not been able to implement ambitious plans as spelled out ex ante does not allow us to draw conclusions about the performance of fiscal policies in a historical perspective, taking past outcomes instead of plans as a benchmark. In this respect, a natural question to be asked is whether the sustainability of fiscal policies has or has not improved after the EU fiscal rules had been introduced. A first look at the data illustrates the relevance of this question. Whereas the EU Treaty has introduced a reference value of 60% of GDP for gross debt, aggregated performance with respect to this reference value has been mixed. In the Euro area, the ratio of gross debt-to-GDP ratio has increased from 34% of GDP in 1980 to 75% of GDP in 1996 and then declined towards 69% of GDP in 2006.

Existing studies have tackled the question of debt sustainability by investigating whether increases in the debt ratio induce corrective action in fiscal policy. Bohn (1998) showed that, under relatively weak conditions, a positive response of the primary balance to government debt implies that debt is dynamically sustainable (i.e. the built-up of debt should lead to a systematic policy response in the form of an increase in the primary balance). On this basis, there has been overwhelming empirical support for a small but positive debt stabilising response of the primary balance in most advanced economies, implying that the debt ratio is mean reverting and thus can be regarded

sustainable. A few of these studies have concluded that the debt stabilising response of current fiscal policy has become stronger after the introduction of the EU fiscal rules in the early 1990s (EC, 2004, Ballabriga and Martinez-Mongay, 2005).

The model of fiscal rules in EMU of Chapter 3 showed that fiscal rules can provide incentives for substituting constrained forms of fiscal policy by unconstrained forms of fiscal policy. Particularly relevant for our current discussion is section 3.4.4 that invested behavioural responses to a fiscal rule that applies to the gross debt ratio. It showed that a fiscal rule may lead to additional fiscal adjustment through the budget balance, but also a policy response through the strategic use of financial assets. This last element has however been ignored in the existing literature, which has investigated the response of the primary balance to measures of gross debt, while leaving out the role played by financial assets. The novel element in this Chapter is that it adjusts the existing the methodology for measuring debt sustainability under the EU fiscal rules to include the role played by financial assets. In applying the methodology, it uses corresponding measures of debt and deficits, so that the budget identity that links debt and deficits holds. When the focus is on the primary balance as the main policy instrument, debt should be measured net of financial assets (i.e. gross financial liabilities minus financial assets). When the focus is on gross debt measured according to the definition provided by the EU fiscal rules, the relevant concept of deficits should be the primary balance plus the sale of financial assets, as both instruments are substitutes regarding their impact on gross debt (a higher primary balance and the sale of financial assets both decrease the gross debt ratio). Using consistent concepts of debt and deficits is particularly relevant in the context of EMU, given that discrepancies between developments in gross debt and national account deficits have been large and

may reflect creative attempts to circumvent the EU fiscal rules (von Hagen and Wolf, 2006, EC, 2005 and Buti *et al.*, 2006).

The rest of the Chapter is organized as follows. Section 5.2 provides an overview of the existing literature on the debt stabilising response in fiscal policy. Section 5.3 illustrates debt developments according to different concepts of net and gross debt. Section 5.4 presents our database and baseline results on the question of whether the introduction of the EU fiscal rules in 1993 represents a structural break in fiscal behaviour. As indicated, it distinguishes between two policy instruments: the primary balance and financial assets. Section 5.5 presents robustness checks assuming another structural break with the introduction of the Stability and Growth Pact in 1999. Section 5.6 uses our estimation results to present simulation analysis for the development of both the net and the gross debt ratio under a regime of no EU fiscal rules (based on our parameter estimates for the period 1970-1992), the 'Maastricht period' when the EU fiscal rules had their strongest impact on fiscal outcomes (based on estimated fiscal policy behaviour during 1993-1997), and fiscal behaviour for the period 1993-2006 as a whole (including the 'Maastricht period' as well as the period under the SGP). Section 5.7 concludes. Annex 5.1 further illustrates the debt stabilising response in fiscal policy on the basis of an example.

5.2 Literature review

The fiscal policies of a country can be considered to be unsustainable if the debt-to-GDP ratio reaches a level beyond which the country faces difficulties in issuing new debt. Since this maximum level of debt is not measurable ex ante, sustainability is

measured in practice by investigating the dynamics of debt over time, in particular whether debt is stable, declining or increasing (EC, 2005). Bohn (1998) implements a methodology for measuring this concept of debt sustainability in a backward-looking manner, asking whether the condition for debt sustainability has been fulfilled over a period of time in the past.[47] The findings in this Chapter will be based on a modification of his methodology; hence, it is useful to spell out the basic concept here.

The starting point is the standard budget constraint that equals debt at the end of period *t* with debt at the end of period *t-1* and the primary surplus (*s*, as a % GDP) in period *t*. It can be derived as follows. In levels, the current level of debt *B* equals last period's debt plus interest payments *r* on last period's debt minus the primary surplus: $B_t = (1 + r_t)B_{t-1} - S_t$. Dividing both sides by the level of GDP Y_t, and recognising that $Y_t = (1 + g_t)Y_{t-1}$, where g is the growth rate of GDP, gives the budget identity in ratios over GDP:

$$b_t = \frac{1 + r_t}{1 + g_t} b_{t-1} - s_t \qquad (5.1)$$

Note that in this equation *r* and *g* are the nominal interest rate and the nominal growth rate. However, given that the inflation rate will cancel out in the ratio, they can also be interpreted as the real interest rate and the real growth rate.

The dynamics of debt can be investigated by replacing the primary surplus in (5.1) by a behavioural model of fiscal policy. In this respect, fiscal policy, as measured by its main

47 Note that this approach is different from forward-looking measures of debt sustainability that project debt developments on the basis of expected expenditure trends, usually incorporating the effects of ageing populations.

instrument of the primary surplus, is often modelled as reacting to the lagged debt ratio (due to a sustainability motive) and a vector of other variables x'. Control variables include the output gap as it represents the stabilisation motive in fiscal policy and a lagged dependent variable that captures inertia in fiscal policy:

$$s_t = \rho b_{t-1} + x'_t \alpha \tag{5.2}$$

Substituting (5.2) in (5.1) gives $b_t = (\frac{1+r_t}{1+g_t} - \rho) b_{t-1} - x'_t \alpha$, which can be re-written as

$$\Delta b_t = -\left[\rho + 1 - \left(\frac{1+r_t}{1+g_t}\right)\right] b_{t-1} - x'_t \alpha = \gamma b_{t-1} - x'_t \alpha \tag{5.3}$$

Where $\gamma = -\left[\rho + 1 - \left(\frac{1+r}{1+g_t}\right)\right]$. From (5.3) it follows that the debt ratio is mean-reverting if $\gamma < 0$ and if x' is stationary. The first condition is satisfied for:

$$\rho > \frac{r_t - g_t}{1+g_t} \tag{5.4}$$

This implies that the policy response to the build-up of debt, in the form of a higher primary balance, should be strong enough to offset the effects of the interest-growth rate differential on debt developments. Annex 1 further illustrates these mechanisms by providing an example of a hypothetical country in EMU.

Bohn (1998) concluded that the condition for debt sustainability had been satisfied for the US given that ρ was found to be significantly positive and since U.S. interest rates had been near or below the growth rate of GDP during the sample period. Following the work of Bohn, an increasing number of studies have estimated fiscal policy reactions functions for different countries or groups of countries. These studies have routinely

interpreted a positive debt stabilising response of the primary surplus as a sufficient condition for debt sustainability, thus implicitly assuming that the condition (5.4) was satisfied in all years included in the sample. Table 5.1 shows an overview for studies that include countries of the Euro area. Its main message is that the literature shows overwhelming support for a small debt stabilising response of the primary balance, where the size of the effect is mostly between 0.02 and 0.05 for groups of countries (this coefficient indicates that a 1 percentage point increase in the debt to GDP ratio leads to a 0.02-0.5 percentage point increase in the primary surplus). In this respect, it has been stressed that the debt stabilising response in fiscal policy was prevalent both before and after the introduction of the EU fiscal rules (Ballabriga and Martinez-Mongay, 2003 and 2005). If anything, the debt stabilising response became stronger after 1993 (EC, 2004). In addition, when focusing on individual countries it turns out that almost all countries are characterised by a positive debt stabilising response, although it is statistically significant for about half of the Euro area countries. Moreover, for a few countries only, the 'Maastricht' effect of the EU fiscal rules may have induced the shift towards sustainability (Ballabriga and Martinez-Mongay, 2005). Artis and Marcellino (2000) report results that are consistent with a realization of a stable debt to GDP ratio in line with the Maastricht criteria.[48]

In addition to these main findings, the review of the literature also shows differences in approach between studies of fiscal reaction functions. First, apart from the actual primary balance, the cyclically adjusted primary balance has also been used as the

48 Artis and Marcellino (2000) focus on the question of whether or not the debt ratio shows a stationary process; results show that there is substantial uncertainty on this issue. Their methodology therefore differs from the methodology that is used in the other studies as referred to in this section.

dependent variable. The underlying idea is that correcting for the effects of the cycle provides for a better proxy of discretionary fiscal behaviour. This change in specification is especially relevant for the stabilisation motive in fiscal policy, as measured by the coefficient on the output gap in equation (5.2). Galí and Perotti (2003) conclude that discretionary budget deficits have become more counter-cyclical in EMU countries after the introduction of the EU fiscal rules. The relevant issue for the present study is that the debt stabilising response of the primary surplus is present either with or without correcting budgetary data for the effects of the cycle.

Regarding the explanatory variables, most studies use the lagged debt level, the output gap, and a lagged dependent variable. Given that fiscal policy itself may influence the output gap, this variable is usually instrumented to overcome endogeneity problems. In addition, a few studies include variables that aim at measuring the monetary policy stance. In particular Mélitz (1997) finds evidence of fiscal and monetary policy moving in opposite ways, i.e. tight/loose monetary policy leads to expansionary/contractionary fiscal policy.[49]

Concerning the concept of debt being used, existing studies either use gross debt or are not explicit about the concept of debt being used. An exception is the study by Ballabriga and Martinez-Mongay (2006) that takes the so-called stock-flow adjustment (SFA) into account in its robustness exercise, by subtracting it from the primary balance.[50] This study also uses data on the primary balance to construct a debt series that would have prevailed if the SFA would have been zero. Results show a higher

49 Such findings are in line with the model of fiscal-monetary interaction as presented in Chapter 3.

50 See section 5.3 for an explanation of the concept of SFA and how it related to financial assets.

policy response to gross debt than to net debt, but otherwise leave the main conclusions that sustainability has prevailed unaltered. Artis and Marcellino (2000) also use different definitions of debt, i.e. net and gross of financial assets and debt based on valuation at face value as well as market valuation. Their results are robust to the definition of the debt ratio. This could possibly be explained by the fact that the core of their database extends up to 1994, i.e. up to the point when the EU fiscal rules only just started to influence fiscal behaviour.

Regarding the methodology, several studies estimate fiscal reaction functions using a dynamic panel data specification, which includes a lagged dependent variable. The standard fixed effect estimator would then be biased because of the lagged endogenous variable on the right-hand side is correlated with the fixed effects. A relevant study on this issue is Judson and Owen (1999) that compares the performance of different dynamic panel estimators in macroeconomic datasets. Results from a Monte Carlo approach indicate that the bias of the coefficients other than the lagged dependent variable, which form the main interest in this study, is very small. Moreover, with 30 yearly observations, least squares dummy variables performs just as well as the other available estimators, including GMM estimation. Perhaps this explains why most studies as summarised in Table 5.1 use a fixed effects estimations method. In addition, Galí and Perotti (2003) consider the issue of bias to be of minor relevance when the main interest is in the differences between coefficients between different periods, as it is in this study.

Table 5.1. Overview of the literature

Study	Sample	Dependent variable*	Data on debt (gross or net?)	Estimation technique	Main findings	Size of the effect
Mélitz (1997)	Annual data OECD countries 1959-1995	PB	Not specified (most probably: gross debt)	2SLS and 3SLS	Stabilising response to debt-to-GDP ratio	0.03 (on quadratic government debt)
Wyplosz (1999)	Annual data EMU members 1982-1997	PB	Not specified (most probably: gross debt)	Panel, using no fixed effects, fixed effects, random effects, variable slope, GLS no fixed effects, 3SLS	Small stabilising response to debt-to-GDP ratio	Between 0.01-0.03
Von Hagen, Hughes-Hallet and Strauch (2001)	Annual data 20 OECD countries 1973-1998	PB, CAPB	Not specified (most probably: gross debt)	3SLS with fixed effects for individual countries, robust standard errors	Stabilising response to debt-to-GDP ratio, became larger in 1990s	0.05 for 1972-1989;0.06 for 1990-1998
Ballabriga and Martinez-Mongay (2003)	Annual data 13 EU Member States 1979-1998	PB	Not specified (probably: gross debt)	Non-linear GMM with instrumental variables[51]	Stabilising response to debt-to-GDP ratio, may become stronger in EMU	All countries except Sweden respond to the accumulation of debt by increasing the primary surplus
Galí and Perotti (2003)	Annual data for EU14 and 5 OECD countries 1980-2002	CAPB	Gross debt	IV estimation for individual countries; IV fixed effects for panel[52]	Stabilising response to debt-to-GDP ratio, both before and after introduction of EU fiscal rules; stronger countercyclical policy after introduction EU fiscal rules	Panel: 0.05 before and after Maastricht; individual countries: between 0.01 and -0.36

51 The set of instrumental variables consists of one lag of all exogenous variables plus one lag of the short run nominal interest rate, the effective real exchange rate and the commodity price indicator.

52 The output gap variable is instrumented using the lagged US output gap.

Study	Sample	Dependent variable*	Data on debt (gross or net?)	Estimation technique	Main findings	Size of the effect
EC (2004)	Annual data Euro-11 1970-2003	PB, CAPB	Gross debt	Instrumental variables[53] fixed effects panel regression	Stabilising response to debt-to-GDP ratio, enhanced after introduction EU fiscal rules	Primary balance: 0.03 for 1970-93 and 0.09 for 1994-2003; primary CAB: 0.03 for 1970-1993 and 0.07 for 1994-2003
IMF (2004)	Annual data Euro area member states excluding Luxembourg, 1971-2003	CAPB	Gross public debt	2SLS IV estimation for individual countries; 3SLS with IV[54] for panel	Stabilising response to debt in most countries; only France, Germany and Ireland show weaker sensitivity	0.03 for panel; 0.00-0.22 for individual countries
Ballabriga and Martinez-Mongay (2005)	Annual data EU, US and Japan, 1977-2002	PB	Not specified (most probably: gross debt)	NLLS (with autocorrelation and heteroscedasticity consistent standard errors) and non-linear GMM with IV for panel[55]	Stabilising response to debt both before and after introduction of EU fiscal rules; in some countries 'Maastricht' induced the shift towards sustainability.	Between 0.00 and 0.24 for individual countries
Ballabriga and Martinez-Mongay (2006)	Annual data EU, US and Japan, 1977-2005	PB, PB minus SFA	Gross debt and calculated measures for net debt	OLS with robust standard errors	Response to debt has fluctuated but sustainability has been present	Between 0.01 and 0.15 for individual countries

Notes: *PB is primary balance, CAPB is cyclically-adjusted primary balance, 2SLS is for two-stage least squares.

53 The output gap variable is instrumented using its own lag and the lagged US output gap.

54 Instruments are own lags and exogenous variables.

55 Instruments for output gap are the own lagged output gap and the lag of a proxy for the external output gap.

5.3 Consistent measures of debt and deficits

The reference value for the debt ratio of the EU fiscal rules of 60% GDP applies to gross debt. As indicated, it does not net out financial assets of the general government, such as cash, bank deposits, loans to the private sector, or participations in private sector companies or holdings in public corporations. Countries therefore have two policy instruments at their disposal for influencing gross debt ratios: the primary balance and changes in the stock of financial assets. This last element has however typically not been included in the existing literature.

In applying the methodology of the previous section, choices should be made as to which measures of debt and budget balances are chosen. Balassone and Franco (2000) discuss the pros and cons of using measures of debt that are gross or net of financial assets. In principle, net debt may constitute a clearer benchmark for assessing debt sustainability given that assets owned by the government can be sold to repay debt (see also McKissack and Comley, 2006). At the same time, gross debt may also be a relevant indicator if some types of investment in financial assets are not liquid (i.e. cannot be easily sold in case of a possible default), are of low quality, or are earmarked for specific purposes so that it would be difficult to use the proceeds of these assets for paying off debt in times of financial stress. Balassone and Franco (2000, p. 31) point out that, whatever indicator is chosen for measuring debt sustainability, a minimum condition is that debt and deficit measures are used consistently so that the budget identity (5.1) holds: 'The debt measure could be either net or gross of assets as long as the deficit measure is defined accordingly (i.e. as resulting from non financial transactions only in the first case or as resulting from non financial transactions plus transactions in assets in the second)'. As indicated already, the empirical estimations in the next section will therefore use measures of net debt in conjunction with national

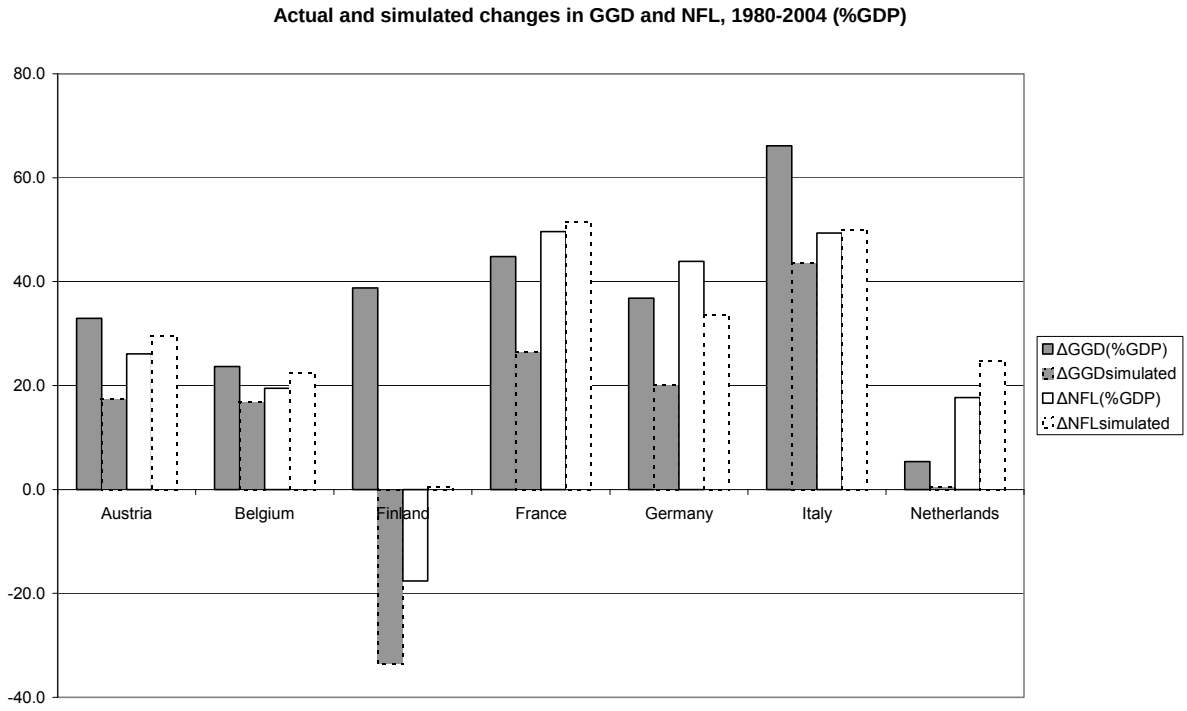
accounts budget balances, and will include changes in financial assets in the measure of the deficit when using gross debt measures.

The relevance of a consistent application of debt and deficit measures can be illustrated further by taking a first look at debt and deficit developments when measured according to different concepts. Figure 1 shows the actual change in net and gross debt during 1980-2004 for those Euro area countries where data were available for both measures, as well as the build-up in debt that was simulated according the budget identity (5.1) on the basis of budget balances as measured in the national accounts. Whereas the actual and simulated changes in net debt are reasonably close the differences between actual and simulated change in gross debt can be large.[56]

Differences between the change in the stock of debt and the budget balance are referred to as the SFA; a positive SFA indicates an increase in the stock of debt that cannot be explained by the deficit. The reasons for the existence of the SFA are discussed extensively in EC (2005) and Buti *et al.* (2006). Its three principal components are: (i) differences between the cash and accrual recording bases of transactions; (ii) valuation effects and other statistical adjustments; and (iii) differences between the net and gross recording of financial transactions (this last component is relevant only for explaining discrepancies between *gross* debt developments and the national accounts deficit).

56 A notable exception where differences between the simulated and actual net debt development are large is Finland. This country has build up large amounts of pension assets within the general government sector: total financial assets increased from around 40% GDP in 1980 to over 100% GDP by 2004. As a result, changes in valuation on these assets may have had a relatively strong influence on the development of net debt

Figure 5.1. Actual and simulated changes in gross debt ('gross financial liabilities') and net debt ('net financial liabilities'), 1980-2004 (% GDP).



Source: calculations on the basis of data from OECD Economic Outlook Database.

From the fact that discrepancies are by far the largest for developments in gross debt, it follows that the third factor is the quantitatively the most relevant one in practice (see also EC, 2005). As indicated, this Chapter corrects only for this last part of the SFA (i.e. financial assets). The reason is that out of the components of the SFA only financial assets can be regarded as a direct policy instrument for influencing developments in gross debt.[57]

A consistent application of measures of debt and deficit is especially relevant in EMU, given that part of the SFA may reflect creative attempts to circumvent the EU fiscal

57 The Working Paper version of this Chapter focused on the role played by the SFA instead of financial assets. The main conclusions are the same; see Wierts (2007).

rules. See EC (2005, p. 95): 'The analysis of the SFA is all the more important as the EU budgetary surveillance – which so far has focused attention on the deficit – may have provided incentives for shifting items from the deficit to the SFA, that is, from above to below the line'. Indeed, von Hagen and Wolf (2006) find evidence that the introduction of the EU fiscal rules has to some extent shifted fiscal policy towards unconstrained forms of fiscal policy as measured by the SFA. In the context of the present Chapter, the relevant issue is that the budget balance is not the only available policy instrument for bringing down gross debt but that the SFA also provides opportunities for influencing the development of gross debt ratios: selling financial assets reduces gross debt without improving net worth.

Finally, it should be noted that the EU fiscal rules may have led to the strategic use of financial assets in different ways. Selling financial assets lowers gross debt and thereby may facilitate compliance with the debt criterion. At the same time, financial assets may also be used to facilitate compliance with the deficit criterion, but in the opposite way. A well-know possibility is to substitute subsidies to companies (which increase the deficit) by loans or participations, which would be classified as a financial transaction (i.e. increase in financial assets) and therefore increase debt but not the deficit. The key question in this Chapter is whether the use of consistent measures of debt and deficits changes the main conclusions of the existing literature that fiscal policy has responded in a systematic and corrective way to increases in the debt ratio.

5.4 Empirical estimations

5.4.1 Database

Data in this Chapter are from the OECD Economic Outlook database, except for data on gross debt according tot the Maastricht definition which are taken from the European Commission Ameco database, using the definitions as used by the European Commission in the excessive deficit procedure (EDP). For gross debt (Maastricht definition) the sample covers the period 1970-2004, except for France (1977-2006), The Netherlands (1976-2006) and Portugal (1973-2006). Net debt is defined as gross financial liabilities of the general government sector less the financial assets of the general government sector. Data on net debt are available for Austria (1980-2006), Belgium (1970-2006), Finland (1975-2006), France (1970-2006), Germany (1970-2006), Italy (1970-2006), The Netherlands (1970-2006), Portugal (1995-2006) and Spain (1990-2006).

Gross debt according to the Maastricht definition differs from the ESA95/ESA93 based general government gross financial liabilities concept of the OECD (as used in the series for net debt). Government bonds are to be valued at nominal values according to the Maastricht-definition, but at the market value or at issue price plus accrued interest according to ESA/SNA rules (valuation issues did however not influence the estimation results; see also footnote 63 of section 5.4). In all calculations, interest rates were calculated as the implied interest rate on the debt, i.e. interest paid as a percentage of the stock of debt of the previous year.

5.4.2 Baseline results

Empirical estimations proceed as follows. First, estimates of the systematic debt stabilising response in fiscal policy are obtained on the basis of the standard specification of the fiscal reaction function as used in the literature. This leads to the following specification, in which s is the primary surplus, b lagged debt, G the output gap, c a country dummy, ε the error term, subscript i for country and t for time:

$$s_{i,t} = \rho b_{i,t-1} + \eta G_{i,t-1} + \beta s_{i,t-1} + c_i + \varepsilon_{i,t} \tag{5.5}$$

Estimation results are obtained for the periods before and after the introduction of the EU fiscal rules in 1993. A Chow test for structural break is then performed to investigate whether the difference in coefficients before and after 1993 is jointly significant (i.e. whether the EU fiscal rules represent a structural break in fiscal behaviour or not).[58] Once estimates of the debt stabilising response before and after 1993 have been obtained, it is investigated whether the condition for debt stability (5.4) has been fulfilled during the periods under consideration.

To facilitate readability, the main results are presented first. After that follows a more technical section that discusses diagnostic tests and accounts for the specification of the fiscal reaction function.

Results for the systematic response of primary balances to net debt (i.e. without including financial assets) are presented in Table 5.2. The small but positive debt stabilising response before the introduction of the EU fiscal rules is very much in line

58 This is done by running one single regression where all variables are included for the period 1970-2006 as a whole, and in addition all variables are multiplied by a dummy for the period 1993-2006. Results can be obtained through an F-test on all variables for the latter period or a t-test on individual variables. See Patterson (2000, p. 185-186) or Verbeek (2004, p. 64).

with results in the literature.[59] Results from the tests for structural breaks show that the difference in all coefficients together for the period 1993-2006 is not statistically significant (F-test). At the same, the difference is statistically significant for the decrease in the debt stabilising response (t-test), which declines from 0.032 to 0.001. A check on the condition for debt sustainability (5.4), with reported values calculated as $\rho - \left(\frac{r-g}{1+g}\right)$, shows that whereas the systematic policy response ensured debt sustainability before 1993, this is no longer the case after 1993. This conclusion is in contrast with the existing literature as discussed in section 5.2, which has linked the response in the primary balance to gross instead of net debt, and thus missed the role played by financial assets.

Results for the systematic policy response of the primary balance plus the selling (i.e decrease) of financial assets to gross debt are presented in Table 5.3.[60] Results show a much stronger policy response than for the primary balance, which is statistically significant both before and after 1993. The policy response shows a small increase during the recent period, but results from the t-test show that the difference is not statistically significant. Findings for the check on the condition for debt sustainability indicate that the margin has decreased somewhat, despite the small increase in the debt stabilising response. The reason for this becomes clear from Figure 5.2. It shows that

59 In addition, the high and statistically significant value of the coefficient on the lagged primary balance is in line with findings in the literature. Moreover, the indeterminate results for the coefficient on the output gap are in line with those reported in previous studies (e.g. European Commission, 2004). In this respect, Chapter 8 will group countries according to debt dynamics and show that countries with more favourable debt dynamics also show better performance with respect to the operation of the automatic stabilisers (i.e. the coefficient on the output gap is positive and statistically significant as expected in 'surplus' countries but not different from zero in 'deficit' countries).

60 In terms of their impact on the gross the debt ratio, the effect of a higher primary balance and the sale of financial is equivalent, as they both lower the gross debt ratio.

the implied interest rate on debt has been above the nominal growth rate since the early 1990s. This implies that the debt stabilising response should be larger than zero during this period, in order to offset the negative effects of the interest growth rate differential on the debt ratio.

Table 5.2 Results for net debt (net financial liabilities)

	1970-1992	**1993-2006**
	Dependent variable: primary balance	
Lagged debt (net financial liabilities)	0.035	0.001
	(2.7)***	(0.1)
Lagged output gap	0.04	-0.08
	(0.6)	(-1.1)
Lagged dependent variable	0.54	0.80
	(3.9)***	(11.8)***
Country dummies included?	Yes	Yes
R-squared	0.79	0.78
Observations	124	145
Chow test: reject null that all coefficients are not jointly significantly different during 1993-2006? (F-test)		No, with p-value of 0.14
Reject null that debt stabilising response is not statistically different during 1993-2006? (T-test)		Yes, with p-value of 0.03
Average value of condition for debt sustainability according to equation (5.4)	0.058	-0.015
Condition for debt sustainability satisfied?	Yes	No

Notes: the estimation technique is OLS fixed effects with robust standard errors. T-values in parentheses; ***, **, * denotes statistical significance at 1%, 5% and 10% level of confidence.

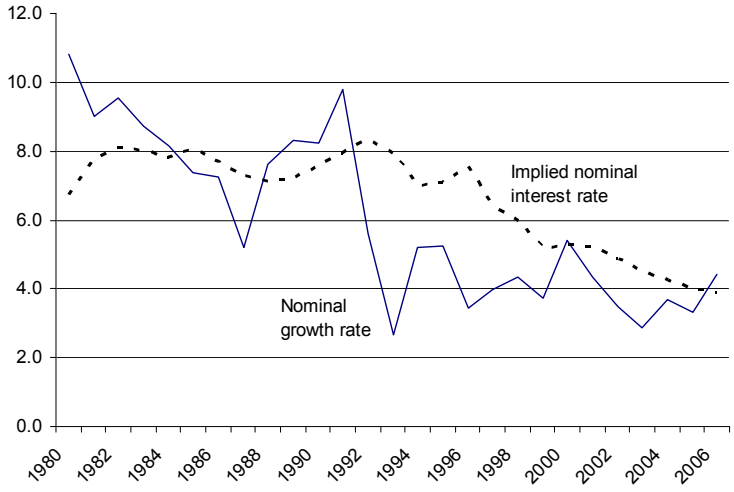
Table 5.3. Results for gross debt (Maastricht definition)

	1970-1992	1993-2006
	Dependent variable: primary balance plus selling of financial assets	
Lagged gross debt (Maastricht definition)	0.083	0.10
	(2.2)**	(2.9)***
Lagged output gap	0.13	0.40
	(0.7)	(1.1)
Lagged dependent variable	-0.10	-0.06
	(-0.5)	(0.85)
Country dummies included?	Yes	Yes
R-squared	0.16	0.29
Observations	88	135
Chow test: reject null that all coefficients are not jointly significantly different during 1993-2006? (F-test)		Yes, with p-value of 0.005
Reject null that debt stabilising response is not statistically different during 1993-2006? (T-test)		No, with p-value of 0.71
Average value of condition for debt sustainability according to equation (5.4)	0.106	0.087
Condition for debt sustainability satisfied?	Yes	Yes

Notes: The estimation technique is OLS fixed effects with robust standard errors. T-values in parentheses; ***, **, * denotes statistical significance at 1%, 5% and 10% level of confidence.

Results that were obtained according to the methodology as traditionally used in the literature are shown in Table 5.4. As indicated already this approach does not use consistent measures of debt and deficits given that policy instruments that influence gross debt include the primary balance as well as changes in financial assets. As expected results are in line with those reported in section 5.2. A small but positive debt stabilising response is found both before and after the introduction of the EU rules.

Figure 5.2 Interest growth rate differential Euro area,



Results from the Chow test show no evidence of a structural break. Even if the debt stabilising response is almost the same before and after 1993, the check on the condition shows a lower value for the recent period due to the developments in interest rates and the growth rate. Overall, the results in this section indicate one major difference with the consensus view in the literature that debt sustainability prevailed both before and after the introduction of the EU fiscal rules: the policy response of the primary balance to net debt actually became weaker after the introduction of the EU fiscal rules. A possible explanation is that the EU rules, which are formulated in terms of gross debt, have shifted attention from policy makers away from developments in net debt, even though eventually net debt may be a more appropriate concept of sustainability than gross debt.[61] The robustness exercise in section 5.5 will look at this explanation in more

61 Anecdotical evidence on the specific situation in the country best know the author – i.e. The Netherlands – may provide an illustration of this point. Due to the EU fiscal rules, the public policy debate has focused heavily on the development in gross debt, which has shown a strong decline. Recently, policy institutions such as the Dutch bureau for policy analysis (CPB) have however called for more attention for the net financial position of the government. Arguments are that net debt did not decline as much as gross debt due to the sale of financial assets. Moreover, due to the decline in natural gas reserves net worth will decline further in the future even though gross debt may be on a declining

detail by considering separately the period 1993-1997. During this period, incentives for compliance with the EU fiscal rules were the strongest given that entry into EMU was conditional upon respect of these rules.[62]

Table 5.4 Results according to traditional methodology, gross debt (Maastricht definition)

	1970-1992	**1993-2006**
	Dependent variable: primary balance	
Lagged gross debt (Maastricht definition)	0.031	0.034
	(3.5)***	(3.63)***
Lagged output gap	0.004	0.013
	(0.09)	(0.2)
Lagged dependent variable	0.72	0.71
	(11.3)***	(12.1)***
Country dummies included?	Yes	Yes
R-squared	0.80	0.75
Observations	180	168
Chow test: reject null that all coefficients are not jointly significantly different during 1993-2006? (F-test)		No, with p-value of 0.17
Reject null that debt stabilising response is not statistically different during 1993-2006? (T-test)		No, with p-value of 0.78
Average value of condition for debt sustainability according to equation (5.4)	0.05	0.02
Condition for debt sustainability satisfied?	Yes	Yes

Notes: The estimation technique is OLS fixed effects with robust standard errors. T-values in parentheses; ***, **, * denotes statistical significance at 1%, 5% and 10% level of confidence.

trend. Finally, ageing populations will put further pressure on public finances in the future, which further enhances the case for improving net worth.

62 The decision upon entry into EMU was taken in 1998, on the basis of data for 1997.

5.4.3 Specification and diagnostics

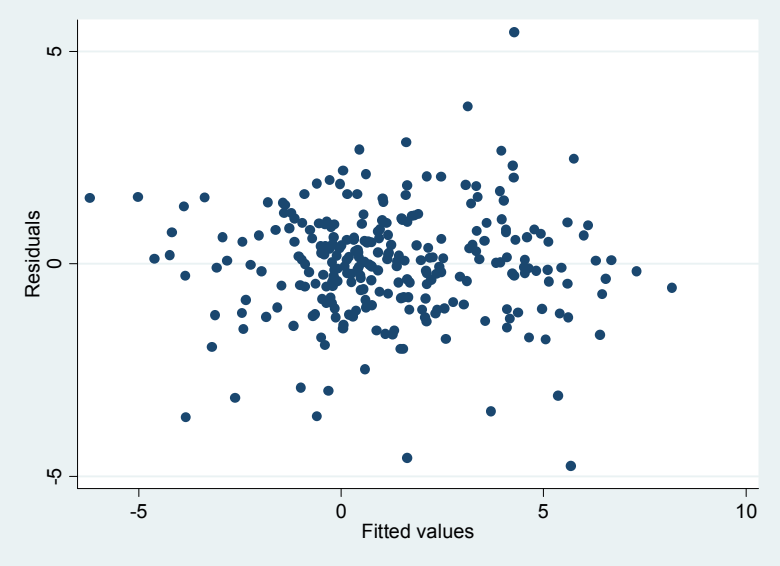
This section presents a discussion of the specification of the estimated reaction function (5.5) and provides results from diagnostic tests.

On possible criticism on the specification of the reaction function is that the debt stabilising response may be asymmetric. Fiscal policy may not react much to the build up of debt, up to the moment that a threshold value is surpassed and sustainability becomes a source for concern. This effect can be captured by including quadratic lagged debt as an additional variable. Results however showed a statistically insignificant debt stabilising response in this specification. Another possibility is that the adjustment to debt takes more than one year. This possibility can be investigated by adding further lags of the debt ratio and calculating the long-run coefficient by adding up these coefficients. The main results with two additional lags are again unaltered, except that the policy response to net debt during 1993-2006 now becomes slightly positive at 0.02 (even though it still decreases in comparison to the previous period as in the baseline results). Instead of being slightly negative, the condition for debt sustainability now gives an indeterminate result of exactly 0.00. Yet another issue is that of reverse causality between fiscal policy and the output gap, which causes a problem of correlation between the errors and the regressors. This can be solved by including the lagged output gap in the regression, as in the estimations above, or by instrumenting the output gap by its own lag. Results for the second option are not reported given that they are very similar to the baseline results.

A first look at the residuals of the regression was obtained on the basis of a residual versus fitted plot. It is shown in Figure 5.3 below for the baseline regression on net debt,

given that results for net debt can be considered as the most innovative ones in the regressions above. Even if the residuals seem symmetrically distributed around zero, there is some indication that the variance in the residuals is higher for higher values of the fitted values. The Breusch-Pagan for heteroscedasticity shows mixed results in this respect. For all baseline regressions the null of a constant variance is not rejected at the 5 per cent level of significance, except for the regression for 1970-2003 as reported in Table 5.2 and the regression for the period 1993-2006 as reported in Table 5.3. Nevertheless, tests results are reported for these regressions are still valid given that the estimations were performed with heterscedasticity and autocorrelation consistent robust standard errors (also known as Newey-West standard errors).

Figure 5.3 Residual versus fitted plot for the baseline regression on net debt



5.5 Robustness check

The difference in findings for the systematic policy response to gross debt (sustainable) and net debt (debt stabilising response exactly offsets interest growth rate differential)

after the introduction of the EU fiscal rules calls for a further analysis.[63] In this respect, previous studies have already found that the EU fiscal rules have increased fiscal discipline up to 1997, while fiscal discipline deteriorated afterwards (Hughes Hallett and Lewis, 2008; see also the literature review in Chapter 2).[64] The explanation given is that the threat of exclusion from EMU was a more credible enforcement mechanism than the threat of possible sanctions under the Stability and Growth Pact (SGP). If incentives for compliance were indeed stronger during this period, the model of Chapter 3 would predict: (i) more 'real' fiscal adjustment during 1993-1997, as measured by the response of the primary balance to net debt, and a deterioration afterwards (ii) a simulteaneous increase in the response through financial assets during 1993-1997, and a decrease afterwards. Table 5.5 and Table 5.6 therefore repeat the baseline estimations while adding another subperiod of 1993-1997. Results indeed show an increase during 1993-1997 in the response to net debt (from 0.04 to 0.10), an even stronger increase in the response to gross debt (from 0.08 to 0.25), and a statistically insignificant response (for net debt) or normalisation (gross debt) afterwards. Results from the Chow tests however show that the differences are at the verge of being statistically significant (p-values of 0.10 and 0.11), which can probably be attributed to the low number of

63 As a further robustness check, the influence of valuation issues on the results was also investigated. An issue may arise given that, according to the Maastricht definition, gross debt is measured at face value. At the same time, net financial liabilities according to the ESA95 methodology are valued at market value (see also the definitions in section 5.4.1). It may therefore be that the differing policy responses to gross and net debt are influenced by valuation issues. The regressions for gross debt as reported were therefore repeated with gross debt now measured as 'gross financial liabilities', with government bonds valued at market value or at issue price plus accrued interest according to the ESA 95 rules. This is exactly the base that is used by the OECD for calculating the net financial liabilities series (i.e. by substracting financial assets). Results (not reported) show a similar increase in the policy response during 1993-1997 as for the Maastricht definition so that the findings are not the result of differences in valuation.

64 Especially between 2000 and 2004 the aggregated fiscal position of the Euro area deteriorated, as witnessed by a decrease in the cyclically-adjusted primary balance from a surplus of 2.9% GDP in 2000 to 0.6% GDP in 2004.

observations for the subperiod 1993-1997. Apart from highlighting the special forces at work during 1993-1997, these results also show that the most recent period (1998-2006) is responsible for the finding that the systematic policy response to net debt disappeared after the EU fiscal rules were introduced (see also the literature review of Chapter 2 on the weakening of fiscal discipline during the first years of EMU).

Table 5.5 Results for net debt (net financial liabilities) – before and after 1993 and 1997

	1970-1992	**1993-1997**	**1998-2006**
	Dependent variable: primary balance		
Lagged debt (net financial liabilities)	0.035	0.104	0.007
	(2.7)***	(2.5)**	(0.4)
Lagged output gap	0.04	-0.02	-0.10
	(0.6)	(-0.1)	(-1.2)
Lagged dependent variable	0.54	0.65	0.67
	(3.9)***	(3.2)***	(7.3)***
Country dummies included?	Yes	Yes	Yes
R-squared	0.79	0.84	0.78
Observations	124	46	99
Chow test: reject null that all coefficients are not jointly significantly different? (F-test)		No, with p-value of 0.12	Yes, with p-value of 0.04
Reject null that debt stabilising response is not statistically different? (T-test)		No, with p-value of 0.101	No, with p-value of 0.18
Average value of condition for debt sustainability according to equation (5.4)	0.06	0.07	0.00
Condition for debt sustainability satisfied?	Yes	Yes	Undetermined

Notes: The estimation technique is OLS fixed effects with robust standard errors. T-values in parentheses; ***, **, * denotes statistical significance at 1%, 5% and 10% level of confidence.

Table 5.6. Results for gross debt (Maastricht definition) –– before and after 1993 and 1997

	1970-1992	1993-1997	1998-2006
	Dependent variable: primary balance plus selling of financial assets		
Lagged debt (Maastricht definition)	0.083	0.246	0.119
	(2.2)**	(2.3)**	(3.2)***
Lagged output gap	0.13	-0.02	0.047
	(0.7)	(-0.0)	(0.3)
Lagged dependent variable	-0.10	0.01	0.37
	(-0.5)	(0.1)	(2.2)**
Country dummies included?	Yes	Yes	Yes
R-squared	0.16	0.71	0.84
Observations	88	38	60
Chow test: reject null that all coefficients are not jointly significantly different? (F-test)		Yes, with p-value of 0.00	Yes, with p-value of 0.00
Reject null that debt stabilising response is not statistically different during subperiods? (T-test)		No, with p-value of 0.11	No, with p-value of 0.98
Average value of condition for debt sustainability according to equation (5.4)	0.11	0.22	0.08
Condition for debt sustainability satisfied?	Yes	Yes	Yes

Notes: The estimation technique is OLS fixed effects with robust standard errors. T-values in parentheses; ***, **, * denotes statistical significance at 1%, 5% and 10% level of confidence.

5.6 Simulation analysis

Estimation results in this Chapter for the parameter values of the fiscal reaction functions are in line with the implication of the model in Chapter 3 that a rule that applies to gross debt may lead to additional fiscal adjustment through the budget balance, but also a policy response through the strategic use of financial assets. These

results now allow us to simulate fiscal outcomes under different regimes (no fiscal rule, strong fiscal rule) and show the impact on net debt on the basis of the response in the primary balance only, and gross debt on the basis of the response in the primary balance as well as the change in financial assets.

According to our model of Chapter 3, the degree to which the primary balance or financial assets are used for influencing the debt ratio depends on the strength of the fiscal rules, but also on the social costs related to the strategic use of financial assets. The reason for this is that a strategic response to fiscal rules is not the only argument why governments may hold a certain level of financial assets. As indicated in Chapter 3, in the absence of fiscal rules, the stock of financial assets can be expected to be driven by portfolio considerations and the desired degree of privitisation. The strategic use of financial assets is therefore not costless.

These arguments point out that, eventually, the mix of instruments to be used in influencing the gross debt ratio under a fiscal rule is an empirical issue. In order to provide more insight in this issue, we now use our estimation results on fiscal reaction functions for simulating fiscal policy behaviour and the resulting developments in gross and net debt under two contrasting regimes: (i) no fiscal rules at European level are in place, on the basis of our parameter estimates for the period 1970-1992; (ii) a strong 'Maastricht type' fiscal rule was in place at European level, on the basis of our parameter estimates for the period 1993-1997. In order to put these results further into perspective, we also include simulated fiscal outcomes on the basis of our estimated parameters for the period 1993-2006, i.e. combining the influence of the Maastricht rule and the SGP.

The starting point for our simulations is 1993. This allows us to compare fitted 'actual' fiscal policy behaviour with the case in which no fiscal rules would have been in place, and the case where the strong incentives for compliance with the 'Maastricht' rules – due to the link with the entry into EMU - would have been in place during the whole of the period after 1992. In running the simulations we aggregate the values for the different variables for the countries in our dataset. In doing so, we can only include the countries for which full data series data are available for all of the variables of interest. The reason for this is that differences in country coverage of our different variables (aggregated for all countries) would otherwise be an independent source of variation of these variables. The simulation therefore uses the actual aggregated values of five countries only: Austria, Germany, Finland, France and The Netherlands.

In our simulations, we proceed as follows. On the basis of the fiscal reaction function (5.5), we first estimate a value of the primary balance (net debt), or the primary balance minus the sale of financial assets (gross debt) for the year 1993. This estimate is based on actual values of the output gap for 1993, and the gross or net debt ratio for the year 1992. We then plug this fitted value into the budget equation (5.1), and calculate the resulting value for the net and gross debt ratio for the year 1993. In the next step, we use these estimated values for the debt ratio to move one year further in calculating the fitted value of the primary balance and the primary balance corrected for the change in financial assets on the basis of the fiscal reaction function. When repeating these steps for each year, we end up with simulated series for the primary balance and net debt, as well as the primary balance minus the sale of financial assets and gross debt for our different regimes of the EU fiscal rules. Note that in running this partial model we assume that the output gap itself is not influenced by fiscal developments and therefore

exogenous. This simplifying assumption receives empirical support of our robustness tests of section 5.5, which showed that instrumenting the output gap hardly changed the estimation results for our fiscal reaction functions.

Results for the evolution of net and gross debt under different fiscal regimes are reported in Figure 5.4 and Figure 5.5. As indicated, the simulated debt development for the regime of 'no rule' is based on our parameter estimates for the fiscal reaction functions for the period 1970-1992. Likewise, the simulation for the 'Maastricht rule' is based on the parameters for 1993-1997, while the 'actual' fiscal scenario is based on estimated parameters for the period 1993-2006.

Figure 5.4 Simulated net debt under different fiscal regimes

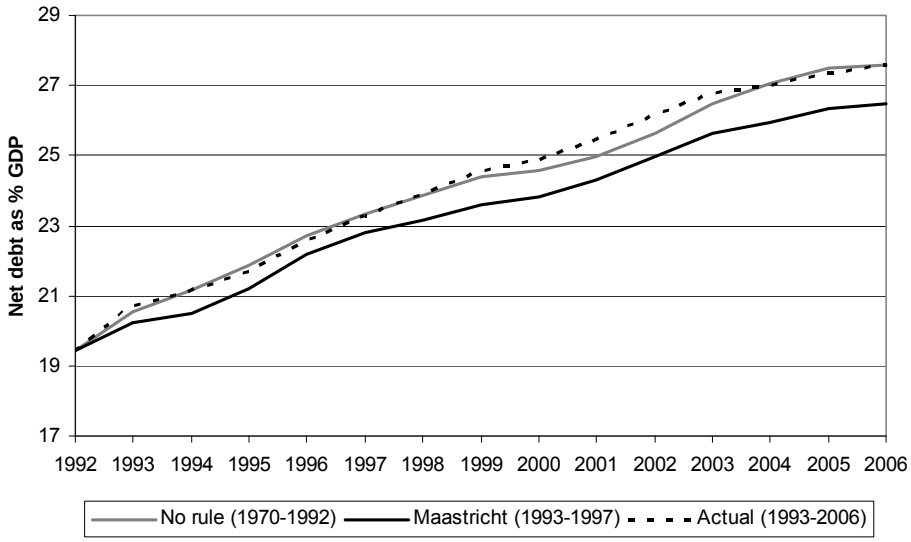
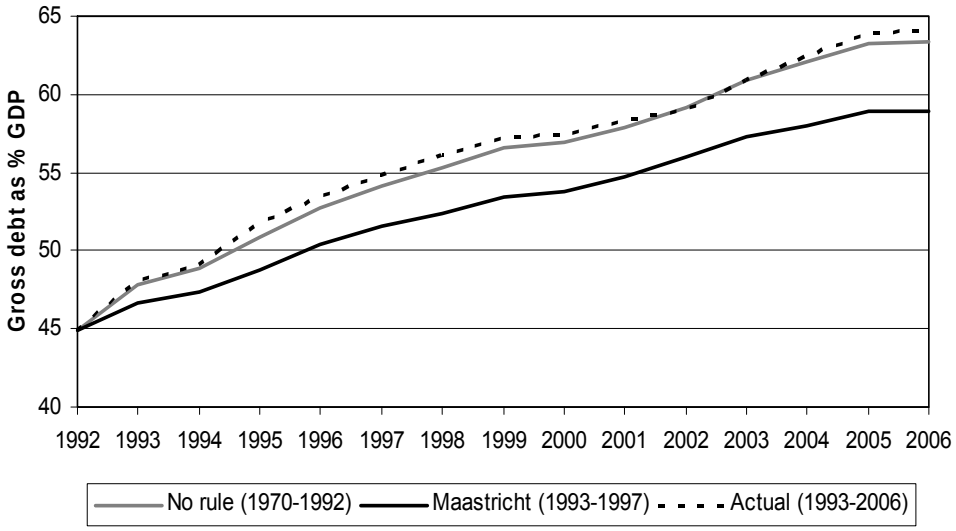


Figure 5.5 Simulated gross debt under different fiscal regimes



A first result of this exercise is that simulated fiscal behaviour for both net and gross debt for the period 1970-1992 ('no fiscal rule'), and the period after 1992 as a whole (combined effect of Maastricht rule and the SGP), is very similar. This result is in line with findings of Hughes Hallet and Lewis (2008) who, on the basis of a different approach, have concluded that the improvement in fiscal discipline during 1993-1997 was compensated by a loss of fiscal discipline during the period after 1997 under the SGP.

A second result is that simulated fiscal outcomes for the Maastricht period of the 'strong' fiscal rule eventually lead to a rather small additional reduction of the net debt ratio: by 2006 the difference with the scenario of 'no fiscal rule' has increased to only 1.1% of GDP. The difference for the gross debt ratio, to which the Maastricht rule applied, is substantially larger for the gross deb ratio: by 2006 the difference with the scenario of 'no fiscal rule' has increased to 5.5% of GDP. Moreover, visual inspection

of the development for gross debt shows clear indications of stabilisation towards the end of the sample period, which is in line with our findings of the previous paragraphs that the systematic policy response to gross debt has been strong enough to ensure sustainability. Stabilisation of the gross debt ratio around 60% GDP is in line with the conclusions of Artis and Marcellino (2000), who reported results consistent with a stabilisation of the debt ratio at the Maastricht value. The simulated evolution of the development in the net debt ratio however shows less clear signs of stabilisation, which is in line with our more indeterminate results for sustainability of the net debt ratio as reported in the previous paragraphs.

5.7 Conclusions

This Chapter has asked whether the increase in government debt in the Euro area has induced systematic corrective action in actual fiscal policies, and whether the EU fiscal rules represent a structural break in fiscal behaviour in this respect. In answering this question, it has adjusted the standard methodology for measuring debt sustainability to the specific context of EMU. The methodology requires that consistent measures of debt and deficits are used, i.e. the primary balance as the policy instrument to steer net debt and the primary balance minus the change in financial assets to influence developments in gross debt. Such an adjustment is particularly relevant for the Euro area, given that the fiscal rules may have provided incentives for shifting fiscal policy to unconstrained forms such as financial assets. Overall, results show sustainable policies for both net and gross debt before 1993, but only for gross debt after 1993. A detailed look at the period when incentives for compliance with the EU fiscal rules were the strongest (i.e.

1993-1997) confirms a small additional degree of 'real' fiscal adjustment during this period, but also a shift to unconstrained forms of fiscal policy (i.e. strategic use of changes in financial assets to influence debt developments). In addition to previous studies that have focused on creative accounting with respect to the budget balance, this Chapter has highlighted behavioural responses to the debt criterion. Findings point to the need to complement the strong focus on developments in gross debt by increased analysis and policy attention for developments in net debt ratios, which may be a more appropriate approximation of the net worth of the government.

Annex 5.1. The debt stabilising response in fiscal policy: an example

This annex illustrates the debt stabilising fiscal policy, as formalised in section 5.2, by providing a hypothetical example. Consider a hypothetical high debt country in EMU in which the interest rate equals the growth rate and the primary budget is in balance, so that the debt ratio is stable (i.e. scenario 1 below). Then, the country is hit by a negative idiosyncratic shock (e.g. a negative productivity shock) that causes a decline in potential growth, so that – in the context of EMU – (wage) inflation needs to go down in order to restore competitiveness. Furthermore, at the same time, the economy is recovering in the rest of EMU so that inflation pressures start to arise and the common interest rate goes up (scenario 2). At unchanged policies, debt dynamics would then become unsustainable given that the interest rate is higher than the growth rate (see budget equation (5.1) in section 5.2, which has been used for the simulation of debt dynamics in the Figure 5.6 below).

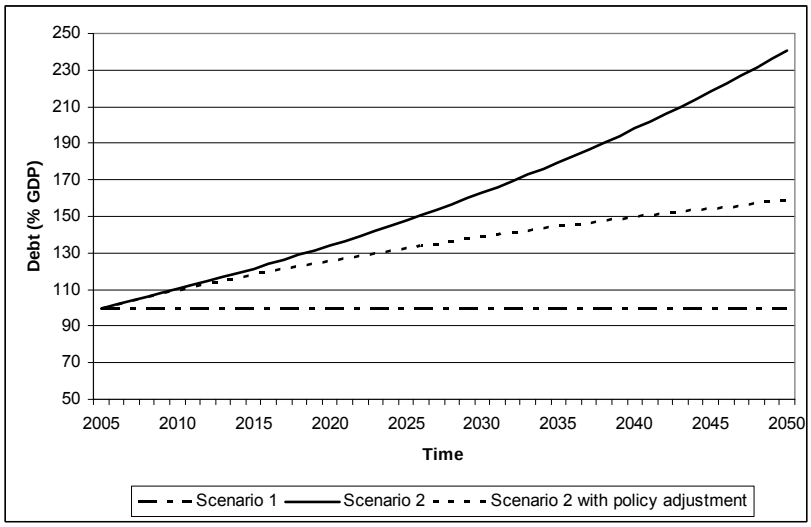
However, according to fiscal reaction function (5.2) of section 5.2, the budgetary authorities may respond to a higher debt ratio by increasing the primary surplus (scenario 2 – with policy adjustment). In this example, the primary balance increases by 0.04 percentage points for every percentage point increase in the debt ratio. Given that the debt stabilising response is larger than the difference between the real interest rate and the growth rate, this will be sufficient to eventually stabilise the debt, even if the

moment at which the debt is being stabilised is rather far into the future in this hypothetical case.[65]

Table 5.7 Debt stabilising scenario's

Assumptions	Scenario 1	Scenario 2	Scenario 2 (with policy adjustment)
Initial debt (% GDP)	100% GDP	100% GDP	100% GDP
Primary balance (% GDP)	0% GDP	0% GDP	Increasing
Debt stabilising response	absent	absent	0.04
Nominal interest rate	4%	5%	5%
Inflation	2.0%	1.5%	1.5%
Real interest rate	2.0%	3.5%	3.5%
Real growth rate	2.0%	1.5%	1.5%

Figure 5.6 Debt developments under different policy reactions



65 That is, debt reaches 158% GDP in 2050 and stabilises only in 2348 at 197% of GDP. The primary balance reaches a surplus of 2.3% GDP in 2050 and increases eventually to 3.9% GDP.

6 Measuring National Fiscal Rules

6.1 Introduction

In the Euro area, while fiscal policies are coordinated through a rules-based fiscal framework, the implementation of fiscal policy remains in the hands of national authorities. A unique feature of this institutional set-up is that all countries are subject tot the same supranational fiscal rule, while national fiscal rules differ widely across countries. As a result, the existence of the EU fiscal rules can be called upon as a variable for explaining shifts in aggregate fiscal performance over time, as discussed in the previous Chapter, but cannot explain heterogeneity in fiscal outcomes across countries. Our investigation into the effect of fiscal rules on fiscal outcomes should therefore by complemented by the study of national fiscal rules. We now shift attention to the question of whether differences in national fiscal rules help to explain cross sectional heterogeneity in fiscal outcomes.

Our study of national fiscal rules implies a shift in focus in yet another way. The study of the supranational rules concentrated on conflicts of interest between countries, which relate to the macro-economic function of fiscal policy in the context of monetary union. The analysis therefore paid attention to the fiscal objectives of sustainability and stabilization as well as the interaction with the single monetary policy. The study of national fiscal rules should obviously be seen in the context of conflicts of interest at national level, which relate to the allocative function of fiscal policy.[66] As was indicated in Chapter 2, such conflicts can appear, e.g., between interest groups in society, between

66 By the allocative function of fiscal policy we mean the allocation of resources in accordance with strategic priorities and the efficient and effective use of resources in the implementation of strategic priorities. See also Schick (2002) on the respective functions of fiscal policy.

spending ministers in the cabinet and the minister of finance, between subsequent governments that alternate in power, and between the government and the parliament. In all cases heterogeneity of interests and fragmentation are central to the analysis, in the form of size fragmentation (i.e. dispersion of interests within the cabinet or within parliament) and time fragmentation (related to the limited time horizon of governments in power and differences in preferences between governments that alternate in power).

In fact, there may be an interaction between national fiscal rules and the EU fiscal rules. To the extent that national fiscal rules are effective in tackling spending and deficit biases at national level, these biases are less likely to show up at the aggregate level in the macro-economic functions of fiscal policy. If this is so, then pressure on the EU fiscal framework in addressing these issues in a cross country setting will diminish. This argument may explain why fiscal surveillance at European level in recent years has strongly increased attention on national fiscal rules and institutions.[67] Indeed, in those countries in which the EU fiscal rules do not bite actual policy discussions usually focus on compliance with the set of national rules, whose targets are often more ambitious than those of the EU fiscal rules.

As indicated in Chapter 1, our study into the effects of fiscal rules on fiscal outcomes requires that national fiscal rules are measured, even if the evolution of these rules themselves is not the main topic of study. This Chapter therefore describes how national fiscal rules have been measured for the purposes of this study. In doing so, it lays the ground for Chapters 7 and 8 that continue the analysis on the effects of national rules on fiscal outcomes.

67 See also the PhD by Hodson (2005) on the interaction between national and European forms of fiscal governance.

The rest of this Chapter is organized as follows. Section 6.2 discusses the question of how much institutional detail should be taken into account when measuring national fiscal rules. Section 6.3 describes the questionnaire that was used to measure national rules, as well as the methodology for aggregating the features of these rules into a single index number that can be used in econometric research. Section 6.4 takes a first look at the national fiscal rules that are in place in the Euro area. Section 6.5 summarises the implications for later Chapters. The Annex to this Chapter contains the questionnaire.

6.2 How much institutional detail?

The book by Drazen (2000) contains a general discussion on the measurement of political decision making mechanisms when studying the effects of these mechanisms on economic outcomes. The challenge is to focus on aspects of the decision-making mechanism that are crucial for understanding policy outcomes, and to abstract from aspects that matter less. In other words: we need to think carefully about the institutional aspects that we want to include in our measure of national fiscal rules, and the elements that we can leave out. The balance between detail and aggregating institutional information could very well be a delicate one, as also reflected in Drazen (2000, p. 62): 'One can err in either direction: one can specify institutions and differentiate decision-making processes in such detail that no regularities emerge; or, one can represent institutions on so abstract a level that the result tells us little about what to expect from real-world institutions'.

Eventually, the optimal level of institutional detail with which institutions should be measured depends on the question being asked. In this respect, this section accounts for

the choices that have been made in this study regarding the level of detail with which national fiscal rules have been measured.

In previous studies, fiscal rules have often been measured in a rather broad way as part of broader indices of budgetary institutions (see the review in Chapter 2) or have been measured as dummies (i.e. a 1 for a fiscal rule and 0 for no fiscal rules) as for example in Manasse (2007). The argument here is that this would probably be a too broad mode of measurement. After all, the discussion so far has indicated that incentives for (non) compliance are key to the analysis so that as a minimum the degree of enforcement of the rules should be taken into account.

There are two studies that could possibly serve as basis for a somewhat more refined way of measuring national fiscal rules, given that they have identified criteria for effective fiscal rules. According to the study by Inman (1996), as discussed already in Chapter 2, fiscal rules are more likely to be effective (i.e. constrain fiscal policy in the intended way) when the rule is subject to compliance is ex post (instead of only submitting a budget that complies with the rule), when the amendment process is difficult so that the rule cannot be changed once it starts to bite (e.g. by putting it in the constitution), when enforcement is independent and when penalties of non-compliance are sufficiently large. Kopits and Symanski (1998) propose a different set of characteristics for ideal fiscal rules: the rules should be well-defined, transparent, simple, flexible, adequate relative to goal, enforceable, consistent and underpinned by structural reforms. As is noted by the authors, some of these criteria contain trade-offs, as between simplicity and flexibility.

The choice of criteria to be used is relevant, because it can have an impact on the conclusions that will ultimately be reached. This point can be illustrated given that both sets of criteria (i.e. the Inman criteria and the Kopits and Symanski criteria) have

already been used to evaluate the design and fiscal performance under the EU fiscal rules. On the basis of the Inman criteria, De Haan *et al.* (2004) conclude that the Stability and Growth Pact has failed because independent external enforcement is lacking. On the basis of the Kopits and Symanksi criteria, Buti *et al.* (2003) however essentially reach the opposite conclusion when they argue that against established criteria for an ideal fiscal rule, the design and compliance mechanisms of the SGP fare reasonably well.

In choosing the set of criteria to be used, it is relevant to note that the criteria as proposed by Kopits and Symanski view fiscal rules from a rather general perspective. They review the effects of fiscal rules on a broad range of variables, e.g. on structural reforms and their relation to other policy objectives such as those related to inflation and output. All these broader effects of fiscal rules are of course relevant but outside the scope of this study. At the same time, the purpose of this research overlaps with that of Inman and Bohn (1996) and Inman (1996) of testing the direct effects of fiscal rules on fiscal outcomes. Moroever, these criteria have been formulated on the basis of quantitative evidence for the experience with budget balance rules in the US, while the Kopits and Symanski criteria appear as the conclusion from a qualitative description of experiences with fiscal rules.

It was therefore decided that the Inman criteria could serve as a useful starting point for measuring the institutional design of national fiscal rules in EMU. In using these criteria, it should however also be acknowledged that Europe is not the US. Care should therefore be taken to integrate the analysis in the specific European context, and reformulate the methodology and underlying behavioural models if necessary.

6.3 The questionnaire and the index

The idea for the questionnaire based approach as used in this thesis has evolved from the work by the author of this thesis on the 2003 study of the European Commission on national expenditure rules (EC, 2003). The main purpose of that study was to provide an overview of the different types of rules in place in EU countries, and to analyse their institutional properties. As a result, a questionnaire was developed that concentrated on the institutional features in a qualitative sense (i.e. describing the institutional design but without adding scores to different features of the design). On this basis, EC (2003) contains a qualitative overview of the institutional features of national expenditure rules, but without aggregating them into a single index number. Hence, whereas the study provided new information on the heterogeneity in the institutional design of national fiscal rules, it could not serve as a basis for systematic econometric research on the impact of rules on fiscal outcomes due to its qualitative nature. On this aspect further inspiration was found in the literature on broader institutional indices, as summarised in Chapter 2. This literature demonstrates the relevance of including closed questions on the basis of well-established criteria, which allows for the calculation of index numbers. As a starting point for the research in this thesis, a new questionnaire was therefore developed that combines closed and open questions. The closed questions match with the chosen set of criteria for well developed fiscal rules, and scores where predetermined that reflect differences in institutional strictness on the range of possible answers to the closed questions. As it was uncertain at the outset whether this approach would in the end deliver meaningful results, it was decided not to immediately cover all types of national fiscal rules, but to limit the scope of the initial version to expenditure rules only.

The remainder of this section describes the original questionnaire and the methodology for calculating index numbers on the institutional design of national expenditure rules.[68] As mentioned in the Introduction to this thesis, the scope of the questionnaire has subsequently been widened to all national fiscal rules as in EC (2006a), and subsequently the OECD incorporated it in its ongoing research on fiscal institutions. As a result of these initiatives, data availability on national fiscal rules will continue to improve over the years to come. In this context, this introduction to the questionnaire and the methodology for calculating the index is also intended as background information for future researchers on the topic.

6.3.1 The questionnaire on expenditure rules

The questionnaire, as included in Annex 6.1, contains of a part on the definition of the rule (questions 1 to 9) and a part on the institutional criteria that serve as a basis for the overall index on the institutional design of the rule (questions 10 to 14). Both are discussed in turn.

Question 1 starts by asking whether a fiscal rules has been in place, on the basis of the definition by Kopits and Symanski (1998). Question 2 asks for the time period during which the fiscal rule has been in place. Questions 3 to 7 (section II of the questionnaire) aim at capturing the scope of the rule. Question 3 asks about the time span of the rule, i.e. in particular whether or not the rule applies on a medium-term basis. Question 4 asks to which sectors of government, as defined in the national accounts, the rule

68 It was decided to present here the original version of the questionnaire that applied to expenditure rules, and not later versions as they have been applied to all types of national rules by EC (2006a) given that only the first version can be considered our original contribution. The content of later versions is however very similar to the first version.

applies, i.e. the central government, regional/local government, social security or the whole of the general government (which covers all sectors). Questions 5, 6 and 7 inquire which items are specifically covered by the rule, or exempted from the rule. Question 6 specifically mentions possible exemptions for interest payments, cyclically sensitive items (e.g. unemployment related expenditure) and so-called productive items (that reflect investment in physical or human capital), given that discussions on the coverage of the rule often focus on these items. The first two (interest payments and cyclic items) are often excluded given that they are less under the direct policy control of the fiscal authorities. Productive items are sometimes excluded from the scope of the rule in order not to compromise on the quality of public finances, which broadly captures the effect of fiscal policy on long-term growth. In general, whereas a broad coverage and a strict ceiling may entail compromises on the policy objectives that are being pursued by specific expenditures, a too narrow coverage of the rule may diminish the effectiveness of the rule in addressing biases. Question 7 inquires about the share of the items covered by the rule. In the later version of the questionnaire of EC (2006a) for all types of national fiscal rules, this information on the share of the budget that is covered by each specific rule has been used to weigh different types of fiscal rules into one overall fiscal rules index for each country.

Question 8 asks how the constraint as set by the rule is defined. As indicated in the range of possible answers, it could be in nominal or real terms, and in terms of a ceiling, a growth rate or a percentage of GDP. As indicated also in EC (2003), each of the options may have its own pros and cones. The difference between a real or a nominal target is relevant in case of forecast errors in inflation projections. A target defined in nominal terms may be perceived to be more transparent, as it makes monitoring easier. It will however lead to a higher/lower than expected adjustment if the inflation outcome

is higher/lower than expected. To some extent, this may be seen as a desirable effect, if higher than expected inflation occurs due to the fact that economic growth is higher than projected, so that the operation of the rule would enhance the operation of the automatic stabilisers (more ambitious ceiling in economic good times). A target defined in real terms on the other hand has the advantage that it does not depend on forecasted inflation. In this respect, it may be seen as more neutral than a target defined in nominal terms.

In principle any target set in terms of a growth rate can also be redefined in terms of absolute values. When the target is however defined as a share of GDP, the result can depend on GDP developments and in particular on GDP forecast errors. Thus, the rule might turn out to be pro-cyclical, since the expenditure ceiling fluctuates in line with GDP around its trend. As such, defining the ceiling set by the rule as a fixed rate of growth or in absolute levels seems to be the preferred option.

Question 9 aims to capture the level of ambition of the ceiling or thresholds set by the rule. As the method of target definition may differ for different types of rules (question 8), the range of possible answers asks for the implication of the rule in terms of real expenditure growth.

Questions 10 to 14 form the basis of the index of the strictness of the institutional design of the rule. Question 10 is based on the idea that a stronger legal base diminishes the options for changing the rule exactly at the moment it starts to bite. It therefore asks whether the rule is based on political commitment, or whether it is enshrined in a legal act or even the constitution. Question 11 enquires about the institution that is responsible for monitoring the rule. The underlying idea is that monitoring by an independent institution would be seen as ‘stricter’ than monitoring by the institution that should at the same time comply itself with the rule. Questions 12 to 14 relate to

different aspects of the enforcement of the rule. The range of answers on question 12 establishes a spectrum from fully independent external enforcement (e.g. independent fiscal body/ review panel created) to internal enforcement within the government or no enforcement at all. Question 13 asks about possible escape clauses, and the degree of discretion attached to invoking them. Question 14 describes what action is taken in case the rule is not complied with. Here, the range of options runs from no ex ante defined enforcement actions at the 'weak' end of the spectrum towards an obligation for corrective action by the relevant fiscal entity and automatic sanctions in case of non-compliance.

6.3.2 Methodology for calculating index numbers

Given that the rest of this study will use the expanded and updated dataset on national fiscal rules of EC (2006a), we immediately report here the calculation of the index numbers as it was applied in that study. Even if the underlying idea is the same as in our original version of the survey, it should be noted that there have been a few slight changes in the way scores are attributed. On the statutory base of the rule, a criterion was added as regards room for setting or revising objectives. Moreover, a criterion was added on the nature of the body in charge of enforcement of the rule. Finally, later versions also added a criterion on the media visibility of the rule, even if this element was not part of the original Inman criteria. The underlying idea of this criterion is that a higher degree of visibility in the media of non compliance with the rule may itself provide some incentives for compliance.

Overall, the criteria that determine the overall index are the legal base of the rule, the nature of the body that monitors the rule, the nature of the body that enforces the rule,

the enforcement mechanisms, and the media visibility of the rule. For all criteria, scores run from 0 to a maximum of 3 or 4 points (depending on the number of possible answers) for the characteristic that is presumed desirable for a strong/effective expenditure rule. The raw scores have been attributed as described below.

Criterion 1. Statutory base of the rule

The score of this criterion is calculated 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

2 if the rule is based on a coalition agreement or an agreement reached by different general government tiers (and not enshrined in a legal act)

1 for political commitment by a given authority

Room for setting or revising objectives

3 if there is no margin for adjusting objectives

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 merely contains broad principles or the obligation for the government or the relevant authority to set targets).

Criterion 2. Nature of the body in charge of monitoring respect of the rule

3 if there is monitoring by an independent authority

2 for monitoring by a 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 criterion is augmented by one point in case there is a real time monitoring of compliance with the rule (e.g. existence of alert mechanisms in case there is a risk of non-respect of the rule).

Criterion 3. Nature of the body in charge of enforcement of the rule

3 if there is enforcement by an independent authority

2 if there is enforcement by the Ministry of Finance or any other government body

1 if there is no specific body in charge of enforcement

Criterion 4. Enforcement mechanisms of the rule

4 if there are automatic correction and sanction mechanisms in case of non-compliance

3 if there is an automatic correction mechanism in case of non-compliance and the possibility of imposing sanctions

2 if the authority responsible is obliged to take corrective measures in case on non-compliance or is obliged to present corrective proposals to Parliament or the relevant authority

1 if there are no ex-ante defined actions in case of non-compliance

The score on this criterion is augmented by 1 point in case escape clauses are foreseen and clearly specified.

Criterion 5: Media visibility of the rule

3 is assigned 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 modest interest of the media

0 for no or modest interest of the media

Once individual scores have been obtained for all fiscal rules for each of the criteria, they have been normalised to run between 0 and 1. The next step is to aggregate individual scores into a single index. In absence of a strong theoretical base regarding the weight to be given to each individual criterion, it was decided to apply a random weights technique is applied, following Sutherland *et al.* (2005). This technique uses 10000 sets of randomly-generated weights to calculate 10000 overall indicators. The random weights are drawn from a uniform distribution between zero and one and then normalised to sum to one. The resulting distribution then reflects the possible range of values given no a priori information on the value for each of the weights. Given that the weights are drawn from a uniform distribution between zero and one, the mean indicator values are asymptotically equivalent to indicators calculated using equal weights for their constituent components.

6.4 National fiscal rules in EMU

This section takes a first look at the institutional design of national fiscal rules in Euro area countries, on the basis of the approach as outlined in the previous section. Data are from the expanded and updated survey of the EC (2006a) on all types of national fiscal rules.

Our analysis in the previous Chapters has shown that fiscal rules can only be effective if the costs of non compliance are sufficiently large to counter the incentives for biased policies. When taking a look at the actual data for fiscal rules, we therefore focus on the incentives for compliance as provided by the institutional design of the rules. Such incentives could be reflected in institutional features of a strong legal base, independent monitoring and enforcement, and economically significant sanctions. With this aim in mind, we first briefly summarise insights from the EC (2006a) study, and then take a more detailed look at national fiscal rules in EMU.

The study by EC (2006a) finds a strong increase in reliance on national fiscal rules in EU countries over the period 1990-2005. In the early 1990s, national fiscal rules mainly applied to the local and regional governments. These rules were generally enshrined in law, and supported by stronger enforcement mechanisms. Indeed, the defining feature of local or regional governments is the existence of a higher level of government (i.e. the central government), which is in a position to enforce the rules for the lower levels of government.[69] A new feature in the 1990s has been the introduction of numerical rules for the central government or the general government as a whole. When looking at the results for the EU as a whole, it appears that these rules are based more on political

69 As indicated in Chapter 1, Introduction, national fiscal rules for the lower and central government are outside the scope of this study.

agreement instead of being enshrined in law or in the constitution. Likewise, enforcement mechanisms are usually weaker for rules applying to the central or general government than for rules that apply to the lower levels of government. The explanation given in EC (2006a) is that rules for the central and general government draw much more public opinion and media interest than other rules. We however would like to draw attention to a different explanation that relates to the political nature of fiscal policy making. In analogy to our discussion on national fiscal councils (Chapter 2) the argument is that the creation of truly external enforcement would take part of the responsibility for fiscal policy out of the political process and thereby deny the political nature of fiscal policy making. Just as truly independent fiscal policy committees have not been feasible in practice, externally monitored and enforced fiscal rules also have not been created in practice in the European Union.

Table 6.1 summarises the institutional design of national fiscal rules in EMU (i.e. those that apply to the central or general government so that they are within the scope of this study). Concerning the items targeted by the rules, the data show that most of the rules apply to the expenditure side of the budget (eight cases) or to the budget balance (five cases) while there are three cases of a revenue rule and two of a debt rule. The data confirm previous findings of a strong degree of diversity in the way the targets are formulated, i.e. in nominal terms, in real terms, as a percentage of GDP or in levels.

When looking at the results for the statutory base of the rules, it appears that out of eighteen rules included here, eleven are based on political agreement (which includes coalition agreements). Moreover, out of these eighteen national rules, fifteen are not monitored or monitored by a government body, while in no case automatic sanctions are imposed by an external body. Finally, Figure 6.1 shows the aggregate index scores for the national fiscal rules in EMU (based on the methodology as outlined in the previous

section). It confirms that, while on the one hand all national fiscal rules in EMU are essentially self-enforced, there is at the same time a large diversity in the overall strictness of the design of these rules. Moreover, as mentioned in Chapter 2 (section 2.4.2), we should not rule out the possibility that national governments voluntarily self-commit to fiscal rules given that the fiscal objectives pursued by the rule are a reflection of their preferences.

Table 6.1. National fiscal rules in EMU, 1990-2005

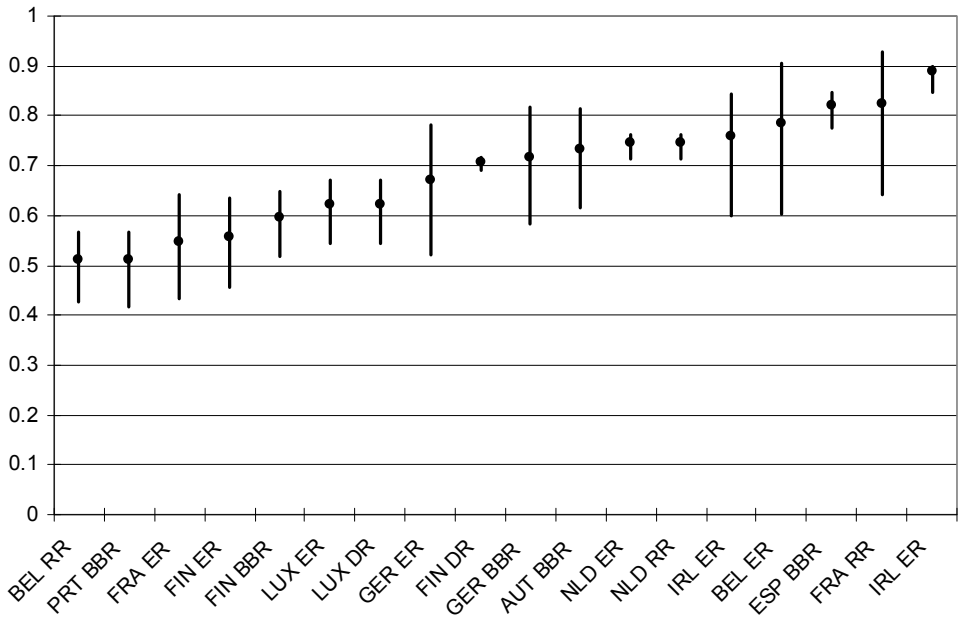
Country	Type of rule	Rule in operation (year of introduction)	Definition of the rule (aggregate targeted)	Sector(s) covered	Time frame	Statutory base	Body in charge of monitoring	Enforcement
Austria	Budget balance rule	1999	Budget balance as a % of GDP	Central, regional and local governments	Multiannual (4 years)	Legal act (based on Constitution)	Governmental structure (Committee with central, regional and local government representatives)	Governmental structure Possibility of sanctions
Belgium	Expenditure rule	1993-1998	Real expenditure ceiling	Central government	Multiannual (4 years)	Political agreement	Independent Fiscal Council	No pre-defined action in case of non-compliance
	Revenue rule	1993-1998	Nominal growth of revenues	Central government	Multiannual (4 years)	Political agreement	No regular monitoring	Obligation to present corrective proposals
Finland	Expenditure rule	1999	Real expenditure ceiling	Central government	Multiannual (5 years)	Political agreement	Government (Ministry of Finance)	Governmental structure proposes corrective measures
	Budget balance rule	1999	Budget balance as % GDP	Central government	Multiannual (5 years)	Political agreement	Government (Ministry of Finance)	Governmental structure No pre-defined action (political pressure to ensure compliance)
	Debt rule	1995	Debt to GDP ratio has to be reduced	Central government	Multiannual (5 years)	Political agreement	Government (Ministry of Finance)	Governmental structure No pre-defined action (political pressure to ensure compliance)
France	Expenditure rule	1998	Real expenditure growth rate	Central government	Annual	Political agreement	Independent (Court of Auditors) and National Parliament	No pre-defined action in case of non-compliance
	Revenue rule	1998	The government has to pre-define	Central government	Annual	Legal act	Independent (Court of Auditors) and	No pre-defined action in case of

Country	Type of rule	Rule in operation (year of introduction)	Definition of the rule (aggregate targeted)	Sector(s) covered	Time frame	Statutory base	Body in charge of monitoring	Enforcement
			the allocation of possible higher-than-expected tax revenue				National Parliament	non-compliance
Germany	Budget balance rule	Before 1990	Budget balance in nominal terms	Central government	Annual	Constitution and legal act	Government (Ministry of Finance) and National Parliament	Possibility of a challenge at Constitutional Court No pre- defined action
	Expenditure rule	Before 1990	Nominal expenditure growth rate	Central and regional governments	Multiannual (5 years)	Political agreement between central and regional governments	Governmental structure (Financial Planning Council with central, regional and local members)	None (Financial Planning Council can criticise rule violations and deviations) No pre-defined action
Ireland	Expenditure rule	2000	Automatic allocation of expenditure to the National Pension Reserve Fund	Central government	Annual	Legal act	Government (Ministry of Finance)	Government No pre-defined action
	Expenditure rule	2004	Nominal expenditure ceiling	Central government	Multiannual (5 years)	Legal act	Governmental structure	Ministry of Finance No pre-defined action
Luxembourg	Expenditure rule	Before 1990	Over the medium-term, nominal expenditure should increase in line with nominal GDP	Central government	Multiannual	Coalition agreement	None	None No pre-defined action
	Debt rule	Before 1990	The debt-to-GDP ratio should remain moderate (new	Central government	Multiannual	Coalition agreement	None	None No pre-defined action

Country	Type of rule	Rule in operation (year of introduction)	Definition of the rule (aggregate targeted)	Sector(s) covered	Time frame	Statutory base	Body in charge of monitoring	Enforcement
			debt only to finance rail infrastructure projects)					
The Netherlands	Expenditure rule	1994	Real expenditure ceiling	General government	Multiannual (4 years)	Coalition agreement	Government (Ministry of Finance)	Government (Ministry of Finance) proposes corrective measures
	Revenue rule	1994	Allocation of higher-than-expected revenues	General government	Multiannual (4 years)	Coalition agreement	Government (Ministry of Finance)	Government (Ministry of Finance) proposes corrective measures
Portugal	Budget balance rule	2001	Budget balance in nominal terms	Central government	Annual	Legal act	Government (Ministry of Finance)	Government (Ministry of Finance) No pre-defined action
Spain	Budget balance rule	2001	Budget balance as % of GDP	General government	Multiannual (3 years)	Legal act	Government (Ministry of Finance) and governmental structure	Government (Ministry of Finance) presents corrective plan with appropriate actions

Source: adapted by the author on the basis of data from EC (2006a).
Note: only national fiscal rules applying to the central/general government are included.

Figure 6.1. National fiscal rules in EMU – index scores



Source: EC (2006a).
Note: only national fiscal rules applying to the central/general government are included. ER=expenditure rule, BBR=budget balance rule, DR=debt rule, RR=revenue rule.

6.5 Conclusions

Two main insights follow from the first look at the institutional design of national fiscal rules in the Euro area. First, the institutional basis is mostly based on political agreement while external monitoring and enforcement are lacking so that the national rules are essentially self-enforced. The implication is that the theory of national fiscal rules should pay close attention to the incentives for compliance with these rules. In particular, the question is whether there are other incentives for compliance than those caused by external monitoring and enforcement. The next Chapter will take up this issue with respect to national expenditure rules, and will stress the political and institutional costs of non-compliance instead of monetary costs in the form of formal sanctions.

The second insight is that apart from the common characteristic that all national fiscal rules are self-enforced by national governments, their institutional design still shows a great deal of heterogeneity across countries. As such, the question to be taken up in Chapters 7 and 8 is whether these differences in design help to explain differences in fiscal outcomes across countries.

Annex 6.1. The questionnaire on national expenditure rules

Expenditure rules in EU Member States – a questionnaire

Note: for the purposes of this questionnaire, the notion of a fiscal rule follows the Kopits and Symansky (1998) definition which states that a fiscal rule is "a permanent constraint on fiscal policy, expressed in terms of a summary indicator of fiscal performance, such as the government budget deficit, borrowing, debt or a major component thereof". The questionnaire is to be answered by the Member States that have introduced expenditure rules within the context of a Medium-Term Expenditure Framework (MTEF) that extends the planning horizon for public expenditure beyond the yearly budgetary cycle, usually by 2 to 4 years.

I Expenditure rule in general

1. Could you please indicate if there is an expenditure rule in your country that is embedded in a MTEF.[70]

☐ yes
☐ no
☐ other, (e.g. there are provisions which cannot be regarded as an expenditure rules in the meaning of the above-mentioned definition, however have the aim of improving expenditure control) please specify:

2. If the answer to question 1 is 'yes', please state when the rule was first introduced. Please also specify the dates of major changes (if any) in the years 1993-2005, and summarise the content of the change.[71]

II Expenditure items, scope, share and target definition

3. Could you please indicate the time span of the rule (e.g. multi-annual rule, 3 years):

70 Note: arrangements such as budget balance rules (e.g. for lower levels of government), a recruitment norm for the government and rules for new labour contracts, that have been classified in European Commission (2003) as expenditure rules (e.g. for EL, AT and PT) do not classify as an expenditure rule according to the definition as used for this survey and could therefore be classified under 'other'.

71 Please specify the specifics of the changes under the relevant questions.

4. To which levels of government does the rule apply? (e.g. general government, central government, regional/local government, social security) :

5. Could you please specify which expenditure items are covered by the rule:

6. Please indicate if any of the below items is explicitly excluded from the rule coverage:
   ☐ Interest payments
   ☐ Cyclically sensitive items (such as unemployment related expenditure) – please specify:
   ☐ Items considered as productive spending (e.g. public investment, R&D) – please specify:

7. Could you please estimate the value of the expenditure items covered by the rule as a percentage of the total expenditure:
   ☐ less than 25% ☐ 25-50% ☐ 50-60% ☐ 60-70% ☐ 70-80% ☐ 80-90% ☐ more than 90%

8. Could you please indicate the method of target definition:
☐ nominal ceiling limiting the expenditure stated in absolute values
☐ real expenditure ceiling defined as a percentage of GDP
☐ nominal expenditure growth rate
☐ real growth rate (price deflated) of expenditure
☐ real growth rate (GDP deflated) of expenditure
☐ other, please describe

9. Could you please approximate what rate of expenditure growth is implied by the expenditure rule as compared to the level of potential growth. Please indicate which of the options comes closest:
   (where X is the potential growth for your country)
☐ 0(zero) – the rule does not allow for any growth of the expenditure

☐ from 0 to X – the rule allows the expenditure to rise, but less than the potential growth rate
☐ X – the rule allows the expenditure to rise in line with the potential growth rate
☐ above X – the rule allows the expenditure to rise above the potential growth rate

Could you please indicate whether with respect to the questions 2-7 anything has changed since 1993, and if so, why these changes occurred?

III Statutory base, monitoring body

10. Could you please indicate which of the following best describes the statutory base of the rule:

☐ coalition agreement

☐ political commitment (e.g. commitment of the Ministry of Finance to limit the expenditure)

☐ provisions enshrined in legal act, e.g. rule incorporated in Public Finance Act

☐ separate statutory act

☐ constitutional clause

☐ other, please describe

11. Who is responsible for implementing the rule?

☐ Ministry of Finance
☐ other, please specify

IV Enforcement mechanism

12. If the rule is not respected, could you please indicate which of the following options best describes who/which body enforces the rule observance:

☐ no enforcment

☐ internal enforcer - Ministry of Finance

☐ politically dependant/governmental structure outside of the Ministry of Finance

☐ National Parliament

☐ independent enforcer, e.g. judiciary branch

☐ independent fiscal body/review panel created to ensure the rule enforcement

☐ other, please specify:

13. Could you please indicate which of the following best characterises the rule in terms of escape clauses:

☐ there are no predefined escape clauses

☐ exceptions to the rule might be granted if the expenditure overruns occur in the sensitive areas (e.g. healthcare)

☐ exceptions to the rule might be granted due to events outside governmental control (e.g. natural disasters, exceptional slowdown in economic growth)

☐ there is a list of events automatically granting the exception from the rule, and if so please specify them:

14. Could you please specify which of the options best describes the actions taken in case of non-compliance

☐ there are no ex-ante defined actions

☐ the enforcer might issue a recommendation to the government calling for the correction

☐ the government is obliged to correct the situation so that the rule is respected

☐ the responsible spending ministry is obliged to offset overruns by expenditure cuts

☐ there is a possibility of imposing sanctions. If so please describe the mechanism (who imposes which sanctions on whom)

☐ other, please specify:

V Experience with the rule implementation

15. Please indicate the years in which the rule has not bee respected during 1993-2005 and summarise the main reasons for non-compliance.

16. Please summarise the overall experience in implementing the rule during the period 1993-2005. In your opinion, can it be assumed that the rule has contributed to improved expenditure control? Did the rule have a restraining impact on expenditure trends?

7 National Expenditure Rules and Expenditure Outcomes

7.1 Introduction

After having developed a measure of national fiscal rules in the previous Chapter, we can now turn to the study of the effects of these rules on fiscal outcomes. This Chapter studies the effects of a specific type of national fiscal rules, i.e. expenditure rules. Focusing on a specific fiscal rule - instead of an aggregate index of all types of national fiscal rules as will be done in Chapter 8 - allows us to build the analysis on a clear theoretical basis. The effects of expenditure rules are studied in a model that aims at capturing their rationale of counterbalancing spending biases. The focus on expenditure rules is moreover motivated by the fact that during the 1990s several EU countries introduced national expenditure rules as a central institutional arrangement in their budgetary management.

This Chapter is a follow-up study to some studies have already used the indices as developed in the previous Chapter for investigating the effect of fiscal rules on fiscal outcomes. Deroose, Moulin and Wierts (2006) use results from the first version of the questionnaire for investigating the effect of expenditure rules on expenditure outcomes. The index of expenditure rules is found to be a statistically significant variable in explaining compliance with national medium term expenditure plans. Results therefore provide support to the view that the effectiveness of fiscal rules depends on their design. Results for the second version of the questionnaire, which extended the approach to all national fiscal rules in EU-25, appeared in EC (2006a) and Ayuso *et al.* (2007). These studies include the indices in augmented fiscal reaction functions of the type that also

appear in Chapter 5 of this thesis. Results again point to a statistically significant link between fiscal rules and fiscal outcomes and suggest that the presence, coverage and design of fiscal rules all matter for explaining fiscal policy outcomes. The study by Debrun and Kumar (2007) however criticises these conclusions by pointing to a lack of incentives for compliance with self-enforced fiscal rules and the issue of reverse causality, as discussed also in Chapter 2 of this thesis. Having pointed to the difficulty of finding adequate instrumental variables for broad indices for national fiscal rules, they then show that – indeed - the effect of fiscal rules on fiscal outcomes is no longer statistically significant once fiscal rules are instrumented in order to overcome issues of reverse causality (Debrun and Kumar, 2007).

Several elements are new in this Chapter in comparison to previous studies. First, we incorporate the conclusion of Chapter 6 that national fiscal rules in EMU are essentially self-enforced, and that we should think about the mechanisms that foster compliance. In this respect, we will argue that incentives for compliance with national expenditure rules depend on the way these rules are embedded in national political and institutional structures.

Second, the approach of being explicit about the underlying theoretical basis and incentives for compliance provides new suggestions for the instrumental variables for expenditure rules. Using these results in an IV-approach sheds new light on the question of the direction of causality between expenditure rules and expenditure outcomes.

Third, apart from the direct effect of expenditure rules in tackling expenditure biases, we also investigate how expenditure rules may condition the response to revenue windfalls or shortfalls. This third extension is motivated by experience that shows that revenue windfalls or shortfalls may lead to procyclical policy reactions in expenditure. In case insufficient budgetary room for manoeuvre has been created, a negative revenue

shock may lead to a downward adjustment in public expenditure in order to prevent a deterioration in the budget balance. Moreover, political pressures for expenditure increases may arise when the budget balance improves due to revenue windfalls in economic good times.[72] In recent years, it has often been asserted that well-designed medium-term expenditure rules may counter such procyclical policy responses on the expenditure side of the budget.[73] In this Chapter we investigate whether empirical support can be given to this claim.

Fourth, on the basis of our overall research question of this thesis, we need to include behavioural responses to expenditure rules. There are already some preliminary indications that countries with stricter expenditure rules (i.e. The Netherlands and Sweden) have at times experienced increases in tax expenditure in order to circumvent the expenditure rules (see van Ende *et al.*, 2004, on the Dutch experience and Boije and Fischer, 2007, on the Swedish experience). However, a major obstacle to systematic research on this issue is the lack of internationally comparable data on tax expenditure. Nevertheless, instead of leaving this issue fully to future research, we aim to make a modest contribution to this topic by extending our baseline model to include tax expenditure as an additional policy instrument, and then by investigating the implications of this model in a case study on The Netherlands.

Finally, it is acknowledged that focusing on a specific type of rule also has drawbacks: results cannot be generalised to other types of fiscal rules and data availability is limited. In this respect, the analysis in this Chapter can be seen as complementary to

72 See for example the EC (2007b, p. 8) Autumn Forecast: 'Public finances are set to improve further this year…This follows, in particular, from stronger than expected revenue growth…However, parts of these windfall gains have been used for additional expenditure this year and next in some Member States'.

73 See for example the Chapter in EC (2006, p. 199) on Fiscal Policy in Good Times: 'Expenditure rules can be an effective tool to curb the tendency for expenditures to grow faster during good times'.

Chapter 8 that uses a broader dataset and includes the index in which all types of national fiscal rules are aggregated into a single time-varying index.

The rest of this Chapter is organised as follows. Section 7.2 contains the baseline model on the intended effects of national expenditure rules, section 7.3 presents the empirical estimations, section 7.4 presents the extension towards including behavioural responses. Section 7.5 concludes.

7.2 The Model

7.2.1 Institutional setting

In the fiscal rules literature a question arises whether to build the approach on theories of the common pool problem, deficit bias or both (e.g. Krogstrup and Wyplosz, 2007). An advantage of focusing specifically on the expenditure side of the budget is that it facilitates the choice of the theoretical basis. First, the original aim of theories of common pool and political fragmentation has been to explain expenditure biases (as in Shepsle and Weingast, 1981) while theories of the deficit bias focus on the budget balance. Second, empirical studies have found convincing support for the impact of political fragmentation on expenditure outcomes (e.g. Perotti and Kontopoulos, 2002, Riciutti, 2004 and Fabrizio and Mody, 2006).

In common pool models, expenditure outcomes are determined, first, by the degree of political fragmentation, and, second, by the rules that govern the decision-making process. The version of Von Hagen and Harden (1994) concentrates on the role of individual spending ministers in reaching the expenditure objectives of their respective ministries. Their model is extended here to analyse the effects of expenditure rules. The

common pool problem arises as in the original model; the new elements concern the way expenditure rules counterbalance spending biases and the inclusion of fiscal shocks on the revenue side. Section 7.2.2 contains the standard arguments that fiscal rules may only be effective if backed by sufficiently strong enforcement, as highlighted by Inman (1996) and formalised by Milesi-Feretti (2003). As indicated already, such an approach would however seem at odds with our observation that national fiscal rules are self-enforced. Section 7.2.3 therefore models the case that seems more realistic in the context of the EU, where the effectiveness of the rules depends on the political and institutional costs of non-compliance.

7.2.2 Compliance due to enforcement and sanctions

In the model of Von Hagen and Harden (1994), a spending bias arises due to the common pool problem in which each individual spending minister maximises its own utility function. The crucial assumption according to the tragedy of the commons is that the tax burden is distributed evenly over all spending ministers (reflecting different constituencies in society) so that each spending minister internalises only a fraction of $1/n$ of *its own* spending bids (where n is the total number of spending ministers). In other words: each spending minister takes the spending bids of his/her colleagues as exogenous, so that he/she only internalises the additional tax burden that is caused by his/her own spending bids. In order to counterbalance the spending bias that arises, we include a fiscal rule in the loss function that punishes expenditure above a threshold as set by the rule.

Given that the common pool problem arises in a static setting, we can restrict the analysis at this point to a one period model (the next section will look at a two period

model). Each spending minister minimises a convex loss function that is increasing in deviations of spending G from its overall desired level G^* and in the overall tax level T divided by the number of spending ministers (reflecting the pre-existing distortion caused by decentralised choice). An underlying assumption is that expenditure (in money terms) translates one-to-one into the expenditure objectives of society through the production function of the government. The spending distortion is addressed through an expenditure rule which applies a penalty (assumed to be quadratic here) when spending is above the threshold r, while p denotes the probability of enforcement of the rule. The function $I(G,r)$ indicates whether the rule is binding or not, such that $I=1$ if $G > r$ (rule is binding) and $I=0$ if $G < r$. As a result, the loss function of each individual spending minister (denoted by subscript i) is:

$$LF(SM_i) = \frac{1}{2}(G_i - G_i^*)^2 + \frac{1}{2}\left(\frac{T_i}{n}\right)^2 + p(G_i - r)^2 I(G_i, r) \qquad (7.1)$$

Note that the choice variables G and T directly enter the loss function, and that it is assumed that they are not subject to uncertainty.[74] In line with our focus on the interaction of revenue shocks and expenditure rules, we do however model uncertainty on the revenue side. Our aim is to try to capture the reality that the largest impact of economic shocks is on the revenue side of the budget, which itself largely stems from the elasticity of revenue to underlying tax bases. The simplest way to do this is to assume that revenue is a function of the tax rate T and a shock to revenue that is normally distributed with mean zero and variance one. The loss function is therefore subject to budget constraint (7.2) below.

74 Even if in practice public expenditure is subject to a small degree of cyclicality mainly due to unemployment transfers and there is uncertainty with respect to the application of open ended regulations. The motivation for abstracting from these aspects reflects our focus on the effects of fragmentation, revenue shocks and expenditure rules.

$$G_i = R_i = T_i + \varepsilon \tag{7.2}$$

At the time when budget is prepared in year *t*-1, the value of the shock is of course unknown. The expectation operator *E* is therefore added in equation (7.3) below so as to reflect uncertainty in revenue developments.

$$G_{i,t-1} = E_{t-1}(R_i) \tag{7.3}$$

Given that $E(\varepsilon) = 0$, the ex ante and ex post solutions will differ only through the materialisation of the shock. Having introduced revenue shocks in the model, it now allows for analysing the ex ante effects of the expenditure rule on expenditure outcomes, as well as the effect of the expenditure rules on the response to revenue shocks. Minimising (7.1) subject to (7.2) with respect to G_i gives:

$$G_i = \frac{G_i^* n^2 + 2n^2 prI(G_i, r)}{n^2 + 2n^2 pI(G_i, r) + 1} + \frac{\varepsilon}{n^2 + 2n^2 pI(G_i, r) + 1} \tag{7.4}$$

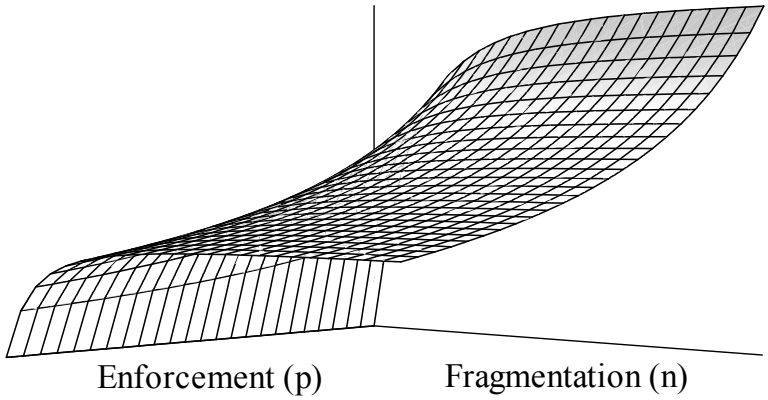
The first term on the right-hand side in (7.4) contains the effect of fragmentation and the expenditure rule on expenditure outcomes. Expenditure is increasing in political fragmentation (i.e. the number of spending ministers), decreasing in the probability that the rule will be enforced, and decreasing in the threshold set by the rule. The second term on the right-hand side shows that expenditure increases/decreases in positive/negative revenue shocks, and that this effect is actually mitigated by the expenditure that has been put in place (which is exactly the hypothesis brought forward in the introduction to this Chapter).[75]

75 Moreover, results also show that a higher degree of political fragmentation actually offsets the upward effect of revenue shocks on expenditure. This effect occurs given that at higher levels of fragmentation, the expenditure bias drives expenditure and tax rates up towards *G**. Positive revenue shocks are then not used to stimulate expenditure beyond *G**, given that this would create losses according to the loss function (7.1), so that they are used to reduce tax rates. In practice this effect that spending ministers would have achieved all their spending objectives can be considered to be of minor relevance.

We can now illustrate the combined effects of political fragmentation (that drives the expenditure bias) and expenditure rules on expenditure outcomes. We start by setting the threshold of the fiscal rule to the solution that would have been obtained by a social planner. The socially optimal solution can be obtained by by setting *n* at 1 in (7.1) (i.e. assuming away the bias caused by fragmented decision making due to political fragmentation) and by skipping the fiscal rule from the loss function. This gives us the value of the threshold of $G_i = \frac{1}{2} G_i^*$. The combined effect of spending bias and an expenditure rule, relative to the threshold as set by the rule, can now be illustrated graphically as in Figure 7.1. It shows the impact on expenditure (on the Z-axis) of the degree of fragmentation (i.e. the number of spending ministers) and the probability of enforcement of the rule on expenditure, while keeping other variables constant.[76] The curved plane represents the solutions for expenditure as they depend on political fragmentation *n* and the probability of enforcement of the rule *p*. Expenditure is increasing above the social optimum as political fragmentation increases, and is decreasing towards the social optimum for higher levels of enforcement of the rule. Overall, this shows graphically how fiscal rules can offset (part of) the expenditure bias if incentives for compliance with the rule are put in place.

76 Setting shocks ε at zero, target expenditure at 1, the threshold at 0.5, and I=1.

Figure 7.1 Expenditure as a function of fragmentation (*n*) and the probability of enforcement of the rule (*p*)



7.2.3 Compliance due to political and institutional costs

The approach to fiscal rules as outlined above can be criticised. As shown already in Chapter 6, expenditure rules in EU are usually enforced by the same authority that co-ordinates expenditure decisions, i.e. the Ministry of Finance. A question then arises why policy makers would stick to such self-enforced rules instead of following their own biased incentives. See for example Debrun and Kumar (2007), who note that institutions matter only to the extent that it is intrinsically costlier to ignore them (and adopt biased policies) than to stick to optimal plans.

A first part of the reply to the critique has already been given in Hallerberg, Strauch and von Hagen (2007, p. 110): '…the threat to break up the coalition is an effective one for enforcing budget targets in ideologically dispersed multi-party governments'. The argument is that in the EU expenditure rules are often based on coalition agreements by multi-party governments. Non compliance by individual spending ministers may then give rise to political costs given that the minister of finance attaches strong political weight to compliance with the agreement.

Our argument is that the effectiveness of expenditure rules may depend on the national institutional setting in yet another way, which concerns the effect of reforms of performance budgeting on expenditure management. Performance budgeting can be seen as a deal between the ministry of finance and the spending ministries. Spending ministries are given more autonomy in achieving policy objectives that have been specified ex ante. In return, they are held accountable for achieving these public objectives within the budget constraint (Schick, 2003). Within this setting, a tight budget constraint is a precondition for performance budgeting to work since increased flexibility requires certainty over the funds that are available to reach the stated targets (Diamond, 2003). Hence, in the context of performance budgeting, each spending ministry knows that continued non-respect of the expenditure rule may imply losing part of its autonomy in carrying out decentralised policies. This link between devolution of spending authority and expenditure limits is of practical relevance in EU countries: the available empirical data indicate that EU countries that are more advanced in introducing institutional reforms related to performance budgeting also introduced expenditure rules (Wierts, 2005).

The essence of these arguments is that overspending relative to the threshold may have repercussions in the next period, given that the coalition may fall or given that spending ministries may become subject to intensified fiscal scrutiny by the ministry of finance. We therefore include a feedback mechanism in the loss function of each spending minister: the higher is the degree of overspending the rule in period 1, the lower is spending in period 2. Achieving expenditure objectives in period 1 thus involves a trade-off with achieving expenditure objectives in the next period. The loss function for individual spending ministers now becomes as in (7.5) below, where the variable a reflects the perception about the extent to which overspending may have repercussions.

$$LF(SM_i) = \frac{1}{2}(G_{1,i} - G_i^*)^2 + \frac{1}{2}\left(\frac{T_{1,i}}{n}\right)^2 + \frac{1}{2}(G_{2,i} - a(G_{1,i} - r)I(G_{1,i}, r) - G_i^*)^2 + \frac{1}{2}\left(\frac{T_{2,i}}{n}\right)^2 \quad (7.5)$$

Subject to:

$$G_{1,i} + G_{2,i} = T_{1,i} + \varepsilon_1 + T_{2,i} + \varepsilon_2 \text{; and} \quad (7.6)$$

$$E_{t-1}(R_{1,i} + R_{2,1}) = T_{1,i} + T_{2,1} \quad (7.7)$$

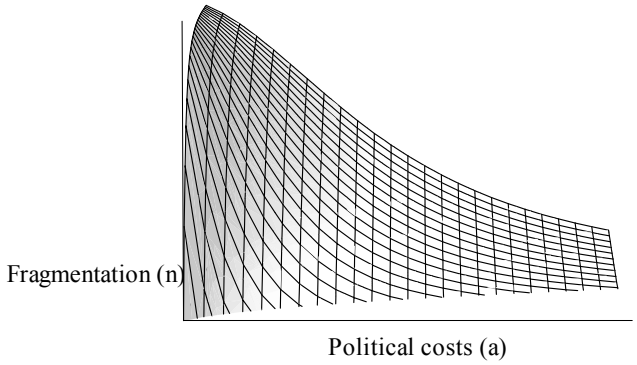
Minimising (7.5) with respect to (7.6) and solving for the choice variables $G_{1,i}$, $G_{2,i}$ and $T_{1,i}$ gives the solution (with $I = (G_{1,i}, r)$):

$$G_{1,i} = \frac{2n^2 G_i^* + a^2 r I^2 + arI - aIG_i^*}{a^2 I^2 + 2aI + 2n^2 + 2} + \frac{\varepsilon_1 + \varepsilon_2 + a\varepsilon_1 I + a\varepsilon_2 I}{a^2 I^2 + 2aI + 2n^2 + 2} \quad (7.8)$$

As with the model in the previous section, the implication is that expenditure is increasing in fragmentation and revenue shocks, and decreasing in the repercussive effects of excess spending as well as the threshold established by the fiscal rule. As before, stronger incentives to comply with the rule also mitigate the effect of revenue shocks on expenditure developments.

Figure 7.2 again visualises the combined effects of political fragmentation (spending bias) and the political/ institutional repercussions of overspending on expenditure in period 1, relative to the threshold set by the rule (which is $\frac{1}{2}G^*$, as before; note that for expenditure below the threshold the rule is not binding so that we are back to the unrestrained solution). As in the previous section, the effect of expenditure bias is clearly visible for low *a* (i.e. little or no incentive to comply with the rule). Moreover, expenditure decreases towards the social optimum for higher values of *a*.

Figure 7.2 Expenditure as a function of fragmentation (*n*) and political/institutional repercussions of non-compliance (*a*)



7.3 Empirical estimations

This section investigates the main implications of the model as presented in the previous section. Section 7.3.1 takes a first look at expenditure rules in place in EU countries. Section 7.3.2 presents baseline results. Section 7.3.3 presents results from a two-stage regression in which expenditure rules are endogenous to political, institutional and initial fiscal variables.

7.3.1 Expenditure rules in EU countries

Studies that have analysed the institutional design of national expenditure rules in EU countries include EC (2003), Deroose *et al.* (2006) and EC (2006a). This Chapter draws on the dataset collected by EC (2006a). For the purposes of this Chapter, expenditure rules were included only when they apply to the central or general government and when they have been in force for several years, in order to ensure sufficiently long time

series. Table 7.1 summarises the institutional design of the six countries rules that have been included in the survey.[77]

Overall, the data confirm that the rules are self-enforced: they are mostly based on political agreement while external enforcement is lacking. At the same time, the overview in Table 7.1 also shows relevant differences in institutional design concerning the definitions of the expenditure rule and on monitoring and enforcement. For example, for some countries no predefined enforcement mechanisms are in force while for others there is an obligation for corrective action. These differences are reflected in the index scores for the institutional design of the rules based on the methodology as outlined in Chapter 6. Table 7.2 shows these index values on the basis of the following criteria: (1) statutory base; (2) monitoring body; (3) enforcement body; (4) enforcement mechanisms and (5) media visibility of the rule.

77 In order to maximise data availability two countries – i.e. Denmark and Sweden – are included that are not part of the Euro area.

Table 7.1 Expenditure rules in EU countries, 1990-2005

Country	Rule in operation (year of introduction)	Definition of the rule (aggregate targeted)	Sector(s) covered	Time frame	Statutory base	Body in charge of monitoring	Enforcement (body&actions in case of non-compliance)
Denmark	1994	Real expenditure growth rate	General government	Multiannual	Political agreement	Government (Ministry of Finance)	Government (Ministry of Finance), No pre-defined action
Finland	1999	Real expenditure ceiling	Central government	Multiannual (5 years)	Political agreement	Government (Ministry of Finance)	Governmental structure proposes corrective measures
France	1998	Real expenditure growth rate	Central government	Annual	Political agreement	Independent (Court of Auditors) and National Parliament	No pre-defined action i
Germany	Before 1990	Nominal expenditure growth rate	Central and regional governments	Multiannual (5 years)	Political agreement between central and regional governments	Governmental structure (Financial Planning Council with central, regional and local members)	None (Financial Planning Council can criticise rule violations and deviations);
The Netherlands	1994	Real expenditure ceiling	General government	Multiannual (4 years)	Coalition agreement	Government (Ministry of Finance)	Government (Ministry of Finance) proposes corrective measures
Sweden	1996	Nominal expenditure ceiling	Central government	Multiannual (3 years)	Legal act	Independent (Court of Auditors) and National Parliament	Government, Obligation to correct by appropriate actions

Source: adapted by the author on the basis of data from EC (2006a).
Note: only national expenditure rules applying to the central/general government are included.

Table 7.2 Values of the expenditure rule index

Country	Expenditure rule index
Denmark	0.84
Finland	0.56
France	0.55
Germany	0.67
The Netherlands	0.75
Sweden	0.95

Source: EC (2006a).

7.3.2 Specification, estimation strategy and baseline results

In addition to the data on the expenditure rule index, empirical estimations in this section use the dataset on national budgetary plans and outcomes from Chapter 4. This database contains data for national fiscal plans and outcomes on (primary) expenditure, revenue and the budget balance, as well as macro-economic variables up to three years into the future. This dataset is particularly suitable for analyzing the effects of expenditure rules given that it includes expenditure objectives as formulated by the countries themselves, so that heterogeneity in political preferences across countries can be taken into account (in terms of equation (7.1), target expenditure G^* will not be homogeneous across countries). The dependent variable in the regressions therefore measures expenditure bias as the difference between observed and planned changes in primary expenditure. Moreover, the database captures the idea of revenue shocks as the difference between observed and planned changes in revenue. Finally, the medium-term time frame of the dataset matches with the multi-annual time-frame of national expenditure rules as shown in Table 7.1.

In testing the effects of expenditure rules on expenditure outcomes, the main econometric issues to be addressed are that: (i) the index for the expenditure rules does

not show time variability so that it is collinear with the fixed-effects in panel regressions;[78] and (ii) the argument that the rules may be endogenous to fiscal outcomes so that the expenditure rule index should be instrumented. These issues are related: if the second issue can be addressed, a time varying index of expenditure rules can possibly be estimated, which can then be included in a fixed-effects regression. The IV-approach will be left to section 7.3.3. Here, we start by investigating the question of whether expenditure rules condition the response to revenue shocks. Hence, we are interested in the following equation (see Milesi-Feretti *et al.*, 2002, and Fabrizio and Mody, 2006, for applications of this approach on the effects of institutions on fiscal outcomes):[79]

$$FEex_{i,t,h} = (1 + \gamma(ER_i - \overline{ER}))(\phi FEre_{i,t,h}) + \alpha_i + t_t + h_h + x'_{i,t,h}\beta + \varepsilon_{i,t,h} \quad (7.9)$$

Where *FEex* denotes the forecast error in primary expenditure, measured as the difference between observed changes in expenditure and planned changes in expenditure (i.e. positive numbers indicate overspending relative to objective). *FEre* measures differences between observed and planned changes in revenue. Subscript *i* refers to country, *t* to year and *h* to planning horizons in medium-term budgetary plans from one to three years (i.e. for each country one medium-term expenditure plan is available each year, which contains plans and outcomes for expenditure one, two and three years ahead). Apart from dummies for countries α and years *t* that account for unobserved heterogeneity across countries and the effect of shocks common shocks, a dummy *h* is included to account for the fact that uncertainty over medium-term

78 One possibility for including the original index would have been to leave out the fixed effects. Such a solution is not feasible here, however, given that an F-test shows that the fixed effects are jointly highly significant, even if many control variables are included in the regression.

79 The original contribution in this field is Blanchard and Wolfers (2000).

expenditure developments is expected to increase with the forecast horizon from one to three years ahead. The vector x' represents a set of control variables to be included in the regression. Our initial set of control variables contains the forecast errors in the real growth rate, a measure of political fragmentation (the number of spending ministers) and the starting level of public expenditure (given that countries with high expenditure ratios may be more under pressures to respect expenditure plans),

As indicated, our main interest is in the interaction of the expenditure rule index *ER* with revenue windfalls/shortfalls *FEre*. The expenditure rule index is included in (7.9) as the *difference* with its average value $\overline{ER}$. The coefficient ϕ on the direct effect of revenue windfalls/shortfalls on the forecast error in expenditure therefore measures the effect of *FEre* when the expenditure rule index is *at* its average value. This effect is conditioned by the interaction effect with the expenditure rule index. As a result, the overall effect of the forecast error in revenue on the forecast error in expenditure is the partial derivative of *FEex* with respect to *FEre*, as in equation (7.10) below. The overall response to revenue shocks then differs across countries in line with the strength of the expenditure rule. Our hypothesis is that a higher value of the expenditure rule index mitigates the upward/downward effect of revenue windfalls/shortfalls on primary expenditure relative to what was planned.

$$\frac{dFEex_{i,t,h}}{dFEre_{i,t,h}} = \phi + \gamma\phi(ER_i - \overline{ER}) \tag{7.10}$$

Apart from including relevant control variables in estimating (7.9), another issue is how to formulate the dynamic specification. As a result a large number of variables could potentially be included in the regression, which may decrease the efficiency of our estimations. We therefore adopt a general-to-specific modelling approach, and start by including all control variables and lagged dependent variables in a dynamic

specification of up to two lags.[80] We subsequently reduce the model in size by excluding variables that are the most insignificant. Moreover, as an additional check the Akaiki Information Criterion (AIC) is calculated in every step. This criterion contains a trade-off between goodness of fit and the parsimony of the model as measured by the number of parameters, with a lower value indicating a better overall trade-off. Results confirm that every step of dropping a statistically insignificant variable indeed results in a lower value of the AIC, and thereby a better fit according to this criterion. In this way, we end up with a more parsimonious baseline regression.

Yet another econometric issue is that of possible endogeneity between forecast errors in expenditure and those in GDP and revenue.[81] Higher/lower expenditure than planned could possible influence the path for GDP itself, and thereby revenue developments. The natural candidates for instrumental variables are lagged values of the projection errors in real GDP and revenue, since they are correlated with the projection errors of these variables in period *t*, but cannot be influenced by the projection errors in expenditure ahead in period *t*. We therefore used as instruments the first and second lag of *FEre* and *FErealGDP*, and tested for endogeneity using the Durbin-Wu-Hausman test.[82] Results show that the null hypothesis of exogenous regressors is not rejected with a p-value of 0.55, so that we do not pursue this path further.

Baseline results for equation (7.9) are reported in Table 7.3, with the coefficients as indicated in the Table corresponding to those in (7.9). Estimates are obtained by using the least squares dummy variable estimator (no lagged variables remained in our

80 See for example Verbeek (2004, 57) and the references therein on the general-to-specific estimation strategy.

81 Heteroscedasticity and autocorrelation are not an issue. Re-running the same regression but without robust standard errors produces only very minor changes in the standard errors and does not change any of the conclusions as reported in the main text.

82 The stata command is ivendog.

specification; hence it can be estimated consistently by OLS). Coefficients have expected sign and are statistically significant. The coefficient on the forecast error in revenue indicates that, all other things equal, an unexpected revenue windfall/shortfall leads to higher/lower expenditure of 0.17% GDP. Coefficients on the forecast error of GDP indicate higher expenditure in response to GDP shortfalls, which is in line with findings in Chapter 4. This could partly capture a denominator effect (lower GDP implies a higher expenditure to GDP ratio), forecast biases in expenditure measures and GDP (in line with the analysis in Chapter 4: too optimistic forecasts for GDP and expenditure measures) and the role of the automatic stabilisers on the expenditure side of the budget (mainly unemployment expenditure). The negative coefficient on the initial level of public expenditure indicates that, ceteris paribus, countries with a higher expenditure to GDP ratio show more compliance with their expenditure plans. This possibly reflects that fact that in these countries there is more political willingness to implement planned fiscal strategies. The positive coefficients on the dummies for the time horizons for two and three years ahead confirm that the expenditure error is almost linearly increasing with the forecast horizon, which is in line with previous findings of Chapter 4.

Our main interest is in the interaction of the expenditure rule index with revenue shocks. The negative coefficient indicates that stronger expenditure rules mitigate the effect of positive revenue shocks on expenditure developments. The overall magnitude of this effect is conditional on the index value of the expenditure rule, according to equation (7.10). Table 7.3 therefore separately reports the effect when the expenditure rule index is at its highest value and when it is at its lowest value (see the rows where is says '*Response to FEre when ER is at maximum/minimum value'*). As is shown, in addition to being statistically significant, the conditioning effects of the expenditure rule are also

quantitatively relevant. In the country with the strongest expenditure rule, a 1% GDP revenue windfall or shortfall leads to virtually no change in the projection error for expenditure (effect is -0.06% GDP). In the country with the weakest expenditure rule, revenue windfalls/shortfalls of 1% GDP however lead to an increase/decrease in spending of about 0.3% GDP.

A further investigation can be made by investing whether the response is different in good times (revenue windfalls) and bad times (revenue shortfalls). On this question, Beetsma and Giuliodori (2008) find that EU countries respond in a procyclical manner to an unexpected worsening of the business cycle, while an improvement in the business cycle does not lead to any systematic fiscal reaction. The explanation given is that as EU governments generally fail to tighten during good times, this forces them into correction in bad times. Our results in Table 7.4 go in the same direction. The forecast error and interaction effect are not jointly significant in good times (indicating that there is no systematic expenditure response to revenue windfalls) but are jointly highly significant in bad times.[83]

83 The null that the parameters are both zero is not rejected for revenue windfalls (p-value of 0.48) and strongly rejected for revenue shortfalls (p-value of 0.00). Moreover, the interaction effect is also separately significant for revenue shortfalls.

Table 7.3 Baseline results

	Forecast error primary expenditure ratio (FEex)
Forecast error revenue ratio (FEre) (ϕ)	0.17
	(2.5)**
Interaction expenditure rule and forecast error revenue ratio (FEre*(ER-ER average) ($\gamma\phi$)	-0.34
	(-2.1)**
Forecast error real GDP (FErealGDP) (vector β)	-0.23
	(-3.9)***
Initial level primary expenditure (vector β)	-0.13
	(-2.0)**
DU t=2 (h_2)	0.006
	(4.4)***
DU t=3 (h_3)	0.012
	(6.2)***
	Conditioning effect
	of FE revenue ratio:
Response to FEre when ER is at maximum value	-0.06
Response to FEre when ER is at minimum value	0.27
Range	0.33
Time dummies included?	Yes
Country dummies included?	Yes
Observations	237
R-squared within	0.56
R-squared between	0.12
R-squared overall	0.42

Notes: the estimation method is fixed effects panel regression with robust standard errors; t-statistics are in parenthesis; ***,** and * indicate statistical significance at 1%, 5% and 10% level. Countries included are FR, BE, AT, DE, DK, EL, ES, FI, IE, LU, IT, NL, PT, SE, UK. The time period under consideration is 1998-2005. Indicated coefficients are from equation (7.9)

Table 7.4 Results for revenue windfalls and shortfalls

	Forecast error primary expenditure ratio (FEex)	
	Revenue windfalls	**Revenue shortfalls**
Forecast error revenue ratio (FEre) (ϕ)	0.11	0.27
	(0.9)	(1.0)
Interaction expenditure rule and forecast error revenue ratio (FEre*(ER-ER average) ($\gamma\phi$)	0.013	-1.43
	(1.0)	(-1.7)*
Forecast error real GDP (FErealGDP) (vector β)	-0.16	-0.25
	(-2.1)**	(-2.1)**
Initial level primary expenditure (vector β)	-0.18	0.05
	(-2.3)**	(0.4)
DU t=2 (h_2)	0.005	0.01
	(3.1)***	(4.1)***
DU t=3 (h_3)	0.013	0.016
	(4.9)***	(4.8)***
	Conditioning effect of FE revenue ratio:	
Response to FEre when ER is at maximum value	0.12	-0.68
Response to FEre when ER is at minimum value	0.11	0.68
Range	-0.01	1.36
Time dummies included?	Yes	Yes
Country dummies included?	Yes	Yes
Observations	153	82
R-squared within	0.60	0.51
R-squared between	0.07	0.48
R-squared overall	0.35	0.37

Notes: the estimation method is fixed effects panel regression with robust standard errors; t-statistics are in parenthesis; ***,** and * indicate statistical significance at 1%, 5% and 10% level. Countries included are FR, BE, AT, DE, DK, EL, ES, FI, IE, LU, IT, NL, PT, SE, UK. The time period under consideration is 1998-2005.

Moreover, additional insight is provided by the interaction effect of the expenditure rule. Countries with strong rules show a countercyclical response in bad times (increase in expenditure in response to revenue shortfall), while countries with weak expenditure rules show a procyclical response. A possible explanation is that the fiscal policies of countries with stronger expenditure rules are usually guided by more stable and ambitious medium term expenditure paths. Therefore, they have created more fiscal room for manoeuvre, so that there may be no need for corrective action in case of a negative revenue shock. Countries with weaker expenditure rules, on the other hand, could be more credit constrained, so that they need to adjust immediately when revenues turn out lower than projected.

7.3.3 Endogenous fiscal rules

We now address the argument that fiscal rules may be endogenous to fiscal outcomes. The argument has come in different forms. In most models, the role of fiscal rules is to counter deficit and spending biases, so that rules may have been introduced as a result of dissatisfaction with fiscal outcomes (e.g. high initial expenditure or debt ratios). Debrun and Kumar (2007) explain rules as mechanisms to signal competence, so that governments that are intrinsically more disciplined are more likely to use stringent fiscal rules. Inman (1996) argues that both rules and outcomes may be driven by a third variable of political preferences.

According to these arguments and our discussion in section 7.2, three variables could be used as instrumental variables: (1) the reliance on performance information in the

budget[84] (given that more autonomy for spending ministers may go hand in hand with tight expenditure limits); (2) the starting point for public expenditure (the higher the initial level of expenditure, the larger the need for a strong expenditure rule); and (3) the degree of political fragmentation (the larger the spending bias, the larger the need for a rule).

Table 7.5 shows the results of a simple regression of the expenditure rule index on these three variables. The fixed effects are now left out of the regression due to the collinearity with the expenditure rule index.[85] Results suggest that especially the first two hypotheses seem to matter: countries with larger public sectors and a stronger reliance on performance budgeting have indeed introduced stronger expenditure rules. At the same time, the relevance of political fragmentation (captured by the number of spending ministers) is also confirmed, even if the effect is statistically significant at the 10% level only. Overall, whereas previous studies highlighted difficulties in finding appropriate instruments for a broad index for all types of fiscal rules (Debrun and Kumar, 2007) or institutions more generally (see e.g. Fabrizio and Mody, 2006), these results indicate that focusing on a specific type of fiscal rule may facilitate the choice of instrumental variables.

84 Data on the degree of performance information in the budget are taken from European Commission (2004). The underlying source is the OECD/World Bank database on budgetary institutions. The variable measures the percentage of the budgetary programmes for which performance information is included in the budget (ranging from zero to one).

85 Note that this collinearity has been the reason why direct inclusion of the index in a fixed effects regression was not possible in the first place.

Table 7.5 Endogenous expenditure rules

	Expenditure Rule Index
Performance Budgeting	0.46
	(9.3)***
Starting Ratio Primary Expenditure	2.92
	(7.2)***
NSM	0.0051
	(1.7)*
Constant	-1.26
	(-7.6)***
Observations	171
R-squared	0.67

Notes: the estimation method is OLS with robust standard errors; ***, ** and * indicate statistical significance at 1%, 5% and 10% level. t-values are indicated in brackets. Countries included are FR, BE, AT, DE, DK, EL, ES, FI, IE, LU, IT, NL, PT, SE, UK. The time period under consideration is 1998-2005.

The fitted values of the expenditure rules index now show some time variation so that they can be included directly in the fixed effects regression, in addition to the interacted variables. Results are reported in column (1) in Table 7.7 for the baseline regression. As can be seen, the fitted value for expenditure rule index itself is *not* statistically significant. Moreover, the interaction effect using the fitted values of the expenditure rule index shows similar values as before, but is no longer statistically significant. These results deserves a closer inspection, however, since the first stage regression already showed a strong correlation between the expenditure rule index and the initial level of public expenditure, reflecting the fact that countries with higher expenditure ratios have introduced stronger expenditure rules. The statistical insignificance of our expenditure rule index could therefore potentially be due to a problem of multicollinearity with the initial level of public expenditure.

We therefore formally test for multicollinearity of the expenditure rule index with the other explanatory variables. This can be done by regressing the index on all the other

explanatory variables, as in Table 7.6 below. The second column reports the proportion of variance of the expenditure rule index that is independent of all other explanatory variables. A value lower than 0.1 presents a clear indication of multicollinearity (Hamilton, 2006, p. 212). Results therefore confirm multicollinearity between the expenditure rule index and the initial level of public expenditure.

Table 7.6 Multicollinearity of expenditure rule index

Variable	Independent variance
Starting Ratio Primary Expenditure	0.05
Forecast error real GDP (FErealGDP)	0.37
Forecast error revenue ratio (FEre)	0.62
Interaction expenditure rule and forecast error revenue ratio (FEre*(ER-ER average))	0.79

Notes: results for dummies for countries, time horizons (t=1…3) and years are not reported.

The presence of multicollinearity shows that there is not enough information in our dataset to efficiently estimate the effect of expenditure rules on expenditure outcomes, while keeping the starting level of primary expenditure constant (given that the two variables move together). Column (2) in Table 7.7 therefore again reports results when the initial level of expenditure is dropped from the regression. The expenditure rule index now shows the expected negative sign and becomes statistically significant. This result suggests that expenditure rules can have a restraining effect on expenditure outcomes, but that we do not know whether this effect represents a causal effect of the rule or a policy response to high expenditure to GDP ratios. Moreover the interaction effect still shows the same sign and order of magnitude as in the baseline regressions: a procylical response in expenditure of 0.3% GDP to revenue shocks of 1% of GDP in countries with no or weak expenditure rules, and no response in countries with strong

expenditure rules. The coefficients are no longer statistically significant, however, so that our overall evidence on the conditioning effect of expenditure rules is mixed.

Table 7.7 Baseline results including fitted values of the expenditure rules index

	Forecast error primary expenditure ratio (FEex)	
	(1)	**(2)**
Forecast error revenue ratio (FEre) (ϕ)	0.19	0.19
	(2.4)**	(2.4)**
Interaction expenditure rule and forecast error revenue ratio (FEre*(ER-ER average) ($\gamma\phi$)	-0.28	-0.26
	(-1.1)	(-1.1)
Expenditure rule index (ER)	0.07	-0.048
	(0.9)	(-1.9)*
Forecast error real GDP (FErealGDP) (vector β)	-0.20	-0.19
	(-2.8)***	(-2.8)***
Initial level primary expenditure (vector β)	-0.37	Dropped
	(-1.6)*	
DU t=2 (h_2)	0.006	0.006
	(3.5)***	(3.5)***
DU t=3 (h_3)	0.010	0.010
	(4.6)***	(4.6)***
	Conditioning effect of FE revenue ratio:	
Response to FEre when ER is at maximum value	0.01	0.02
Response to FEre when ER is at minimum value	0.27	0.27
Range	0.26	0.25
Time dummies included?	Yes	Yes
Country dummies included?	Yes	Yes
Observations	168	168
R-squared within	0.56	0.55
R-squared between	0.07	0.04
R-squared overall	0.14	0.20

Notes: the estimation method is fixed effects panel IV regression with robust standard errors; t-statistics are in parenthesis; instruments for the expenditure rule index are as reported in the previous table; ***,** and * indicate statistical significance at 1%, 5% and 10% level. Countries included are FR, BE, AT, DE, DK, EL, ES, FI, IE, LU, IT, NL, PT, SE, UK. The time period under consideration is 1998-2005.

7.4 Circumventing expenditure rules: a case study

Expenditure rules can be avoided by resorting to items not covered by the rule or specific tax concessions that substitute for direct expenditure (i.e. tax expenditure). Such a behavioural response is to some extent similar to circumventing in the form of creative accounting as discussed in the context of budget balance rules in Chapter 3. At the same time, it also differs given that creative accounting represents *hidden* non-compliance, while an expenditure rule can be fully met while at the same avoiding it through tax expenditure or other forms of fiscal policy that fall outside the scope of the rule. Hence, whereas creative accounting under a budget balance rule has been attributed to a lack of fiscal transparency (Milesi-Ferretti, 2003) expenditure rules can be circumvented even in countries with highly transparent budgets. The best examples for investigating these issues are therefore countries that have introduced strict expenditure rules, but at the same time have highly transparent budgets, such as Sweden and The Netherlands.

Due to the existence of an expenditure rule, tax expenditure and expenditure outside the ceilings can become subject to less fiscal scrutiny than expenditure covered by the rule. To some extent this may be seen as a desirable effect, e.g. if the aim is to promote an increase in productive expenditure that has deliberately been put outside the scope of the rule (e.g. public investment, provided that its social benefits outweigh its social costs). At the same time, several authors have pointed out that, very often, differences in budgetary scrutiny on tax expenditure and regular expenditures lead to an increase in tax expenditure beyond a level at which its social benefits outweigh the social costs (Kraan, 2004, Brixi *et al.*, 2004). These costs include, inter alia, a loss of transparency, erosion of the tax base and providing open-ended government spending. The OECD best practice guidelines on off budget and tax expenditures therefore recommend to

include tax expenditure in the total expenditure cap set by the rule or in a special tax expenditure cap of each year.

In this context, this section first aims to capture the incentives for circumventing national expenditure rules by resorting to tax expenditure. This part is based on an extension of the model as presented in 7.2. It then summarises existing studies on the interaction between expenditure rules and tax expenditure in Sweden and provides a new case study on the case of The Netherlands.

7.4.1 A simple model

In modelling behavioural responses to an expenditure rule, we draw on the model of Milesi-Ferreti (2003) on creative accounting under a fiscal rule, with some relevant adjustments. In the model of Milesi-Ferreti, the incentive for creative accounting arises from the stringent fiscal rule. The scope for creative accounting depends on the transparency of the budget. The use of creative accounting is held back (in comparison with unrestrained fiscal policy) by the probability that creative accounting is detected so that the fine related to non-compliance that has to be paid. In the model here, the incentive for tax expenditure arises from the expenditure rule. However, there is no fine related to tax expenditure given that it does not represent 'hidden' non-compliance. Circumventing behaviour may thus take place even if fiscal policy is highly transparent. Nevertheless, under an expenditure rule a suboptimal level of tax expenditure may arise since each spending minister does not internalise the full social costs of its tax expenditure (the set-up is such that tax expenditure would be zero in the absence of an expenditure rule given that its social costs are higher than for direct expenditure).

As before, we assume that an expenditure rule is in place for which a penalty is attached to expenditure above the threshold *r* (with *p* being the probability of enforcement of the rule; as before *I*=1 when the rule is binding while *I*=0 when the rule is not binding). The extension in comparison with the model as presented in section 7.2.2 is that spending ministers have an additional instrument at their disposal for achieving their spending objectives, i.e. tax expenditure as represented by G^t. Hence, tax expenditure contributes to achieving expenditure objectives, but it also brings with it social costs (i.e. lower transparency of the budget, smaller tax base) as reflected by the parameter α on tax expenditure. Each spending minister however internalises only a fraction 1/*n* of these social costs given that they will be spread out over all spending ministers (as with general taxation). The loss function now becomes:

$$LF(SM_i) = \frac{1}{2}(G_i + G_i^t - G_i^*)^2 + \frac{\alpha}{2}\left(\frac{G_i^t}{n}\right)^2 + \frac{1}{2}\left(\frac{T_i}{n}\right)^2 + p(G_i - r)^2 i(G_i, r) \qquad (7.11)$$

Subject to the budget constraint $T_i - G_i^t = G_i$ (we abstract from the role played by revenue shocks as analysed in section 7.2).

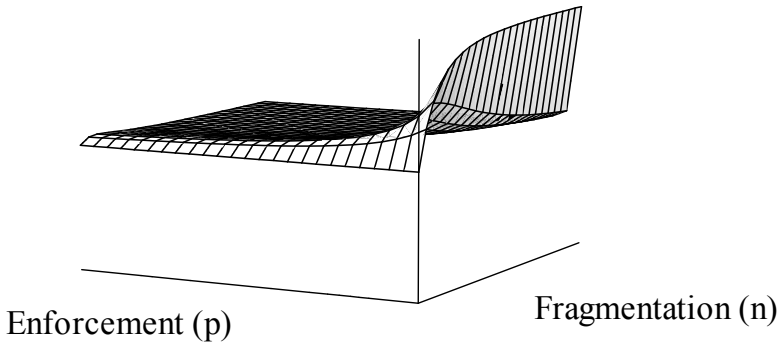
Minimising with respect to the choice variables regular expenditure G_i and tax expenditure G_i^t, and setting the derivatives simultaneously to zero give the solution. The solution for regular expenditure becomes:

$$G_i = \frac{\alpha G^* n^2 + 2n^2 prI + 2n^4 prI + 2\alpha n^2 prI}{\alpha + \alpha n^2 + 2n^2 pI + 2n^4 pI + 2\alpha n^2 pI}$$

The implication for regular expenditure can most easily be seen by comparing the case of a non-binding rule (*p=0*) with the case of a fully binding fiscal rule (*p*, the probability of enforcement, is 1). In the first case, the solution simplifies to the unrestrained

solution of expenditure bias due to political fragmentation, of $G_i = \frac{n^2}{n^2+1}G^*$. As soon as the fiscal rule gets enforced to some degree (i.e. *p* starts to increase), the spending minister chooses to just satisfy the expenditure rule, as illustrated graphically in Figure 7.3.[86] This effect occurs given that due to the penalty introduced by the fiscal rule, tax expenditure now effectively becomes the choice variable for expenditure levels above the threshold *r*.

Figure 7.3 Expenditure as a function of the probability of enforcement (*p*) and fragmentation (*n*)



The solution for tax expenditure is:

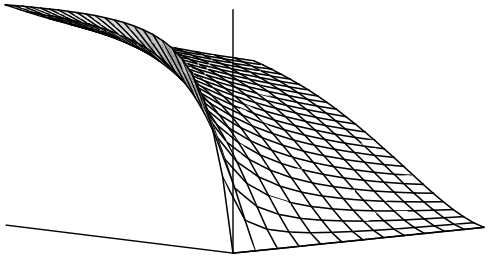
$$G_i^t = -2n^2 pI \frac{r - G^* n2 + n^2 r}{\alpha + \alpha n^2 + 2n^2 pI + 2n^4 pI + 2\alpha n^2 pI}$$

Again, the implications can best be investigated by comparing the case of a non-binding rule (p=0) with the case when the rule becomes binding. In case the fiscal rule is non-binding, there is no need to resort to tax expenditure so that it is zero. As soon as the

86 The figure has been drawn while setting G^*=1, t=0.5 and α=1.

fiscal rules starts to bind, tax expenditure is increasing the degree of political fragmentation, decreasing in the social costs of tax expenditure, and increasing in the threshold set by the rule. Figure 7.4 illustrates the impact of fragmentation n (the number of spending ministers) and the social costs α attached to tax expenditure on overall tax expenditure. As can be seen, tax expenditure decreases only very slowly in its social costs α. This result stems from the assumption that each individual spending ministers does not fully internalise these costs, given that they spill over to the cabinet as a whole.

Figure 7.4 Tax expenditure as a function of its social costs (α) and political fragmentation (n)



7.4.2 Data availability on tax expenditure

Overall, the model in the previous section shows that an effect of expenditure rules on outcomes may appear in two possible ways: (1) an effect on regular expenditure if non-compliance is sufficiently costly and (2) a circumventing effect that increases in the probability of enforcement of the rule.

A difficulty in empirically investigating the behavioural responses to expenditure rules arises from limited data availability. The scope of expenditure rules differs from country to country while expenditure outside the rule is often not specifically recorded. Furthermore, internationally comparable data tax expenditures do not exist. See Brixi *et al.* (2004) and Kraan (2004): there is no international agreement on the appropriate benchmark tax for measuring tax expenditure. As a consequence, the literature has focused on the experiences of individual countries, as in the book of Brixi *et al.* (2004) that includes several country studies.

Theory predicts that the interaction between expenditure rules and tax expenditure is the strongest in countries with strict expenditure rules such as Sweden, Denmark and The Netherlands (see the values of the expenditure rule index in Table 7.2). Indeed, several papers have discussed the link between expenditure rules and tax expenditure for the case of Sweden (Hansson Brusewitz and Lindh, 2005 and Boije and Fischer, 2006). The bottom line of these papers is that there have been some indications of pressures for increases of tax expenditure, but the effect is not large enough to change to conclusion of an overall (very) favourable experience with the Swedish expenditure rules.[87] Nevertheless, the Swedish government has taken measures in the Budget Bill for 2007 to strengthen the ability of the expenditure ceiling to limit expenditures by proposing a reduction of tax expenditures that constitute a close substitute for direct expenditures (update of Sweden's convergence programme, 2006).

87 See Hansson Brusewitz and Lindh (2005): 'Tax expenditures have however been relatively small in relation to the total expenditure level'. Boije and Fischer (2007) state: 'Tax subsidies have been used, although to a limited extent, as a remedy by the Swedish government when the expenditure ceilings have been threatened'.

7.4.3 Case study The Netherlands

This section adds one observation on the interaction between expenditure rules and tax expenditure, by studying the case of The Netherlands. The experience of The Netherlands is particularly interesting given its long experience with stringent expenditure rules since 1994. Respondents to different surveys on expenditure rules showed a strong agreement that the Dutch expenditure rules have contributed to budgetary control (EC, 2003; Deroose *et al.*, 2006). It therefore represents a clear case where incentives for circumventing could also be expected. Such an investigation is facilitated by the transparency of the Dutch budget as reflected in the relative long history on recording tax expenditures in The Netherlands.

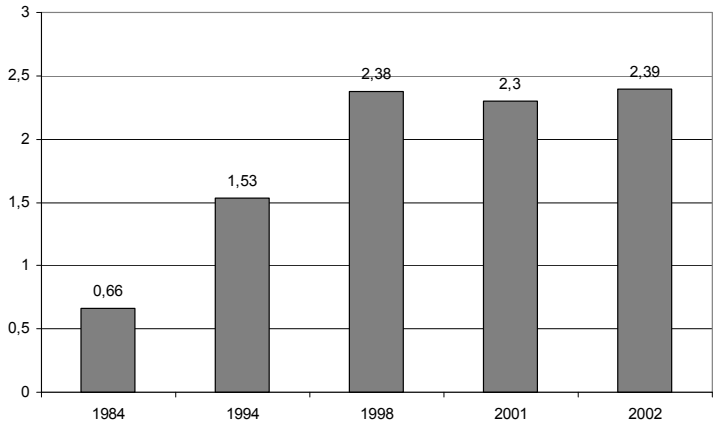
Starting in the year 1999, the Budget Memorandum includes a separate annex on tax expenditures. Until 2002, the annex only included tax expenditure in the wage and income tax and corporation tax. From 2003, tax expenditures for indirect taxes are also included. These reported expenditures constitute undisputable tax expenditure according to the definition of tax expenditures as used in the Dutch context, following a 1987 report on tax expenditure.[88] However, a study group of high government officials recently advised to also include disputable tax expenditures, with a view to showing the costs of all fiscal measures on the revenue side of the budget (Studiegroep Begrotingsruimte, 2006).

Figure 7.5 shows the evolution of the tax expenditures over time, according to the narrow definition (for which a longer time series is available), while Table 7.8 shows recent data that include disputable tax expenditures. Taken together, they show a steep

88 The definition of tax expenditures as adopted by this working group is: 'a government spending in the form of a loss or deferment of tax revenue that is due to a tax provision insofar as that tax provision is not in accordance with the benchmark tax structure of the law'.

increase in the use of tax expenditures over the 1990s, and a stabilisation and small decline from 2001 onwards. The reasons for the increase over the 1990s have been documented by van den Ende *et al.* (2004, p 137). According to these authors, a main reason for the steep increase has been that: '…the budgetary policy of the Kok-1 administration favoured tax expenditure over direct expenditure because tax expenditure ceilings were introduced for direct expenditures'.

Figure 7.5 Tax expenditures in The Netherlands (narrow definition, % GDP)



Source: van den Ende *et al.* (2004).

Table 7.8 Tax expenditures in The Netherlands: narrow definition and 'grey' area (% GDP)

	2001	2002	2003	2004	2005	2006	2007
	Reported in Budget Memorandum						
Tax expenditure[1]			2.7	2.4	2.2	2.2	2.1
	Not reported in Budget Memorandum						
Pension premiums employees	0.4	0.5	0.6	0.6	0.6	0.6	0.6
Mortgage deduction[2]	1.3	1.4	1.6	1.6	1.6	1.6	1.6
Different tax credits (including labour)	1.4	1.5	1.6	1.8	1.9	1.9	1.9
Total			6.5	6.4	6.4	6.3	6.2

Source: adapted from Studiegroep begrotingsruimte (2006).
Notes: [1]according to the strict definition; [2]sum mortgage deduction and 'eigenwoningforfait'.

From 1994 onwards, the increase in tax expenditure was facilitated by the combination of prudent budgeting and the start of the economic upswing that led to windfalls on the revenue side of the budget. It was the practice of the Kok-1 administration to take a discretionary decision each year on the funds available for tax reductions (while the Kok-2 administration moved to a fixed formula for dividing windfalls).

Following recommendations in a report by the Court of auditors in 1999, tax expenditures have become subject to increased budgetary scrutiny as from the Budget Memorandum 2001. Criteria have been introduced so as to check whether tax expenditures are the most effective and efficient instrument for achieving a particular objective. Moreover, the Balkenende administrations have moved to the full operation of the automatic stabilisers on the revenue side of the budget, thereby also limiting the scope for using revenue windfalls for additional tax expenditures. It should also be noted that the possibility of directly including tax expenditures in the expenditure ceilings was considered but has not been implemented. The reason is that projections for tax expenditures are less accurate and subject to more uncertainty than regular expenditures. In addition, no data on realisations are available (Studiegroep begrotingsruimte, 2006).

Even if the level of tax expenditures has declined slightly in recent years, its level still has been high enough to have triggered a debate about their costs and benefits. Recent contributions by Stevens (2006) and Boot (2006) question the effectiveness of several individual fiscal measures and point to costs such as an erosion of the tax base and increases in the administrative burden. Hence, there is at least some indicative support for the implication of the theoretical model that expenditure rules may cause an increase in the amount of tax expenditures to rise to a suboptimal level. As indicated, this effect

occurred only during the early years after the introduction of the Dutch expenditure rules, due to differences in budgetary scrutiny on different forms of expenditure.

7.5 Conclusions

This Chapter has investigated the effects of self-enforced expenditure rules on expenditure outcomes. According to theory, such rules can restrain expenditure biases if the political and institutional costs of non-compliance are sufficiently high. Results in this Chapter confirm previous findings that stronger expenditure rules are correlated with a lower expenditure bias. In addition, results also show that expenditure rules mitigate the response of expenditure to revenue shocks, especially in bad times.

The more difficult question concerns the causality from expenditure rules to expenditure outcomes. On this question, results show that a focus on a specific type of fiscal rule (here: expenditure rule) facilitates the choice of instrumental variables: countries with higher initial expenditure ratios, a stronger devolution of expenditure control to line ministries and a higher degree of political fragmentation have introduced stronger expenditure rules. Using these results for estimating the causality of rules on outcomes shows, very clearly, that we cannot separate the effect of the rules from the effect of high expenditure to GDP ratios, due to a problem of multicollinearity. Results therefore provide support to the hypothesis that the institutional design of expenditure rules reflects political willingness to address high ratios of expenditure to GDP. Expenditure rules then restrain the expenditure bias, and also mitigate the effect of shocks on expenditure developments.

Finally, we recall that that this thesis investigates intended effects of fiscal rules as well as circumventing behaviour. On this aspect, our extension of the baseline model on

expenditure rules shows that such rules may lead to increases in tax expenditure beyond a level that can be considered socially optimal. Due to a lack of internationally comparable data on tax expenditure, we limit our empirical analysis on this issue to a case study on the Netherlands. Results show that the increase in tax expenditure levelled off once tax expenditure had been made subject to intense fiscal scrutiny, so that it became a less obvious option for circumventing the strict expenditure rules. A policy lesson is that the introduction of stringent expenditure rules should coincide with immediate efforts to close loopholes.

8 From Deficits to Surpluses: Rules, Institutions and Political Variables

8.1 Introduction

The introduction of fiscal rules during the 1990s, both at national level and supranational level, can be considered as a policy response to fiscal deficit and spending biases that have characterised fiscal outcomes during the 1970s and 1980s. The previous Chapters have analysed the role of fiscal rules in addressing these biases. In Chapter 4, 5 and 7, the focus has been on the effects of *specific* fiscal rules on fiscal outcomes (i.e. the ex ante part and the debt rule of the EU fiscal framework and national expenditure rules). In this Chapter we broaden the scope of our analysis to all types of rules that could possibly affect fiscal outcomes. This includes an overall index of the EU fiscal rules and an aggregate index of national fiscal rules. Moreover, we broaden the analysis in another way, given that we include in our analysis a broad range of economic, political and institutional variables that could be expected to affect fiscal outcomes. This will help to put the role played by fiscal rules into perspective relative to other policy options for political and/or institutional reform.

The ultimate aim of fiscal rules is to improve fiscal outcomes, by countering the deficit bias. Another innovative element in this Chapter is that we start the analysis fiscal outcomes instead of the existence of fiscal rules. Using a broad data set on economic, political and institutional variables we ask why an increasing number of countries managed to overcome the fiscal deficit bias by running fiscal surpluses.[89] Given that

89 As will be shown in section 8.2, the stylised fact is that since 1998, 12 out of 22 OECD countries have recorded budgetary surpluses for periods of at least three years.

many of the countries that have recorded fiscal surpluses are outside the Euro area, we need to broaden the scope of the countries under consideration in this Chapter to the whole of the OECD. As with the increase in explanatory variables under consideration, this extension is needed to put results in perspective; it does not change the main focus of this thesis on the Euro area.

Our focus on the re-emergence of fiscal surpluses in several countries has also been motivated by the increasing emphasis of policymakers on the need to move towards budgetary surpluses in the years ahead. Several studies have provided estimates of future expenditure pressures due to ageing populations (e.g. Economic Policy Committee, 2001 and 2006). On the basis of this input, many policy institutions have issued recommendations on the need to move to fiscal surpluses during the years ahead. For example, the European Commission has calculated required primary surpluses for the coming years that range from 1.6% of GDP in Austria to 9.2% of GDP in Greece within the Euro area (EC, 2006). This perception that budgetary surpluses are needed in order to prepare for the costs of ageing populations is not limited to EU countries. See for example McKissack and Comley (2005) on the Australian experience and for an overview of experiences of industrial countries in pre-funding known future fiscal pressures. Our analysis adds a political-economy perspective to these long term sustainability calculations, by focusing on the political-institutional structure within which the policy advice needs to be implemented. A specific question is therefore whether differences in long-term expenditure pressures help to explain why some countries have already recorded fiscal surpluses while others have not.

The remainder of this Chapter is organised as follows. Section 8.2 briefly reviews the facts on how budgetary surpluses have re-emerged in some countries during the last decade but not in others, and puts our discussion on fiscal surpluses in a historical

perspective. Section 8.3 briefly recalls the literature on the variables that help explaining fiscal outcomes, and classifies them into economic, political and institutional variables (including fiscal rules as an institutional variable). Section 8.3.3 discusses our dataset that is used in the empirical estimations of section 8.4. Section 8.4 first investigates whether the explanatory variables as highlighted in section 8.3 show different *values* for countries and periods in which surpluses or deficits were recorded. It then investigates whether fiscal policy behaviour is different for surpluses, by estimating whether the *impact* of the variables mentioned is different. The analysis is completed by investigating whether country specific factors may explain the appearance of surpluses in some countries but not in others. Section 8.5 analyses why countries may want to respond to known future fiscal pressures by running fiscal surpluses now. It then asks whether differences in fiscal pressures due to ageing populations may explain why some countries have been running surpluses while others have not. Section 8.6 concludes.

8.2 Budgetary surpluses in OECD countries: a brief history

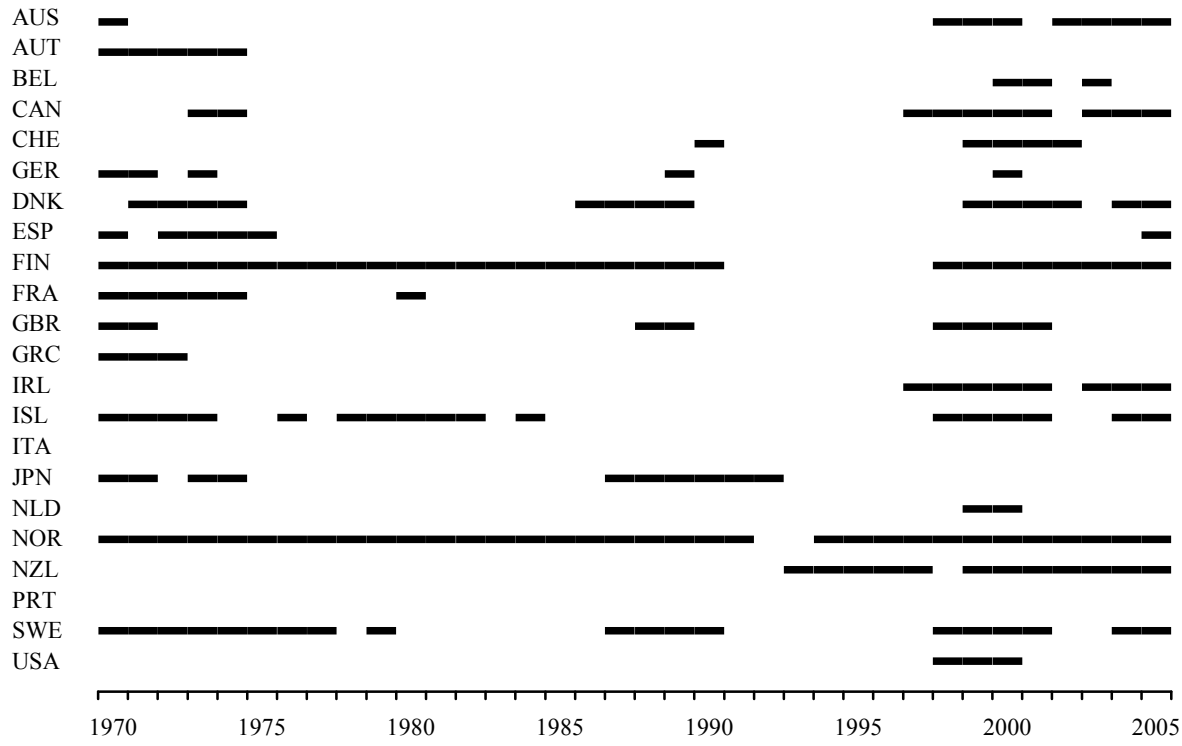
During the 1950s and 1960s, budget surpluses were as common as budget deficits (Grilli *et al.*, 1991). This changed from the 1970s onwards, when budget deficits became a regular feature of fiscal policies in almost all industrials countries. As a result, a large literature has developed that attempts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

In this Chapter, we depart from the traditional perspective on budget deficits and focus on budgetary surpluses instead.

Figure 8.1 provides an overview of the periods during which OECD countries have recorded budgetary surpluses, as indicated by the black marks in the timelines for each country. It confirms that budgetary surpluses were still very common during the first half of the 1970s. Out of 22 OECD countries, 9 were running surpluses for at least three years in a row. Between 1975 and 1998 budgetary surpluses disappeared in most countries. The most obvious exceptions to this rule are Norway and Finland that maintained surpluses up to the early 1990s.[90] A remarkable turnaround in fiscal outcomes took place around 1998/1999, when surpluses emerged or re-appeared in many OECD countries. Out of 22 countries included in the sample, 12 have been running a budgetary surplus for at least 3 years in a row during the last decade. This group of countries consists of Australia, Canada, Denmark, Finland, Iceland, Ireland, New Zealand, Norway, Sweden, Switzerland, the UK and the US. In several of these countries, surpluses have disappeared again recently (most notably in the US), so that by 2005, 10 countries were running a budgetary surplus, including three countries of the Euro area (Finland, Spain and Belgium).

90 In addition, Sweden, Japan, Iceland and Denmark also continued recording surpluses for shorter periods of time.

Figure 8.1 Budgetary surpluses in OECD countries 1970-2005



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

The timelines in Figure 8.1 allow for a very brief review of the history of the dominant thinking on fiscal surpluses that serves to put the current discussion in a historical perspective. Buchanan and Wagner (1977) provide an overview of the fiscal principles according to 'the old time fiscal religion' (i.e. the 'pre-Keynesian period'). The central principle was that public finance and private finance are analogous, and that the norms for prudent conduct are similar. Leaving exceptional circumstances such as wars aside, public were supposed to be financed by taxation, just as private spending was supposed to be financed from income. As a result, surpluses were normally produced during peace-time, and these surpluses were used to retire the debt created during war emergencies.

The disappearance of budgetary surpluses in the early 1970s has obviously inspired the subsequent literature on the deficit bias. In the view of Buchanan and Wagner (1977),

Keynesian thinking has destroyed the old time principles of fiscal prudence. Indeed, Keynesian theories have had a profound influence on normative thinking about how fiscal policy should be run. Nevertheless, this argument cannot account for the fact that surpluses disappear specifically in the early 1970s and why debt increased much more in some countries than in others (see Alesina and Perotti, 1994, for an elaboration of this argument). Positive political economy theories have provided explanations as to why observed fiscal policy may deviate from this normative benchmark. This literature has pointed to the role of political and institutional variables in explaining a deficit bias in fiscal policy outcomes (see also Chapter 2). Section 8.3 will provide further details on the main explanatory variables.

The question not yet addressed in the literature is why budgetary surpluses re-emerged in several countries by the end of the 1990s. The historical perspective allows to put forward several hypotheses that will be tested formally in the remainder of this Chapter. First, as usual in budgetary policy, growth may matter: surpluses re-emerged at a time of the boom of the late 1990s. Second, the re-emergence of surpluses took place after a decade during which increasing emphasis was put on institutional reform in many Member States. For example, von Hagen (2006) notes that in the EU, budgetary institutions improved over the 1990s. At the same time, the use of national fiscal rules increased markedly in EU countries (see Chapter 6). Thirdly, it should be noted that there are two countries (Norway and Finland) that have maintained budgetary surpluses through almost the entire period under investigation, so that country specific factors may play a role, such as oil reserves in Norway and the decision to build up pension assets within the public sector in Finland. Finally, during the last decade many studies have pointed out that surpluses would be needed for keeping fiscal policies on a

sustainable path in the light of ageing populations. Perhaps this policy advice has been successful in influencing policy outcomes?

8.3 Explaining budgetary outcomes by economic, political and institutional variables

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

Our starting point is the large literature on fiscal reaction functions that include lagged debt (due to a sustainability motive) and the output gap (due to a stabilisation motive) as the main explanatory variables (see also Chapter 5 and the references therein) and then augment these reaction functions by political and institutional variables. To save space we immediately focus on the political and institutional variables that may help to explain budgetary outcomes, by summarising evidence in recent empirical studies. On this basis, the section ends with an overview of our database of economic, political and institutional variables that will be used for the empirical estimations of section 8.4.

8.3.1 Political variables

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

elections. In this respect, Chapter 2 already contains a discussion of the political origins of fiscal indiscipline. The aim of this section is to provide guidance on the variables that should be included in the empirical estimations in the sections that follow.

Political fragmentation

Political fragmentation is expected to influence budgetary outcomes through the common pool problem. The more fragmented is the system of budgetary decision-making, the weaker are the incentives for each participant to internalise the full tax burden of its spending bids. The original version of the common pool problem as in Shepsle and Weingast (1981) explains expenditure pressures, and not necessarily a tendency towards budget deficits.[91] However, in recent years a variant of the common pool problems has been developed that explains the speedy disappearance of budgetary surpluses due to a voracity effect (seen Tornell and Lane, 1999, and Lane, 2003). In a situation of surpluses, the incentive to act prudently is low, as each party knows that if it refrains from using the surplus to implement its desired policy, competing parties will do so. In addition political fragmentation may also explain why deficits persist despite general recognition that adjustment is needed. The reason is a "war of attrition" between e.g. the coalition parties, waiting for each other to concede (Alesina and Drazen, 1991).

In the recent literature, a common indicator for measuring fragmentation is the number of spending ministers (NSM). Perotti and Koptopolous (2002) find that this indicator

91 A related issue is the literature on the effect of electoral rules and political regimes on fiscal policy outcomes. Persson and Tabellini (2002) find evidence that presidential regimes lead to smaller governments, while majoritarian elections lead to smaller governments and smaller welfare programs (see also Chapter 2). The underlying theories and the evidence in this strand of the literature concentrate on public expenditure, and not on the budget balance, so that they are outside the scope of the current Chapter.

matters for explaining expenditure outcomes and to a lesser extent also for the budget balance. Therefore, we expect surpluses to coincide with fewer spending ministers.

Political instability and polarisation

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

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

Ideology

Different predictions have been made concerning the impact of ideology on budgetary outcomes. Intuition may suggest that leftwing governments run deficits, while rightwing governments may run surpluses or smaller deficits. However, in the model of Persson and Svensson (1989) - in which a rightwing government favours low spending while a

leftwing government favours a large government - the rightwing government has an incentive to run deficits in order to restrain the spending possibilities of its successor.

Regarding the empirical evidence, Perotti and Kontopoulos (2002) find that ideology is not an important determinant of the deficit when using panel estimations.[92] However, Alt and Lassen (2006) find that rightwing government is associated with higher government debt when using a cross-sectional approach that focuses on average values over the 1990s.[93] As a result, we expect to find mixed evidence on the link between surpluses and ideology.

Elections

Political competition can be modelled on the basis of partisan motives (i.e. the desire to implement preferred policies) and opportunistic motives (i.e. the desire for re-election). The latter motive has given rise to the literature on political business cycles, starting from Nordhaus (1975). On the empirical side, there is some evidence of a political budget cycle in transfers in OECD countries (see Drazen, 2000, for an overview of the literature). At the same time, the political budget cycle seems especially strong in young and developing democracies, whereas it is less apparent in established democracies (Brender and Drazen, 2005a), that are the main focus in this Chapter.[94] Looking from a different angle, we investigate whether the political budget cycle differs between surplus and deficit countries.

92 Ideology does however impact on transfers in an intuitive way (leftwing governments spend more on transers).

93 As a variable for rightwing government they use the 'proportion of years from 1990-1999 with a rightwing party in office'.

94 Moreover, Brender and Drazen (2005) show that budget deficits decrease chances for re-election.

8.3.2 Institutional variables

With dissatisfaction about persistent deficits increasing during the 1980s, attention naturally shifted towards fiscal rules and institutions that could act as a counterweight against existing spending and deficit biases. The role of rules and institutions in influencing fiscal policy outcomes should therefore be seen in combination with the underlying political factors that cause the spending and deficit biases in the first place.[95] Focusing on *only* the political or the institutional variables should therefore cause a problem of omitted variable bias.[96]

Much of the empirical work on the interaction between budgetary institutions and fiscal outcomes has used aggregate indices of budgetary institutions that cover the stages of budget formulation, approval and implementation. Many studies in this line of research have confirmed that aggregate indices of budgetary institutions matter during different sample periods and for different groups of countries (Von Hagen, 1992, Gleich, 2003, Yläoutinen, 2006). Here, we focus instead on two specific institutional variables that have figured prominently in the recent literature: fiscal rules and transparency.

Fiscal rules

So far, our analysis has separately analysed the effects of the EU fiscal rules and the national fiscal rules on fiscal outcomes. In this Chapter, we intend to include the effects of both types of rules simultaneously. For the national fiscal rules, we use the aggregate index of all types of national fiscal rules as it has been developed by EC (2006a). This

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

96 For example, the theoretical and empirical analysis in Chapter 7 on spending biases include the role of political fragmentation, as measured by the number of spending ministers, as well as the role of expenditure rules in countering these biases.

index is based on the methodology as developed in Chapter 6. In this index all subindices for different types of national fiscal rules are weighted by the share of the budget that they apply to. In this way, a time-varying index of all national fiscal rules in place in each EU country has been constructed, which takes the overall effect of these rules into account. Moreover, we also investigate separately the effect of national expenditure rules, given that expenditure rules are preferred by some authors since they target the part of the budget that is most directly under the control of the government (i.e. the expenditure side).

Regarding the EU fiscal rules, Chapter 4 has already investigated the effect of the ex ante rule of the framework (i.e. the obligation to present a medium term fiscal plan that moves towards a sustainable medium-term fiscal position) while Chapter 5 has investigated the effects of the debt rule. Our motivation for studying these less well researched parts of the EU fiscal framework was that a large literature had already focused on the 3%-limit for the budget balance (see also Chapter 2). In the context of this Chapter, we *do* however need to include the part of the framework that can be expected to have the largest impact on fiscal outcomes, which is the obligation to correct deficits above the threshold of 3% GDP. In capturing this impact, we draw on the indicator developed by Golinelli and Momigliano (2006). This time varying indicator takes into account the distance between the actual deficit and the threshold value of 3% GDP. Moreover, it captures the fact that incentives for compliance were the largest in the run-up to 1998, when the decision on EMU participation was taken (see also Chapter 5 on this issue, that shows strong differences in the impact of the EU fiscal rules in the pre and post 1998 periods). The variable measuring the impact of the EU fiscal rules is therefore set equal to zero in the years before the EU rules were first introduced, or if the deficit is below the 3% threshold. For the years 1992-1996 it is

equal to the difference between the deficit and 3% of GDP, divided by the number of years leading up to 1997 (as the decision on EMU was taken in 1998 on the basis of data for 1997) and then reduced by the expected change in interest expenditure in the following year (given that interest rate developments were heavily influenced by the expected convergence path as EMU cam closer). After 1996, it takes into account that in the original version of the Stability and Growth Pact excessive deficits had to be corrected in the year after their original recognition.

Transparency

According to Alt and Lassen (2006) fiscal transparency may matter for fiscal outcomes given that with more transparency, incumbent governments have less of an incentive to feign competence by issuing debt. The main finding from their cross-sectional estimations is that, indeed, a higher degree of fiscal transparency is associated with lower public debt and deficits. In our estimations, we use the transparency index as constructed by Von Hagen (1992) and Hallerberg *et al.* (2001).

8.3.3 Database

On the basis of this literature review, we have constructed a broad database of economic, political and institution variables that could be relevant for explaining fiscal outcomes. Obviously, given that we draw on a large range of theories, we also collected data from a wide range of sources. An advantage of our broad approach is that it allows us to compare the impact of fiscal rules on fiscal outcomes with the impact of other variables. A drawback is that the coverage of different variables may differ across time and countries. This especially applies to the institutional variables, as described below.

Data on budgetary and economic variables are taken from the OECD Economic Outlook database. Our sample covers the years 1970 until 2005 and includes the following countries: Australia, Austria, Belgium, Canada, Switzerland, Germany, Denmark, Spain, Finland, France, United Kingdom, Greece, Ireland, Iceland, Italy, Japan, Netherlands, Norway, New Zealand, Portugal, Sweden and the United States.

Political variables are taken from a range of sources, as described in Table 8.1, where we report the details for each variable (i.e. how it is defined, whether it varies across countries and time, data availability across countries and time, and the source). Political fragmentation is measured by the number of spending ministers (NSM) and by the number of government changes per year (GOVCHAN). The first variable captures size fragmentation and the second captures time fragmentation. These variables are time-varying. Moreover, coverage across the countries in our database is rather broad. The ideology of the government is measured by the so-called Schmidt-index (Ideological Compostion of the Government, or ICG). Its values measure the political spectrum between dominance of right-wing parties to dominance of left-wing parties. The political business cycle is measured by an election dummy (ELECT) and the remaining number of years until the next election (YRCURNT). Most of the political variables are available up to 2003.

Regarding the institutional variables, we mainly focus on fiscal rules, as discussed already. As such, we include the measure of the EU fiscal rules as suggested by Golinelli and Momigiano (2006), the composite index of national fiscal rules as discussed also in Chapter 6, and our index of expenditure rules. Moreover, as an additional institutional variable we also include the index of fiscal transparency of Hallerberg *et al.* (2001). The coverage of these institutional variables is more limited than that of the political variables. Data are available only for the EU countries in our

dataset and since the early 1990s onwards. As indicated in Chapter 6, cross country coverage on fiscal rules is however expected to develop further now that the OECD has included our approach to measuring national fiscal rules in its survey on budgeting practices and procedures.

Table 8.1 Political and institutional variables: data availability and sources

Variable	Do data vary both across countries and over years?	Data availability	Source
NSM: Number of spending ministers	Yes	All countries in sample, 1970-2003, but shorter period for ESP (1977-2003), GRC (1975-2003), ISL (1980-2003) and PRT (1977-2003)	Mierau *et al.* (2006), except for ISL and CHE: 1980-1998, own calculations based on Woldendorp *et al.* (2000) and 1999-2004: own calculations based on various editions of Yearbook of European Journal of Political Research.
GOVCHAN: Number of government changes per year	Yes	All countries in sample 1970-2003, but shorter period for ESP (1977-2003), GRC (1974-2003) and PRT (1976-2003)	Armingeon et al (2005)
ICG: Cabinet composition (Schmidt-Index): (1) hegemony of rightwing parties (gov_left=0), (2) dominance of rightwing (and centre) parties (gov_left<33.3), (3) patt between left and right (33.3<gov_left<66.6), (4) dominance of socialdemocratic and other left parties (gov_left>66.6), (5) hegemony of socialdemocratic and other left parties (gov_left=100).	Yes	All countries in sample 1970-2003, but shorter period for ESP (1977-2003), GRC (1974-2003) and PRT (1976-2003)	Armingeon *et al.* (2005)

Variable	Do data vary both across countries and over years?	Data availability	Source
ELECT: Dummy; 1 if elections in SECOND half of year t OR FIRST half of t+1.	Yes	All countries in sample 1970-2003	Own calculations based on Armingeon *et al.* (2005)
YRCURNT: Years left in current term (only full years are counted. Thus, a "0" is scored in an election year, and n-1 in the year after an election, where n=length of term).	Yes	All countries in sample, 1975-2004, but shorter period for ESP (1978-2004), FIN (1976-2004), ITA (1976-2004) and PRT (1976-2004)	Beck *et al.* (2001)
EU fiscal rules	Yes	EU countries, 1992-2005	Measured as suggested by Golinelli and Momigliano (2006)
FISCRULE: composite index including design and coverage of fiscal rules	Yes	EU countries, 1990-2005	EC (2006a)
EXPRULE: composite index including design and coverage of expenditure rules	No	EU countries, 1990-2005	EC (2006a)
TRANSPARENCY: index number for EU Countries	Time variability consists of two observations (1991 and 2001)	Data available for AUT, BEL, GER, DNK, ESP, FIN, FRA, GBR, GRC, IRL, ITA, NLD, PRT, SWE. Assumed coverage is 1990-2004	Von Hagen (1992) and Hallerberg *et al.* (2001)

8.4 Empirical evidence

We now turn to the empirical evidence as to why surpluses emerged in some countries but not in others, focusing on the role of economic, political and institutional variables. We test three complementary hypotheses:

The *values* of the explanatory variables differ between deficits and surpluses. Based on the review in section 8.3, one may expect that surpluses coincide with less political fragmentation, stronger fiscal rules, more transparency, and so on. Section 8.4.1 discusses the empirical evidence along these lines.

The *impact* of explanatory variables may differ for deficits and surpluses. According to this hypothesis, budgetary behaviour may differ between surplus and deficit countries (countries may respond differently to, e.g., the economic cycle or the degree of political fragmentation). To test this hypothesis, section 8.4.2 estimates fiscal reaction functions for the budget balance, while section 8.4.3 focuses on the link between government expenditure and revenue.

Surpluses may be due to country specific factors that are not covered by our explanatory variables. If, e.g., the presence of oil would explain the emergence of surpluses in Norway, then one would expect this effect to be reflected in the country fixed effect of fiscal reaction functions. See section 8.4.4.

A crucial issue is how to divide our sample into a surplus and a deficit group. We are not aware of any study that has tackled this issue before. In order to be able to test the robustness of our results, we therefore use several criteria to make the distinction. We select *countries* that have recorded surpluses or deficits over extended periods of time, and we concentrate on the *periods* during which surpluses have been recorded. When grouping countries, we look at accumulated deficits, or government debt. In our

baseline specification, we consider a country as 'surplus' if it is both among the 11 countries with lowest debt ratio in 2003, and among the 11 countries with the largest drop of the debt ratio between 1980 and 2003. If a country fails on both criteria, it is labelled 'deficit'; if it fails on one, we consider it a doubtful case and therefore drop it from the sample.[97] Our alternative selection criterion labels the 11 countries with the lowest debt ratios in 2003 as surplus, and the other 11 as deficit.[98] When grouping periods, we take as alternative criteria the nominal, the cyclically-adjusted and the primary balance. When the budget is in surplus for at least 3 consecutive years, it is qualified as a surplus period. One and two years of surpluses are considered 'coincidents' and are dropped from the sample.

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

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

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

8.4.1 Surpluses and economic, political and institutional variables

In order to test our first hypothesis of whether the values of our range of explanatory variables differ between surplus and deficit observations we use Hotelling's T-square statistic. It is a generalisation of Student's t-statistic that is used for multivariate hypothesis testing.[99] In interpreting the results, it should be kept in mind that our data set on economic and institutional variables extends to the whole set of OECD countries over the sample period 1980-2003 while data on institutional variables (fiscal rules and transaparency) only cover EU countries for the period 1990-2005. For this reason, the tests are run separately for the groups of economic, political and institutional variables, resulting in a homogenous sample size for each group. In interpreting the results of these tests, it should also be kept in mind that they do not indicate a direction of causality, as they simply measure whether averages differ between groups of observations. Results are reported in Table 8.2 (distinguishing between surplus/deficit countries) and Table 8.3 (focusing on periods, and reporting results for the nominal balance, the cyclically-adjusted balance and the primary balance). Overall, the tests confirm that economic, political and institutional variables all differ between surpluses and deficits, that these differences are mostly as theoretically predicted, and that they are statistically significant. Turning to the groups of variables, the following results emerge.

99 In a previous version of the Chapter we used ranksum tests given that the assumption of normally distributed variables is generally violated. Results are almost identical.

Economic variables

The average debt ratio is much lower for surplus countries, which is a result of our grouping of countries based on debt ratios. The debt ratio is also lower for surplus periods (except for the primary balance where the difference is very small), which suggests that surpluses are not primarily a reaction to high debt ratios. Results for the output gap show large differences only when focusing on surplus/deficit periods, with surpluses emerging in 'good times' (this results even holds for the cyclically-adjusted balance). Finally, while surplus and deficit countries appear to have the same level of long term interest rates (8.7 versus 8.5) the comparison for periods shows much lower interest rates for surplus periods (7.4 versus 9.3 for the nominal balance).

Political variables

Turning to the results for political variables, it turns out that both surplus countries and periods are characterised by less political fragmentation (measured by the number of spending ministers and showing an average value of 14 for surplus countries and 18 for deficit countries) and more political stability (measured by the number of government changes per year). Furthermore, surpluses are recorded by governments that are somewhat less rightwing even though the difference in ideological composition is small. Overall, the difference in the vector of means is statistically significant only for the distinction based on countries and the primary balance for the periods. An earlier version of this Chapter however showed that the differences are also *individually* statistically for the number of spending ministers, with surplus countries characterised by a lower degree of political fragmentation according to this indicator (Brosens and Wierts, 2007).

Institutional variables

Results for the institutional variables (for EU countries only, 1990-2005) show similar results for surplus countries and time periods. Surpluses coincide with stronger fiscal rules, as measured by the aggregate composite index of national fiscal rules as well as the expenditure rule index, and also with a higher degree of fiscal transparency. The only exception to the last result occurs when surpluses are measured according to the primary balance (in this case the level of the transparency index is equal for surplus and deficit periods).

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

Table 8.2. Does the value of variables differ between surplus and deficit countries?

	Surplus (1)	**Deficit (2)**
Economic variables		
Debt ratio (% GDP)	48.7	76.6
Output gap (% of GDP)	-0.89	-0.70
Long interest rate	8.8	8.8
Number of observations	*191*	*199*
Probability that vector of means is equal for the two groups	*0.00****	
Political variables		
Number of spending ministers	14.2	18.1
Number of government changes per year	0.48	0.56
Ideological composition of government	2.60	2.38
Years left in office	1.50	1.74
Number of observations	*216*	*215*
Probability that vector of means is equal for the two groups	*0.00****	
Institutional variables		
Fiscal rules	0.54	0.39
Expenditure rules	0.20	0.12
Transparency	0.71	0.66
Number of observations	*60*	*90*
Probability that vector of means is equal for the two groups	*0.08**	

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

Table 8.3 Does the value of variables differ between surplus and deficit periods?

	Nominal balance (% GDP)		**Cyclically-adjusted nominal balance (% GDP)**		**Primary balance (% GDP)**	
	Surplus (1)	Deficit (2)	Surplus (1)	Deficit (2)	Surplus (1)	Deficit (2)
Economic variables						
Debt ratio (% of GDP)	48.2	67.6	51.3	65.7	65.8	60.2
Output gap (% of GDP)	0.74	-1.43	0.27	-1.15	0.08	-2.0
Long interest rate	7.4	9.3	7.3	9.3	7.8	10.0
Number of observations	*105*	*362*	*97*	*373*	*246*	*212*
Probability that vector of means is equal for the two groups	*0.00****		*0.00****		*0.00****	
Political variables						
Number of spending ministers	15.5	16.0	15.5	16.0	15.7	16.3
Number of government changes per year	0.41	0.51	0.40	0.50	0.41	0.56
Ideological composition of government	2.58	2.44	2.57	2.43	2.49	2.46
Years left in office	1.56	1.59	1.47	1.64	1.61	1.59
Number of observations	*108*	*392*	*97*	*405*	*251*	*238*
Probability that vector of means is equal for the two groups	*0.32*		*0.16*		*0.04***	
Institutional variables						
Fiscal rules	0.75	0.43	0.73	0.44	0.57	0.35
Expenditure rules	0.21	0.13	0.22	0.14	0.18	0.11
Transparency	0.82	0.71	0.81	0.71	0.73	0.73
Number of observations	*30*	*158*	*40*	*151*	*127*	*61*
Probability that vector of means is equal for the two groups	*0.00****		*0.00****		*0.00****	

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

8.4.2 Surpluses and budgetary behaviour: evidence from fiscal reaction functions

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

$$b_{i,t} = \alpha + x'_{i,t}\beta + z'_{i,t}\gamma + \eta_i + \varepsilon_{i,t},\ t = 1,...T,\ i = 1...N \tag{8.1}$$

where b is the nominal balance as a share of GDP, subscript t denotes time and i countries, x' is a vector of standard explanatory variables (lagged dependent variable, output gap, lagged government debt ratio, lagged long term interest rate and dependency ratio), z' is a vector of political and institutional explanatory variables and η represents the country fixed effects. We want to determine the coefficients β and γ by estimating the above equation for both deficit and surplus countries/periods. We do this by introducing a dummy D that takes the value 1 for surplus observations and is 0 otherwise. We can then combine the equations for deficits and surpluses by estimating the following single equation:

$$b_{i,t} = \alpha_d + (\alpha_s - \alpha_d)D_{i,t} + x'_{i,t}\beta_d + (Dx)'_{i,t}(\beta_s - \beta_d) + z'_{i,t}\gamma_d + (Dz)'_{i,t}(\gamma_s - \gamma_d) + \eta_i + \varepsilon_{i,t},$$
$$t = 1...T,\ i = 1...N \tag{8.2}$$

with subscript d indicating the coefficient for deficit observations, and subscript s denoting surplus observations. For all variables the non interacted coefficients (e.g. β_d) can be interpreted as applicable to deficit observations, while for surpluses, the

coefficients of the normal and interacted variables should be added up. Similar reasoning applies to the intercept α.[100]

EU-countries, including fiscal rules

Availability of data on especially institutional variables is generally poor. We therefore first present results for a relatively small sample of EU-countries for the years 1990-2003.[101] This enables us to include our indices for the EU fiscal rules and the national fiscal rules. The next paragraph presents a robustness check based on a larger sample of OECD-countries, excluding fiscal rules variables.

The first column of Table 8.4 presents the baseline regression, with no distinction being made between surpluses and deficits. Columns 2 to 5 show separate coefficients for deficits and surpluses. The upper half of the table shows the coefficient for deficits β_d. The lower half shows the *additional* impact for surpluses (β_s-β_d). To obtain the overall coefficient β_s for surpluses, the coefficients in the upper and lower table half should be added up. To test robustness for our baseline country selection criterion, we use our alternative criterion in column 3. Column 4 shows the result with the primary balance as dependent variable. Column 5 shows the results when distinguishing periods instead of countries.

The coefficients have the expected sign. Looking at the sample as a whole (column 1), the output gap is positively correlated with the nominal balance, reflecting the cyclical

100 Note that separate intercepts α_s and α_d can only be calculated when using surplus periods as a criterion. When using countries as a criterion, α_s cannot be estimated, as it is collinear with the country fixed effects. Any common differences in the intercept among surplus countries therefore show in the country fixed effects, which are discussed in section 8.4.4.

101 The dataset on fiscal rules runs up to 2005 but the data on most of the political variables are available only up to 2003.

sensitivity of the budget.[102] The lagged debt ratio has a positive coefficient, in line with the intertemporal budget constraint. Both EU and national fiscal rules are positively and statistically significantly correlated with the budget balance.[103] As such, the 'core' part of the EU fiscal framework (i.e. the 3% limit for the budget deficit) as well as the institutional design of national fiscal rules are correlated with fiscal outcomes in the hypothesised manner.

Distinguishing deficit and surplus countries (column 2), our main result is that differences in budgetary behaviour between surpluses and deficits are related to the fundamentals of fiscal policy: the sustainability and stabilisation motives.

The coefficient on the lagged debt ratio turns out to be higher in surplus countries: the higher this ratio, the higher the budget balance. This suggests a stronger role for sustainability considerations in surplus countries. This result should not surprise us however, since the criterion used to select surplus countries is partly based on the debt development over time. When selecting surplus countries based only on the debt level at the end of the sample (column 5), this result is no longer significant.

With full automatic stabilisation, we would expect a positive correlation between the output gap and the (cyclically unadjusted) balance of the standard value of around 0.5. Interestingly we do find this expected positive coefficient for *surplus* countries. For deficit countries however, the coefficient is much smaller or zero. This suggests that

---

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

103 Our index of the EU fiscal rules was not used in the discussion in the previous section (i.e. 8.4.1) given that it is always zero for surplus countries by definition (they are above the deficit threshold of 3% GDP). It should also be noted that in Golinelli and Momigliano (2006) the coefficient on this variable enters with a negative sign, while we have defined it in such a way that it enters with a positive sign, given that the effect of national fiscal rules also appears with a positive sign.

deficit countries implement policies that counteract the operation of the automatic stabilisers, using budgetary room available in cyclical upturns and implementing fiscal austerity measures in downturns, while in surplus countries automatic stabilisers are allowed to operate more freely.

Finally, it should be noted that the *impact* of political and institutional variables does not differ significantly between surpluses and deficits (although, as shown in section 8.4.1, the *values* do differ).

OECD-countries, excluding fiscal rules

We have checked the robustness of our results using a sample of OECD-countries covering the years 1980-2003. For this extended period however, institutional variables were not available. Table 8.5 shows that the results are broadly similar: results confirm that the main differences in fiscal behaviour concern the sustainability and stabilisation motives in fiscal policy. In addition, some of the political variables now appear as being statistically significant in the overall regression. In particular, the negative impact of political fragmentation (measured by the number of spending ministers) is confirmed[104], just as the role played by the political business cycle (measured by the years left in the current term, so that the positive coefficients indicates a lower budget balance as the number of years until the next elections decreases).

104 This result is in line with findings in Chapter 7, where the number of spending ministers was not statistically significant in a smaller database of EU countries.

Table 8.4 Does the impact of variables differ between surpluses and deficits in EU-countries?

	(1)	(2)	(3)	(4)	(5)
Dependent variable	**Nominal balance**	**Nominal balance**	**Nominal balance**	**Primary balance**	**Nominal balance**
Lagged dependent variable	0.63	0.74	0.71	0.54	0.56
	(12.1)***	(7.4)***	(7.7)***	(5.4)***	(10.6)***
Output gap	0.32	0.017	0.099	0.22	0.27
	(4.8)***	(0.1)	(0.9)	(2.2)**	(4.1)***
Lagged debt ratio	0.048	0.025	0.028	0.033	0.056
	(4.4)***	(1.2)	(1.9)*	(2.2)**	(5.1)***
Lagged long interest rate	-0.15	-0.15	-0.15	0.0084	-0.13
	(-3.2)***	(-2.3)**	(1.9)**	(0.2)	(-2.9)***
Dependency ratio	-0.19	-0.10	-0.071	0.012	-0.26
	(-1.2)	(-0.3)	(-0.2)	(0.0)	(1.5)
Years left in current term	0.11	0.17	0.18	0.11	0.037
	(1.4)	(1.4)	(1.6)	(1.1)	(0.5)
Number of spending ministers	-0.11	-0.055	-0.061	-0.044	-0.10
	(-1.8)*	(-0.7)	(-0.8)	(-0.6)	(-1.8)*
EU fiscal rules	0.46	0.37	0.43	0.63	0.22
	(1.6)*	(0.9)	(1.2)	(1.9)*	(0.8)
National fiscal rules	0.73	0.21	0.31	0.59	0.81
	(2.1)**	(0.2)	(0.5)	(1.0)	(2.3)**
Surplus (constant)					-8.07
					(-0.9)
Surplus*Lagged dependent variable		-0.080	-0.10	0.061	-0.16
		(-0.6)	(-0.9)	(0.5)	(-1.1)

	(1)	(2)	(3)	(4)	(5)
Dependent variable	**Nominal balance**	**Nominal balance**	**Nominal balance**	**Primary balance**	**Nominal balance**
Surplus*Output gap		0.36	0.36	0.27	0.18
		(1.9)*	(0.14)**	(1.9)*	(0.7)
Surplus*Lagged debt ratio		0.060	0.051	0.072	0.019
		(2.0)**	(2.2)**	(-3.4)***	(0.8)
Surplus*Lagged long interest rate		0.13	0.21	0.077	0.46
		(0.7)	(1.6)	(0.6)	(2.0)**
Surplus*Dependency ratio		-0.43	-0.44	-0.41	0.16
		(-1.0)	(-1.2)	(-1.2)	(0.5)
Surplus*Years left in current term		-0.12	-0.096	-0.033	0.16
		(-0.6)	(-0.6)	(-0.2)	(0.7)
Surplus*Number of spending ministers		-0.30	-0.31*	-0.26	0.018
		(-1.4)	(-1.8)	(-1.5)	(0.1)
Surplus*EU fiscal rules			0.020	0.32	
			(0.0)	(0.6)	
Surplus*National fiscal rules		0.73	0.78	0.38	-0.14
		(0.5)	(0.9)	(0.5)	(-0.1)
Surplus selection criterion	*n.a.*	*Countries*	*Countries (alt)*	*Countries (alt)*	*Periods*
Time period (max)	*1990-2003*	*1990-2003*	*1990-2003*	*1990-2003*	*1990-2003*
Number of observations	*182*	*140*	*182*	*182*	*178*
Number of countries	*13*	*10*	*13*	*13*	*13*

Notes: T-values in parentheses. Other controls always included: Constant and country fixed effects. Output gap instrumented using lagged output gap and lagged real GDP growth. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 8.5 Does the impact of variables differ between surpluses and deficits in OECD-countries?

	(1)	(2)	(3)	(4)	(5)
Dependent variable	**Nominal balance**	**Nominal balance**	**Primary balance**	**Nominal balance**	**Nominal balance**
Lagged dependent variable	0.77	0.89	0.85	0.87	0.68
	(22.6)***	(20.2)***	(19.8)***	(20.7)***	(18.9)***
Output gap	0.14	-0.057	0.0091	-0.0016	0.12
	(2.5)**	(-0.8)	(0.1)	(-0.0)	(2.5)**
Lagged debt ratio	0.028	0.011	0.014	0.016	0.026
	(4.1)***	(1.3)	(1.7)	(2.1)**	(4.4)***
Lagged long interest rate	-0.046	-0.057	0.037	-0.035	-0.038
	(-1.3)	(-1.2)	(0.8)	(-0.8)	(-1.2)
Dependency ratio	-0.14	-0.090	-0.094	-0.11	-0.11
	(-1.5)	(-0.8)	(-0.9)	(-1.0)	(-1.4)
Years left in current term	0.11	0.19	0.16	0.18	0.13
	(1.6)	(2.2)**	(1.9)*	(2.6)**	(2.1)**
Number of spending ministers	-0.071	-0.082	-0.068	-0.081	-0.087
	(-1.6)	(-1.8)*	(-1.5)	(-1.8)*	(-2.2)**
Surplus (constant)					-0.73
					(-0.3)
Surplus*Lagged dependent variable		-0.28	-0.24	-0.27	-0.22
		(-4.2)***	(3.8)***	(-4.4)***	(-2.9)***
Surplus*Output gap		0.46	0.39	0.38	0.16
		(4.6)***	(3.5)***	(4.4)***	(1.5)
Surplus*Lagged debt ratio		0.072	0.090	0.026	-0.0051

	(1)	(2)	(3)	(4)	(5)
Dependent variable	**Nominal balance**	**Nominal balance**	**Primary balance**	**Nominal balance**	**Nominal balance**
		(4.8)***	(6.0)***	(2.2)**	(-0.5)
Surplus*Lagged long interest rate		-0.0047	-0.044	-0.069	-0.022
		(-0.1)	(-0.7)	(-1.1)	(-0.3)
Surplus*Dependency ratio		-0.53	-0.38	-0.099	0.064
		(-2.8)***	(-2.1)**	(-0.6)	(0.9)
Surplus*Years left in current term		-0.16	-0.14	-0.084	-0.16
		(-1.2)	(-1.1)	(-0.8)	(-1.1)
Surplus*Number of spending ministers		-0.059	-0.042	0.0068	0.092
		(-0.5)	(-0.4)	(0.1)	(1.7)*
Surplus selection criterion	*n.a.*	*Countries*	*Countries*	*Countries (alt)*	*Periods*
Time period (max)	*1980-2003*	*1980-2003*	*1980-2003*	*1980-2003*	*1980-2003*
Number of observations	*373*	*373*	*373*	*467*	*459*
Number of countries	*18*	*18*	*18*	*22*	*22*

Notes: T-values in parentheses. Other controls always included: Constant and country fixed effects. Output gap instrumented using lagged output gap and lagged real GDP growth. * significant at 10%; ** significant at 5%; *** significant at 1%.

8.4.3 Surpluses and expenditure policy

The conjecture of a stronger cyclical response of the budget balance in surplus countries deserves closer examination. As procyclical policy is conducted mainly on the expenditure side of the budget (Alesina and Tabellini, 2005, EC, 2006), we focus on spending. During cyclical upturns, revenues boom and the budget balance improves so that possibly a surplus emerges. These are the times when the budgetary framework of a country is put to the test: can pressures to spend the inflowing money be resisted (so that a possibly a surplus is maintained), or does expenditure growth follow revenues? If our conjecture is correct, we would observe a stronger relationship between expenditure and revenue growth in deficit countries than in surplus countries. We therefore estimate the following equation:

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

$$t = 1,...T\ ,\ i = 1,...,N \qquad (8.3)$$

with g denoting real growth of government expenditure, x' a vector of standard explanatory variables (output gap, government revenue growth at different lags, lagged government debt ratio, lagged long term interest rate, and dependency ratio), z' a vector of political and institutional explanatory variables, with subscript d indicating the coefficient for deficit observations, and subscript s denoting surplus observations. Nominal variables have been turned into real variables using the GDP deflator. Results are presented in Table 8.6. When evaluating the undivided sample (column 1), expenditure and revenue growth are correlated. Splitting the sample (column 2) reveals an interesting difference. In *deficit* countries, expenditure growth co-moves with

simultaneous revenue growth.[105] Interestingly, the coefficients of revenue growth and interacted revenue growth roughly cancel each other out. This means that in *surplus* countries, there is no clear co-movement between revenue and expenditure growth.[106] These results are consistent with those of Table 8.1 and Table 8.2, which show that surplus countries have stronger expenditure rules, and Chapter 7, which showed that expenditure rules mitigate the response of expenditure to windfalls shocks (note though that in this Chapter we focus on fiscal outcomes instead of revenue and expenditure windfalls/shortfalls as in Chapter 7).

A second difference between deficit and surplus countries is the political budget cycle. Theory predicts accelerating expenditure growth in the run-up to the elections. Indeed, the (ex ante) number of years left in the current term has a negative coefficient for *deficit* countries. In *surplus* countries on the other hand, we find no evidence of a political budget cycle-effect related to the years left in office.[107]

105 Simultaneous revenue growth may be endogenous and is therefore instrumented using the lagged output gap and lagged real GDP growth.

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

107 In fact, the coefficients of the normal and interacted variable 'Years left in the current term' more than cancel out. A Wald-test does not reject the hypothesis that the coefficients of 'Years left in the current term' and of 'Years left in the current term' times our dummy for surpluses add up to zero. Alternatively, in a sample of surplus countries only, 'Years left in the current term' has a positive but insignificant coefficient.

Table 8.6 The determinants of expenditure growth

	(1)	(2)	(3)	(4)
Dependent variable	**Real govt exp growth**	**Real govt exp growth**	**Real govt exp growth**	**Real govt exp growth**
Real government revenue growth	0.25	0.47	0.43	0.27
	(1.9)*	(2.9)***	(3.1)***	(2.5)**
Lagged real govt revenue growth	-0.012	0.027	0.0041	-0.023
	(-0.2)	(0.4)	(0.1)	(-0.4)
Two period lagged real govt revenue growth	0.067	0.051	0.062	0.059
	(1.3)	(0.7)	(1.0)	(1.2)
Lagged debt ratio	-0.062	-0.041	-0.045	-0.070
	(-6.6)***	(-3.4)***	(-4.1)***	(-8.2)***
Dependency	0.024	0.23	0.24	-0.021
	(0.2)	(1.0)	(1.2)	(-0.2)
Years left in current term	-0.19	-0.50	-0.44	-0.22
	(-1.5)	(2.9)***	(-2.9)***	(-1.8)*
Number of spending ministers	0.14	0.18	0.17	0.13
	(1.7)*	(2.0)*	(2.0)**	(1.7)*
Surplus (constant)				0.11
				(0.0)
Surplus*Real government revenue growth		-0.39	-0.42	-0.46
		(-1.4)	(-2.1)**	(-1.8)*
Surplus*Lagged real govt revenue growth		-0.066	-0.023	0.096
		(-0.6)	(-0.3)	(0.9)

	(1)	(2)	(3)	(4)
Dependent variable	**Real govt exp growth**	**Real govt exp growth**	**Real govt exp growth**	**Real govt exp growth**
Surplus*Two period lagged real govt revenue growth		0.039	0.054	0.20
		(0.4)	(0.6)	(2.0)**
Surplus*Lagged debt ratio		-0.074	-0.059	0.0050
		(-2.6)***	(-3.1)***	(0.3)
Surplus*Dependency		-0.11	-0.23	-0.0081
		(-0.3)	(-0.9)	(-0.1)
Surplus*Years left in current term		0.69	0.49	0.28
		(2.6)***	(2.1)**	(1.0)
Surplus*Number of spending ministers		0.13	0.075	-0.055
		(0.6)	(0.4)	(-0.6)
Surplus selection criterion	*n.a.*	*Countries*	*Countries (alt)*	*Periods*
Method of estimation	*LS FE*	*LS FE*	*LS FE*	*LS FE*
Time period (max)	*1980-2003*	*1980-2003*	*1980-2003*	*1980-2003*
Number of observations	*401*	*401*	*495*	*486*
Number of countries	*18*	*18*	*22*	*22*

Notes: T-values in parentheses. Other controls always included: Constant and country fixed effects. Real govt revenue growth instrumented using lagged output gap and real GDP growth. * significant at 10%; ** significant at 5%; *** significant at 1%.

8.4.4 Surpluses and country specific factors

In the previous sections, we have shown that both the values and the impact of some explanatory variables differ between surpluses and deficits. In addition, it may be that surpluses can be explained by country specific factors that are not covered by our variables. We investigate this by looking at the dispersion of the country fixed effects (CFEs) within the group of surplus countries that result from the regressions presented in Table 8.4 and Table 8.5. The CFEs capture remaining country-specific variation that is constant over time. An F-test formally investigates the null-hypothesis that fixed effects are equal for all surplus countries.

Results as reported in Table 8.7 strongly reject the hypothesis of equality for our selection of surplus countries. Only for the small sample of EU15-surplus countries excluding Finland (that was identified in section 2 as a country for which country specific factors may be especially relevant) the null cannot be rejected. This suggests that in addition to different values and coefficients of the variables in our regressions, there are country specific factors at play.

Table 8.7 F-test that all surplus-CFEs are the same

Selection criterion	Countries	Period	Number of observations	p-value
Surplus OECD-Countries Alternative	11	1980-2003	222	0.00
Surplus OECD-Countries Baseline	9	1980-2003	176	0.00
Surplus EU15-Countries Alternative	6	1990-2003	84	0.00
Surplus EU15-Countries alternative, excluding FIN	5	1990-2003	70	0.12
Surplus EU15-Countries Baseline	4	1990-2003	56	0.22

8.5 Surpluses and future expenditure pressures

Our focus on fiscal deficits versus surpluses has been motivated by the question of whether fiscal rules and other political and institutional variables can contribute to overcoming the fiscal deficit bias. In addition, this approach has also been motivated by the strong emphasis on budgetary surpluses in the context of discussions on the long-term sustainability of public finances. In this section we first analyse why it may be welfare-enhancing to prefund part of the future ageing-related expenditure pressures, by running surpluses now. We then investigate empirically whether differences in the size of these future expenditure pressures can explain why some countries have already recorded budgetary surpluses while others have not.

8.5.1 A simple benchmark model

Long-term sustainability assessments, as those produced by the European Commission, typically contain a time horizon up to 2050, so that the planning horizon in our model should not be infinite. We capture this element by including two periods. During the first period, expenditure pressures are not yet materialising, while during the second period target expenditure increases due to the effects of ageing. We use the basic set-up of the model of Von Hagen and Harden (1994), Milesi-Ferretti (2003) and Chapter 7 of this thesis and add the element of future increases in public expenditure due to the costs of ageing.

In the two-period model, the government minimises a convex loss function that is increasing in the level of taxation T and in deviations of spending G from its desired level G^*. In order to limit the model to the essential features, it is assumed that there is no spending bias due to political fragmentation (as it appeared in Chapter 7) and that the government does not discount the future so that the real interest rate equals zero. The crucial variable here is α that reflects the increase in target expenditure in the second period (e.g. due to an increase in the number of pensioners and in health expenditure). The case where $\alpha > 1$ reflects increasing expenditure in the second period:

$$L(FA) = \frac{1}{2}(G_1 - G^*)^2 + \frac{1}{2}T_1^2 + \frac{1}{2}(G_2 - \alpha G^*)^2 + \frac{1}{2}T^2 \qquad (8.4)$$

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

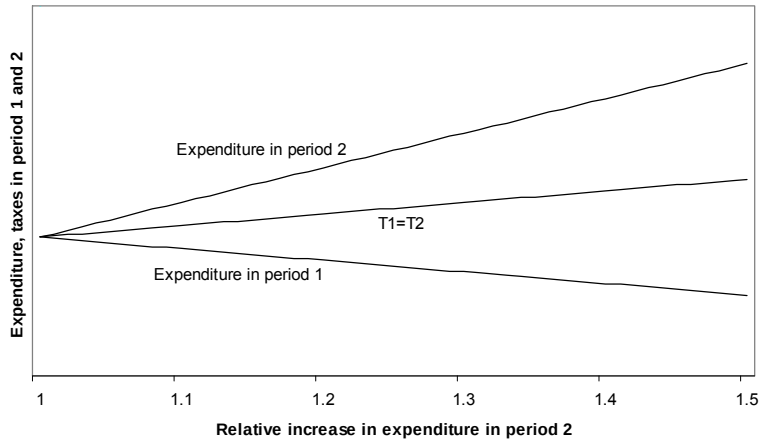
$$L(FA) = \frac{1}{2}(G_1 - G^*)^2 + \frac{1}{2}(G_2 - \alpha G^*)^2 + \left(\frac{G_1 + G_2}{2}\right)^2 \quad (8.5)$$

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

$$G_1 = \left(\frac{3-\alpha}{4}\right)G^*;\ G_2 = \left(\frac{3\alpha - 1}{4}\right)G^*;\ T = \left(\frac{1+\alpha}{4}\right)G^*. \quad (8.6)$$

The main implication of the model is shown in Figure 8.2 that plots expenditure and taxation in both periods as a function of α. If $\alpha=1$ (i.e. target expenditure in period 1 equals target expenditure in period 2), the government runs a balanced budget in both periods. Higher future expenditure pressures ($\alpha>1$), on the other hand, imply a higher budgetary surplus in period 1 (as measured by the difference between expenditure in period 1 and the constant level of taxation), a higher deficit in period 2, and a higher overall level of taxation in both periods. This provides an analytical underpinning of policy recommendations that part of the future expenditure pressures due to ageing populations should be prefunded through fiscal surpluses now.

Figure 8.2 Expenditure and taxes as a function of future expenditures



8.5.2 Evidence for EU countries

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

Results on the basis of standard t-tests are reported in Table 8.8, while using different indicators of surpluses (i.e. the nominal balance, the primary balance and the cyclically-adjusted balance). Results show that average expenditure pressures are actually *lower* for countries and periods where surpluses were recorded, but the difference is not statistically significant. In order to account for differences in initial positions between countries, such as debt levels and budgetary strategies, Figure 8.3 also shows the correlation between Required Primary Surpluses as calculated by EC (2004, 2005) as part of its sustainability assessments and actual primary surpluses. The figure confirms that there is no correlation between the perceived need to run surpluses in different countries and the occurrence of surpluses in actual policies. Hence, there are no indications that, by itself, increasing awareness on the perceived need to move towards surpluses can explain why some EU countries have moved towards budgetary surpluses while others have not.[108]

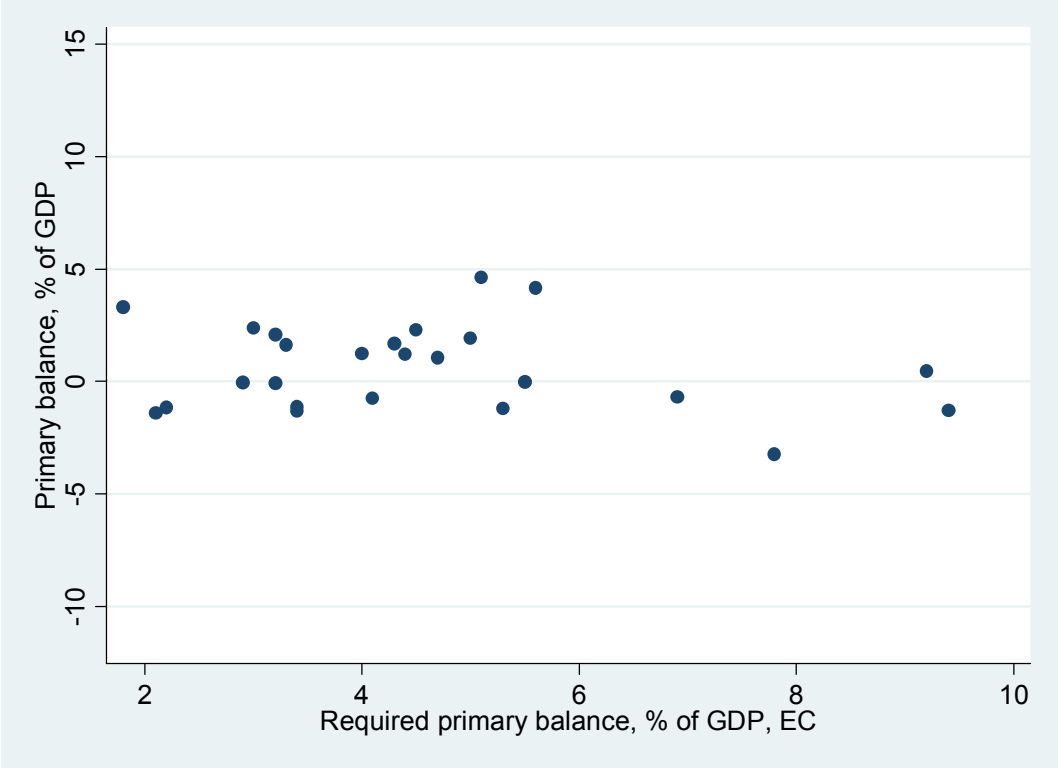
108 In addition, we also included indicators of future expenditure pressures and required primary surpluses in the fiscal reaction functions as presented in section 8.4.2. Results confirm that the impact is not statistically significant.

Table 8.8 Are future spending pressures higher for surplus countries?

	Nominal balance (% GDP)		**Cyclically-adjusted nominal balance (% GDP)**		**Primary balance (% GDP)**	
	Surplus (1)	Deficit (2)	Surplus (1)	Deficit (2)	Surplus (1)	Deficit (2)
Future increase in ageing-related expenditure (2000-2005)	4.5% GDP	5.3% GDP	4.5% GDP	5.3% GDP	5.1% GDP	5.1% GDP
Number of observations	*19*	*55*	*25*	*56*	*56*	*24*
P-value for null hypothesis that means are equal for the two groups	*0.65*		*0.16*		*0.95*	

Source: calculations based on data from European Commision (2004, 2005)

Figure 8.3 Required Primary Balance (EC) and actual Primary Balance



Source: required primary balance is taken from EC (2004a) and (2005); Primary balance: OECD Economic Outlook.
Note: data are for 2004 and 2005.

8.6 Conclusions

In this Chapter, we have investigated why some countries managed to overcome the fiscal deficit bias while others did not. In investigating why surpluses re-emerged in an increasing number of countries, we have focused on the role of a wide range of economic, political and institutional variables that have been highlighted in the literature. Three complementary hypotheses have been formulated, asking (i) whether the *level* of explanatory variables is different for surpluses and deficits; (ii) whether the *impact* of explanatory variables differs for surpluses and deficits, and (iii) whether

country specific factors play a role in explaining why some countries have recorded surpluses while others have not.

Results confirm the relevance of all three hypotheses. Concerning the *level* of our explanatory variables, results show that surpluses coincided with fewer spending ministers, more political stability, stronger national fiscal rules and more transparent fiscal policies. Regarding fiscal rules, this confirms their potential role in overcoming the fiscal deficit bias. Regarding the *impact* of explanatory variables, we find that fiscal rules are correlated with fiscal outcomes in the expected manner ('stronger' rules increase the budget balance), and that revenue fluctuations lead to a procyclical response in spending in deficit countries whereas this effect is absent in surplus countries. Moreover, the political budget cycle seems present in deficit countries but not in surplus countries. With respect to country specific factors, results show that not all the differences in budgetary outcomes between countries can be explained by the explanatory variables that we have included in our estimations. Further research could possibly investigate the role of these factors.

Overall, this Chapter shows that cross-country differences in the values of political and institutional variables (including fiscal rules) coincide with fundamental differences in budgetary behaviour. At the same time, results also show that cross country differences in expected expenditure pressures due to ageing populations cannot explain why surpluses emerged in some countries but not in others. Therefore, the current policy discussion on the perceived need to move towards budgetary surpluses in many countries may need to include the underlying political-institutional setting in which the advice needs to be implemented.

Well-designed fiscal rules, when embedded within their specific national political and institutional setting and supported by broader institutional reforms, can play a role in improving policy outcomes but are certainly not the only relevant factor. Results in this Chapter also highlight the relevance of a complementary approach aimed at reducing political fragmentation and instability and improving fiscal transparency. Taken together, all these variables may be relevant for addressing the political business cycle and procyclical policies. This, in turn, may allow more countries to overcome the fiscal legacy of deficit and spending biases as they occurred most visibly during the 1970s and the 1980s. The experiences of a growing number of countries show that democratically elected politicians can run fiscal policy in a way that overcomes the deficit bias. In these countries, the move to fiscal surpluses has been made without the existence of truly independent bodies that monitor and enforce compliance with fiscal rules or even take over the responsibility for determining the fiscal trajectory of the government, as in the case of independent fiscal councils as discussed in Chapter 2.

9 Conclusions

9.1 Summary

During the 1990s, fiscal rules have become increasingly popular as a policy response for addressing fiscal deficit and spending biases. The fiscal policies of all Euro area countries became subject to the same set of supranational fiscal rules while different types of fiscal rules have been introduced at the national level. The aim of this thesis has been to investigate the impact of these supranational and national fiscal rules on fiscal outcomes. In investigating the incentive effects of fiscal rules, we make a separation between the intended effects of fiscal rules, i.e. the effect on the indicator of fiscal policy that is constrained by the rule, as well as behavioural responses towards unconstrained forms of fiscal policy.

In order to answer these questions, we started by developing theoretical priors about the existence of deficit and biases at supranational level and at national level. In both cases, these biases arise due to conflicts of interest between fiscal decision makers. At the level of monetary union as a whole, a deficit bias may arise due to conflicts of interests between decentralised fiscal policies of individual countries that arise in the presence of spillover effects trough the common interest rate. At the national level, deficit and spending biases may occur due to conflicts of interest between governments that alternate in power and between individual spending ministers and the interest of the tax-paying population at large.

In examining the effects of the EU fiscal rules on fiscal outcomes, we have tested for the existence of structural breaks in aggregate fiscal behaviour after the introduction of these rules. In studying the effects of national fiscal rules we have tested whether

differences in the institutional design of these rules help to explain heterogeneity in fiscal outcomes across countries. Our main findings can be summarised as follows:

In *Chapter 2* we survey the literature on the political origins of fiscal indiscipline as well as the available policy options for addressing it. A distinction is made between policy options that tackle fiscal biases at their source by removing the incentives for undisciplined policies, such as independent fiscal committees, and solutions that counterbalance the biases without changing the political nature of fiscal decision making, such as fiscal rules and institutions. Findings help to explain why fiscal rules are widely used in practice, while independent fiscal committees are not. Our position is that the creation of independent fiscal committees is incompatible with fundamental democratic principles, even if the idea is appealing on theoretical grounds. Fiscal rules, on the other hand, may be a feasible solution in practice, but instead of removing incentives for biased policies they can only counter them. Differences of opinion arise with respect to the incentives for compliance with fiscal rules. The traditional view, based on evidence for the US, is that rules are only effective when they are supported by independent enforcement and economically significant sanctions. A more recent literature on the experience with soft forms of governance in the EU however suggests that we should not rule out the possibility that the political costs of non-compliance may be large enough to foster compliance, especially if the outcome generated by the fiscal rule reflects the preferences of those in power. An implication for our study is that it should pay close attention to the question of why politicians would comply with the rules instead of following their own objectives. Moreover, our survey indicates that a large literature has already investigated the effects of the 3%-limit of the EU fiscal rules on fiscal outcomes. Our own research therefore focuses on the effects of fiscal rules on

which less research has been conducted, i.e. the preventive part and the debt rule of the EU fiscal framework as well as national fiscal rules.

In *Chapter 3* we develop a theoretical model of deficit bias in monetary union, and the role played by fiscal rules in addressing this bias. In the model, a conflict of interest arises between national fiscal policy makers in EMU, given that monetary union has diluted the monetary response to expansionary policies within a single country. The unrestrained solution results in sub optimally high deficits and interest rates. This framework is used to investigate the effect of different types of fiscal rules on fiscal outcomes. A credible budget balance rule, backed by enforcement and economically significant sanctions, could be designed in such a way that it exactly offsets the incentives for biased policies. Creative accounting however diminishes the effectiveness of such a rule, depending on the probability that creative accounting is detected. Ex ante fiscal rules, which are characterised by an obligation to comply in terms of fiscal plans but not outcomes, would institutionalise an ongoing stream of unpleasant fiscal 'surprises'. A rule on the gross debt ratio can be achieved either through fiscal adjustment through the budget balance or changes in financial assets. Its predicted effect is a combination of adjustment through the budget balance and financial assets, where the balance between the two depends on the social costs of a suboptimal level of financial assets. To the extent that adjustment takes place through changes in financial assets, this will lower the gross debt ratio but without improving net worth of the government.

In *Chapter 4* we study the implication of the model on ex ante fiscal rules, on the basis of an original database on fiscal plans and outcomes as submitted under the Stability and Growth Pact. This Chapter investigates compliance with the preventive part of the

EU fiscal rules, which consists of an obligation to present progress towards sustainable medium term fiscal positions, but without enforcing this obligation. Our decomposition of fiscal plans versus outcomes corrects for the impact of macro-economic surprises. It also distinguishes between compliance on the expenditure side and the revenue side of the budget. Findings indicate strong similarity in the national medium-term fiscal plans across countries and time, which almost always show planned expenditure-based fiscal consolidation. Our decomposition of plans versus outcomes then indicates that most of the fiscal slippages can be attributed to a lack of implementation of policy measures on the expenditure side of the budget, while economic shocks explain a much smaller part of the shortfalls. The main effect of the ex ante fiscal rule is to institutionalise negative fiscal surprises. Findings point to the need to put matching levels of fiscal scrutiny on plans and outcomes.

In *Chapter 5* we investigate the effect of the debt rule of the EU fiscal framework on fiscal outcomes. In doing so, we test whether the introduction of the EU fiscal rules in the early 1990s and the SGP in 1999 represent a structural break in aggregate fiscal behaviour in Euro area countries. In line with our overall research question, we focus on the policy response in both constrained and unconstrained forms of fiscal policy. We therefore complement the standard methodology of measuring the policy response in the budget balance (which is constrained by the EU fiscal rules) to the gross debt ratio, by also including the structural policy response of financial assets (that are not constrained by the rule). Results for the period when incentives for compliance with the EU fiscal rules were the strongest - i.e. 1993-1997 when entry into EMU was made conditional on compliance with the rules - confirm an additional degree of fiscal adjustment in the budget balance during this period. At the same time, there has been a shift to unconstrained forms of fiscal policy, i.e. strategic use of changes in financial assets to

influence debt developments. Simulations show that the 'Maastricht' rules (1993-1997) have had a significant effect on the development of gross debt but only a small effect on net debt. Moreover, for the period 1993-2006 as a whole, the deterioration in fiscal discipline after 1998 has offset the effect on debt developments that occurred during the Maastricht period. Findings point to the need to complement the focus on gross debt by more attention for developments in net debt ratios, which may be a more appropriate approximation of the net worth of the government.

In *Chapter 6* we switch attention to the national fiscal rules, and outline our methodology for measuring the institutional design of national fiscal rules. We develop a composite indicator of national fiscal rules that can be used in econometric research on the impact of national fiscal rules on fiscal outcomes. We report results of the questionnaire-based survey into the institutional design of national fiscal rules in the Euro area. A first finding is that there is a large degree of heterogeneity in the institutional design of national fiscal rules across countries. This concerns, in particular, the legal base of the rules and whether compliance with the rule is required only at the planning stage or also in the implementation stage. As a result, our index of the institutional design of national fiscal rules could possibly help to explain differences in fiscal outcomes across countries. At the same time, results on national fiscal rules also show that independent external monitoring and enforcement are absent so that the national fiscal rules are essentially self-enforced. This finding provides further support to the implication of Chapter 2 that the theory on national fiscal rules should pay close attention to the incentives for compliance with these rules.

In *Chapter 7* we model the role of national expenditure rules in addressing spending biases and procyclical policy reponses to unexpected revenue developments. It is argued

that incentives for compliance with national expenditure rules can arise due to the specific political and institutional setting within which these rules have been introduced. First, non-compliance by spending ministries with expenditure rules can put pressure on coalition governments as these rules have often been written into the coalition agreement. Second, non-compliance with expenditure rules may put increased autonomy of spending ministries, as part of reforms of performance budgeting, at risk. Empirical results indicate that stronger expenditure rules are correlated with a lower expenditure bias, and that stronger expenditure rules mitigate procyclical responses to revenue shocks. The more difficult question concerns the causality from expenditure rules to expenditure outcomes. Results from an instrumental variables approach show that stronger expenditure rules have been introduced in countries with higher expenditure to GDP ratios. This may indicate that both the institutional design and the effect of expenditure rules on outcomes may reflect political willingness to address high expenditure to GDP ratios. Finally, our case study on the evasion of national expenditure rules through the use of tax expenditure highlights the relevance of complementing strict expenditure rules by efforts to cloose off loopholes.

In *Chapter 8* we change perspective and take fiscal outcomes instead of fiscal rules as a starting point of the analysis. We observe that an increasing number of OECD countries have managed to overcome the fiscal deficit bias since the end of the 1990s. The question is whether economic, political, institutional and country specific variables may help to explain why fiscal surpluses have re-emerged in some countries but not in others. Results show that surpluses coincided with less political fragmentation, more political stability, stronger national fiscal rules and more transparent fiscal policies. We also find systematic differences in fiscal behaviour: in deficit countries revenue fluctuations lead to a procyclical response in spending whereas this effect is absent in

surplus countries. Moreover, the political budget cycle seems present in deficit countries but not in surplus countries. Overall, these results suggest that while well-designed fiscal rules can play a role in addressing fiscal spending and deficit biases, many more relevant factors could be considered as part of a comprehensive package of political and institutional reform.

9.2 Policy implications

As indicated in the introduction to this thesis, part of the motivation for investigating the interaction between fiscal rules and fiscal outcomes has been the degree of controversy surrounding the debate on fiscal rules. There is no agreement in the literature on the extent to which fiscal rules can be effective in addressing spending and deficit biases. Another motivation for carrying out this research has been an observed imbalance in the literature that has so far strongly focused on the corrective part of the EU fiscal rules (i.e. the 3% GDP limit for the budget deficit) while paying much less attention to the ex ante part and the debt rule of the EU fiscal framework as well as the role played by national fiscal rules. We hope that, overall, findings in the thesis may help to resolve part of the controversy surrounding the effectiveness of fiscal rules, and provide guidance to policy makers that aim that are involved in developing and implementing fiscal rules at supranational or at national level.

Theory shows that fiscal rules may be effective, but only if non-compliance with the rules is sufficiently costly so that these costs counter existing incentives towards biased policies. Our results indeed show that ex ante fiscal rules, for which there is an obligation to comply in terms of fiscal plans but not in terms of outcomes, influence

fiscal plans more than outcomes (Chapter 4). Hence, a first policy implication is that an obligation for compliance is a necessary condition for fiscal rules to be effective.

But even if fiscal rules contain a formal obligation for compliance the question on the incentives for compliance still arises. Traditionally it was thought that the costs of non-compliance come from the existence of independent monitoring and enforcement and sufficiently high sanctions in the case of non compliance. On the basis of this argument alone, one would not expect much from the existing fiscal rules in the Euro area. As is well-know, truly external enforcement is lacking for the EU fiscal rules (see Chapter 3: the national ministers of finance who are subject to the rules also enforce them in the context of the Ecofin Council). In addition, our results in Chapter 6 now clearly show that independent monitoring and enforcement are also lacking for the national fiscal rules.

Results from this thesis however suggest that fiscal rules at times still have had intended effects on fiscal outcomes, given that the costs of non-compliance have arisen in different forms. Chapter 5 confirms findings of previous studies that the EU fiscal rules have had an effect up to 1997 since entry into EMU was made conditional upon compliance with the rules. Results in Chapter 7 indicate that national expenditure rules may have been effective due to political and institutional costs of non-compliance, i.e. political difficulties within the cabinet for non complying spending ministers or the risk of a loss of autonomy for their ministry. We therefore believe that the incentives for compliance with fiscal rules depend on the specifics of the case, as represented by the political and institutional setting within which the rules have been introduced. A second policy implication that follows is that, if the objective is to design and introduce an effective fiscal rule, policy makers may need to be very alert on the following issue:

what is the specific mechanism that may foster compliance with the fiscal rule? Would incentives arising from this mechanism be strong enough to counter existing incentives towards biased policies?

Results also show that, once rules become binding and therefore may have intended effects on the fiscal indicator that is constrained by the rule, incentives for circumventing behaviour immediately arise. In this respect, Chapter 5 found clear indications for the strategic use of financial assets under the EU fiscal rules in order to influence the development in gross debt during the period up to 1997. Similarly, Chapter 7 found indications that countries with strong expenditure rules have experienced increases in revenue side measures that can be considered as a direct substitute for expenditure measures (i.e. increases in tax expenditure). A third policy implication that therefore follows is that the introduction of any binding fiscal rules needs to be complemented by efforts to close possible loopholes for the specific type of fiscal rule that is being introduced.

Our results show that stronger fiscal rules are correlated with fiscal outcomes in the intended way, i.e. a higher value for the budget balance or smaller discrepancies between expenditure plans and outcomes (Chapters 7 and 8). At the same time, we have not been able to fully resolve the issue on the causality between fiscal rules and fiscal outcomes. As indicated in Chapter 2 and Chapter 7, different hypotheses have been put forward regarding this causality. Are both fiscal rules and fiscal outcomes a reflection of a third variable of voter preferences? Or can fiscal rules be seen as an exogenous instrument that can have an independent causal effect on fiscal outcomes? Our results actually point to a combination of these two hypotheses. The facts show that the EU fiscal rules have been introduced after a period when the debt ratio had shown a steady

increase (see Figure 1.1 in the introduction) while countries with higher initial expenditure to GDP ratios have introduced stronger national expenditure rules (Chapter 7). This suggests that during a continued period of biased fiscal outcomes, it eventually becomes clear that the upward trend in public debt or expenditure ratios will turn out to be unsustainable. A political consensus may then develop that a policy response would be necessary. This process may in due course result in the introduction of a fiscal rule to counter the trend. One interpretation would then be that the simultaneous introduction of a fiscal rule and an improvement in fiscal outcomes reflects a change in political preferences. Another interpretation would be that the rule has been effective in addressing the spending and deficit biases that have caused the unsustainable trend in the first place, while at the same time the causal effect from rules to outcomes is reflected in a degree of circumventing behaviour. Whatever may be the correct interpretation, a fourth policy implication that follows is that policy makers need to be very sensitive for the political climate within which fiscal rules are being introduced. Given that truly external monitoring and enforcement may not seem feasible in practice, the strength of fiscal rules seems ultimately to be determined by the political commitment to the underlying objective that the rule pursues.

Results in this thesis support the conclusion that well-designed fiscal rules, when supported by specific compliance mechanisms and efforts to close loopholes, can contribute to conquering spending and deficit biases. At the same time, it should be stressed that fiscal rules are certainly not the only relevant policy option. In this respect, Chapter 2 reviewed the literature on institutional reform concerning the way budgets are prepared, approved and carried out, while Chapter 8 highlighted experiences of countries that have already managed to overcome the fiscal deficit bias. Consequently, countries with unsatisfactory fiscal trends may first need to examine the underlying

political causes of these trends (e.g. incentives to run procyclical policies or the existence of a political business cycle), consider the full range of possible policy options, and then need to tailor their policy response to the specifics of the case. In any case, results from Chapter 8 suggest that recommendations on 'required surpluses' – in order to address the budgetary costs from ageing populations - will by itself not be effective in conquering the fiscal deficit bias.

9.3 Directions for further research

Our research provides suggestions for several avenues for further research. An obvious extension would be to use the extended data coverage on national fiscal rules that will become available in the OECD Budget Practices and Procedures Survey. Such research could shed light on the question of whether correlations between the institutional design of national fiscal rules and fiscal outcomes will also hold in a large cross section of countries across the world.

In addition, our results also point to possibilities to refine our indicator of national fiscal rules. Our starting point for measuring national fiscal rules have been the Inman criteria, which themselves are based on systematic evidence on the use of fiscal rules in the states of the US. Our results confirm the relevance of this approach, but we also argued that incentives for compliance with national fiscal rules may stem from the specific political and institutional setting within which the rules have been introduced. A possibility for future research would therefore be to add this element to the existing criteria. A question could simply be added to a new version of the questionnaire that asks the national respondents whether, in their view, there exist specific political or institutional mechanisms that may foster compliance with the fiscal rule (other than

enforcement through the application of pecuniary sanctions). Obviously, such a question should be well-explained, for example with reference to the specific compliance mechanisms based on coalition contracts, the link between performance budgeting and expenditure rules or the role of peer pressure in fostering compliance with the EU fiscal rules.

Finally, whereas results in this thesis indicate that the institutional design of fiscal rules matters and that the difference between ex ante versus ex post rules matter, we have not focused on the question of which specific aspects of the institutional design of the rule matter most. As indicated in Chapter 6, our aggregate index of institutional design applies an equal weighting to all individual institutional elements of the index, in absence of a clear theoretical framework on this issue. Another possible avenue for future work would be to use the heterogeneity in the institutional design of fiscal rules and fiscal outcomes for arriving at a better weighting of the institutional index of fiscal rules.

REFERENCES

Advisory Council on Intergovernmental Relations (1987), Fiscal discipline in the federal system: national reform and the experience of the states, Washington: Advisory Council on Intergovernmental Relations

Aghion, P., Alesina, A. and Trebb, F. (2004), 'Endogenous political institutions', *The Quarterly Journal of Economics*, May, pp. 565-611

Alesina, A. and Ardagna, S. (1998), 'Tales of fiscal adjustment', *Economic Policy*, 27, pp. 489-545

Alesina, A. and Bayoumi (1996), T., 'The costs and benefits of fiscal rules: evidence from U.S. states', *NBER Working Paper Series,* No. 5614, National Bureau of Economic Research

Alesina, A. and Drazen, A. (1991), 'Why are stabilizations delayed? A political economy model', *American Economic Review*, 81, pp. 1170-88

Alesina, A., Hommes, R., and Stein, E. (1996), 'Budget institutions and fiscal performance in Latin America', *IDB Working Papers*, No. 394, Washington

Alesina, A. and Perotti, R. (1994), 'The political economy of budget deficits', *NBER Working Paper Series*, No. 4637, National Bureau of Economic Research

Alesina, A. and Tabellini, G. (2005), 'A positive theory of budget deficits and government debt', *Review of Econonic Studies*, 57, pp. 403-14

Alt, J.E. and Lassen, D.D. (2006), 'Fiscal transparency, political parties, and debt management in OECD Countries', *European Economic Review*, 50, pp. 1403-39

Annet, A, Decressin, J. and Deppler, M. (2005), 'Reforming the Stability and Growth Pact', *IMF Policy Discussion Paper*, No 05/2, International Monetary Fund, Washington D.C.

Armingeon, K. Leimgruber, P., Beyeler, M. and Menegale, S. (2005), Comparative political data set 1960-2003, Institute of Political Science, Bern

Artis, M.J. and Buti, M. (2000), 'Close-to-balance or in surplus: a policy-maker's guide to the implementation of the stability and growth pact', *Journal of Common Market Studies*, pp. 563-91

Artis, M.J. and Marcellino, M. (1999), 'Fiscal forecasting: the track record of the IMF, OECD and EC', *CEPR discussion papers*, No. 2206, Centre for European Policy Research, London

Artis, M.J. and Marcellino, M. (2000), 'The solvency of government finances in Europe', in Banca d'Italia volume on Fiscal Sustainability

Artis, M.J. and Onorante, L. (2006), 'The economic importance of fiscal rules', *CEPR discussion papers*, No. 5684, Centre for European Policy Research, London

Ayuso-i-Casals, J., Gonzalez, D, Moulin, L. and Turrini, A. (2007), 'Beyond the SGP: features and effects of EU national-level fiscal rules' in The role of fiscal rules and institutions in shaping budgetary outcomes, *European Commission Economic Papers*, No. 275, European Commission, Brussels

Ballabriga, F.C. and Martinez-Mongay, C. (2003), 'Has EMU shifted monetary and fiscal Policies?', in Monetary and Fiscal Policies in EMU, M. Buti, ed., Cambridge University Press, pp. 246-72

Ballabriga, F.C. and Martinez-Mongay, C. (2005), 'Sustainability of EU Public Finances', *European Commission Economic Papers,* No. 225, European Commission, Brussels

Ballabriga, F.C. and Martinez-Mongay, C. (2006), 'A Further Inquiry about the Sustainability of Fiscal Policy in the EU', paper presented to DGECFIN Workshop on Fiscal Indicators for EU Budgetary Surveillance.

Balassone, F. and Franco, D. (2000), 'Assessing fiscal sustainability: a review of methods with a view to EMU', in Fiscal Sustainability, Banca d'Italia, Rome

Barro, R. (1979), 'On the determination of public debt', *Journal of Political Economy*, 87, pp. 940-71

Beck, T., Clarke, G., Groff, A., Keefer, P., and Walsh, P. (2001), 'New tools in comparative political economy: The Database of Political Institutions', *World Bank Economic Review*, 15, pp. 165-76

Beetsma, R. and Debrun, X. (21006), 'The new stability and growth pact: A first assessment', *European Economic Review*, 51(2), pp. 453-477

Beetsma, R., Debrun, X. and Klaassen, F. (2001), 'Is fiscal policy coordination in EMU desirable?', *CEPR discussion papers*, No. 3035, Centre for European Policy Research, London

Beetsma, R. and Giuliodori, M (2008), 'Fiscal Adjustment to Cyclical Developments in the OECD: An Empirical Analysis based on Real-Time Data', *Working Paper*

Beetsma, R. and Uhlig, H. (1999), 'An analysis of the Stability and Growth Pact', *The economic journal*, 109, pp. 546-571

Blanchard, O.J. and Wolfers, J., 'The Role of Shocks and Institutions in the Rise of European Unemployment: The Aggregate Evidence', *Economic Journal*, 100, pp. 1-33

Bohn, H. (1998), 'The behaviour of U.S. public debt and deficits', *The Quarterly Journal of Economics*, 113, pp. 949-63

Bohn, H. and Inman, R.P. (1996), 'Balanced budget rules and public deficits: evidence from the US states' *NBER Working Paper Series*, No. 5533, National Bureau of Economic Research

Boije, R. and Fischer, J. (2007), 'The Swedish budget "model": a genuine beauty or in need of a face lift?', in The role of fiscal rules and institutions in shaping budgetary outcomes, *European Commission Economic Papers*, No. 275, European Commission, Brussels

Boot, A. (2006), 'Economisch beleid niet toekomstbestendig', *Economisch Statistische Berichten*, 91, pp. 644-47

Bordignon, M. (2006), 'Fiscal decentralization: how to harden the budget constraint', in Fiscal policy surveillance in Europe, Wierts, P. Deroose, S, Flores, E and Turrini, A., eds., Palgrave McMillan, Bansingstoke

Brender, A. and Drazen, A. (2005), 'How do budget deficits and economic growth affect reelection prospects? Evidence from a large cross-section of countries', *NBER Working Paper Series*, No. 11862, National Bureau of Economic Research

Brender, A. and Drazen, A. (2005a), 'Political budget cycles in new versus established democracies', *Journal of Monetary Economics*, 52, pp. 1271-95

Brixi, H. (2006), 'Contingent liabilities in new Member States', in Wierts, P., Deroose, S, Flores, E. and Turrini. A., eds., Fiscal policy surveillance in Europe, Palgrave McMillan, Bansingstoke

Brixi, H.; Valenduc, C. and Swift, Z., eds. (2004), Tax Expenditures – Shedding Light on Government Spending through the Tax System, World Bank

Brosens, T. and Wierts, P. (2007), 'The surplus factor', in The role of fiscal rules and institutions in shaping budgetary outcomes, *European Commission Economic Papers*, No. 275, European Commission, Brussels

Brunila, A., Buti, M. and Franco, D., eds. (2001), The Stability and Growth Pact – The acrchitecture of fiscal policy in EMU, Palgrave McMillan, Bansingstoke

Buchanan, J.M. and Wagner, R.E. (1977), Democracy in deficit: The political legacy of lord Keynes, Academic press, New York

Buti, M., Eiffinger, S. and Franco, D. (2003), 'Revisiting the Stability and Growth Pact: grand design or internal Adjustment?', *CEPR Discussion Papers*, No. 3692, Centre for European Policy Research, London

Buti, M. and Giudice, G. (2002) , 'Maastricht's Fiscal Rules at Ten: An Assessment', *Journal of Common Market Studies*, 40, pp. 823-848

Buti, M., Martins, J.N. and Turrini, A. (2006), 'From deficits to debt and back: political incentives under numerical fiscal rules', *CEPR Discussion Papers*, No. 5809, Centre for European Policy Research

Buti, M. and van den Noord, P. (2003), 'Tax reforms: stabilisation and incentive effects', *Mimeo*, European Commission, Brussels

Buti, M., Roeger, W. and in't Veld, J. (2001), 'Stabilizing output and inflation: policy conflicts under a Stability Pact', *Journal of Common Market Studies*, 39, pp. 801-28

Calmfors, L. (2003), 'Fiscal policy to stabilise the domestic economy in the EMU: what can we learn from monetary policy?, *CESifo Economic Studies*, 49(3). pp. 319-53

Debrun, X. and Kumar, M. (2007), 'The discipline-enhancing role of fiscal institutions: theory and empirical Evidence', in The role of fiscal rules and institutions in shaping budgetary outcomes, European Commission Economic Papers, No. 275**,** European Commission, Brussels

Deroose, S., Moulin, L. and Wierts, P. (2006), 'National expenditure rules and expendituer outcomes: Evidence for EU member states', *Wirtschaftspolitische Blätter*, 53, pp. 27-42

Diamond, J. (2003), 'Performance budgeting: managing the reform process', *IMF Working Paper*, No. 33, International Monetary Fund, Washington

Dixit, A. and Lambertini, L. (2001), 'Monetary-fiscal policy interactions and commitment versus discretion in a monetary union', *European Economic Review*, 45, pp. 977-87

Drazen, Allan (2000), Political economy in macroeconomics, Princeton, New Jersey, Princeton University Press

Economic Policy Committee (2001), 'Budgetary challenges posed by ageing populations, the impact on public spending on pensions, health and long-term care for the elderly and possible indicators of the long-term sustainability of public finances', *Report by the Economic Policy Committee*, Brussels

Economic Policy Committee (2006), 'Report by the Economic Policy Committee and the European Commission on the impact of ageing populations on public spending', Economic Policy Committee, *Report by the Economic Policy Committee*, Brussels

Ende, L van den, Haberham, A and den Boogert, K. (2004), 'Tax expenditures in the Netherlands' in Brixi, H.P., Valenduc, C., and Swift, Z.L., eds., Tax expenditures – shedding light on government spending through the tax system, World Bank, Washington

European Commission (2002), 'Strengthening the co-ordination of budgetary policies', *Communication from the Commission to the Council and the European Parliament*, COM (2002) 668 final

European Commission (2003, 2004, 2005, 2006, 2007), Public finances in EMU, *European Economy no. 3*, European Commission, Brussels

European Commission (2004a), EMU after five years, *European Economy Special Report no. 1*, European Commission, Brussels

European Commission (2004b), 'Strengthening economic governance and clarifying the implementation of the Stability and Growth Pact', *Communication from the Commission to the Council and the European Parliament*, COM(2004) 581 final

European Commission (2005a), 'Recommendation on the independence, integrity and accountability of the national and community statistical authorities', *Communication of the European Commission to the Council and European Parliament*, COM(2005) 217 final

European Commission (2006a), 'National numerical fiscal rules and institutions for sound public finances', in Public Finances in EMU, pp. 121-68, European Economy no. 3, European Commission, Brussels

European Commission (2007a), 'Public Finances in EMU 2007 – Ensuring the effectiveness of the preventive arm', *Communication of the European Commission to the Council and European Parliament*, COM(2007) 316 final

European Commission (2007b), Autumn economic forecasts 2007-2009, European Economy no. 7, European Commission, Brussels

European Court of Justice (2004), Judgement of the Court of Justice in case C-27/04. Press release No. 57/04, Luxembourg: Court of Justice of the European Communities

Fabrizio, S. and A. Mody (2006), 'Can budget institutions counteract political indiscipline?', *Economic Policy,* 21(48), pp. 689-739

Fatas, A., Hagen, J. von, Hallett, A.H., Strauch, R. Sibert, A. (2003), 'Stability and Growth in Europe: towards a better pact', *CEPR Discussion Papers*, No. 4759, Centre for European Policy Research, London

Fischer, J., Jonung, L. and Larch, M., (2007), '101 proposals to reform the Stability and Growth Pact. Why so many? A Survey', *European Commission Economic Papers*, No. 267, European Commission, Brussels

Galí, J., and Perotti, R. (2003), 'Fiscal policy and monetary integration in Europe', *Economic Policy*, 37, pp. 533-72

Gleich, H., 2003, 'Budget institutions and fiscal performance in central and eastern European countries', *ECB Working Paper Series*, No. 215, European Central Bank, Frankfurt

Golinelli, R. and Momigliano, S. (2006), 'Real-time determinants of fiscal policies in the euro area', *Journal of Policy Modeling* 28, pp. 943-64

Grilli, V., Masciandaro, D. and Tabellini, G. (1991), 'Political and monetary institutions and public financial policies in the industrial countries', *Economic policy*, 13, pp. 342-92

Haan, J. de, Berger, H., Jansen, D.J. (2004**)**, 'Why has the Stability and Growth Pact failed?', *International Finance*, 7(2), pp. 235-60

Haan, J. de, W. Moessen and B. Volkering (1999), 'Budgeterary procedures – aspects and changes: new evidence for some European countries' in Poterba, J.M. and Hagen, J von, eds., Fiscal institutions and fiscal performance, The University of Chicago Press

Hagen, J. von (1992), 'Budgeting procedures and fiscal performance in the European Communities', *European Commission Economic Papers*, No. 96, European Commission, Brussels

Hagen, J. von (2006), 'Are fiscal spending rules effective?', *Wirtschaftspolitische Blätter*, 1, pp. 7-18

Hagen, J. von, Harden, I.J. (1994), 'Budget processes and commitment to fiscal discipline', *European Economic Review*, 39, pp. 771-779

Hagen, J. von, Hughes-Hallet, A and Strauch, R. (2001), 'Budgetary consolidation in EMU', *European Commission Economic Papers*, No. 148, European Commission, Brussels

Hagen, J. von, and Wolff, G.B. (2006), 'What do deficits tell us about debt? Empirical Evidence on Creative Accounting with Fiscal Rules'*, Journal of Banking and Finance*, 30(12), pp. 3259-3279

Hallerberg, M., Hagen J. von (1999), 'Electoral institutions, cabinet negotiations, and budget deficits', in Poterba, J and Hagen, J. von, eds., Fiscal institutions and fiscal performance, Chicago, University of Chicago Press,

Hallerberg, M., Strauch, R. and Hagen, J. von (2001), The use and effectiveness of budgetary rules and norms in EU Member States, *Working Paper* , Dutch Ministry of Finance

Hallerberg, M., Strauch, R., Hagen, J. von (2007), 'The design of fiscal rules and forms of governance in European Union countries', in The Role of Fiscal Rules and Institutions in Shaping Budgetary Outcomes, *European Commission Economic Papers*, No. 275, European Commission, Brussels

Hamilton, L.C. (2006), Statistics with Stata: Updated for Version 9, Thomson Brooks/Cole

Hansson Brusewitz, U. and Lindh, Y. (2005), 'Expenditure ceilings and fiscal policy: Swedisch experiences', in Banca d'Italia Volume on Public Expenditure

Hodson, D. (2005), Economic governance and the dual outcome in Euro area fiscal policy, 1999-2002, PhD Dissertation, London School of Economics and Political Science

Hodson, D. and Maher, I. (2004), 'Soft law and sanctions: Economic policy Coordination and Reform of the Stability and Growth Pact', Journal of European Public Policy, 11(5), pp. 806-821

Hughes Hallett, A. and Lewis, J. (2008), European fiscal discipline before and after EMU: permanent weight loss or crash diet, *forthcoming in Macroeconomic dynamics*

Inman, R. P. (1996), 'Do balanced budget rules work? U.S. experience and possible lessons for the EMU', *NBER Working Paper Series*, No. 5614, National Bureau of Economic Research

International Monetary Fund (2004), 'Has fiscal behavior changed under the European Economic and Monetary Union?', in World Economic Outlook, April, Washington D.C.

International Monetary Fund (2005), 'Promoting fiscal discipline: is there a role for fiscal agencies?, *Board Paper prepared by the Fiscal Affairs Department*, International Monetary Fund, Washington

Jonung, L and Larch, M. (2006) 'Improving fiscal policy in the EU: The case for independent Forecasts', *Economic Policy*, 21(47), pp. 491-531

Judson, R.A. and Owen, A.L. (1999), 'Estimating dynamic panel data models: A guide for macroeconomists', *Economic Letters* 65, pp. 9-15

Koen V., and van den Noord, P. (2006), 'Fiscal gimmickry in Europe: One-off measures and creative accounting', in Fiscal policy surveillance in Europe, Wierts, P. Deroose, S, Flores, E and Turrini, A., eds., Palgrave McMillan, Bansingstoke

Kopits, G. and Symanski, S., 1998, Fiscal policy rules, IMF Occasional Paper 162, Washington

Kraan, D.J. (2004), 'Off-budget and tax expenditures', *OECD Journal on Budgeting*, 4, pp. 121-142

Krogstrup, S. and Wyplosz, C. (2007), 'A common pool theory of deficit bias correction', in The role of fiscal rules and institutions in shaping budgetary outcomes, *European Commission Economic Papers*, No. 275, European Commission, Brussels

Kydland, F. Prescott, E.C. (1977), 'Rules rather than discretion: the inconsistency of optimal plans', *Journal of Political Economy*, 85(3), pp. 473-492

Lane, P.R. (2003), The cyclical behaviour of fiscal policy: Evidence from the OECD, *Journal of Public Economics*, 87, pp. 2661-2675

Larch, M. and Salto, M (2005), 'Fiscal rules, inertia and discretionary fiscal policy', *Applied Economics*, 37, pp. 1135-46

Manasse, P. (2007), Deficit limits and fiscal rules for dummies, *IMF Staff Papers*, 2007, 54(3), pp. 455-47

McKissack, A. and Comley, B. (2006), 'Fiscal sustainability and pre-funding strategies in OECD countries' in Public Expenditure, Banca d'Ialia, Rome

Mélitz, J. (1997), 'Some cross-country evidence about debts, deficits, and the behavior of monetary and fiscal authorities', *CEPR discussion papers*, No. 1653, Centre for European Policy Research, London

Mierau, J.O., Jong-A-Pin, R. Haan, J. de (2007), 'Do political variables affect fiscal policy adjustment decision?, New Empirical Evidence', *Public Choice*, 133(3-4), pp. 297-319

Milesi-Ferretti, G. (2003), 'Good, bad or ugly? On the effects of fiscal rules with creative accounting', *Journal of Public Economics*, 88, pp. 377-394

Milesi-Feretti, G.M. and Moriyama, K. (2004), 'Fiscal adjustment in EU countries: a balance sheet approach', *IMF Working Paper*, No 143, International Monetayr Fund, Washington

Milesi-Ferretti, G.M., Perotti, R. and Rostagno, M. (2002), 'Electoral Systems and Public Spending', *The Quarterly Journal of Economics*, May, pp. 609-657

Morris, R., Ongena, H. and Schuknecht, L. (2006), 'The reform and implementation of the Stability and Growth Pact', *Occasional Paper Series*, No. 47, European Central Bank, Frankfurt

Mueller, D.C., 2003, Public choice III, Cambridge, Cambridge University Press

Moulin, L. (2004), Expenditure rules *à la française*, ECFIN Country focus, DG Economic and Financial Affairs, Brussels

Moulin, L. and Wierts, P. (2007), 'How credible are multiannual budgetary plans in the EU?', in Banca d'Italia volume on Fiscal Indicators

Nordhaus, W, 1975, 'The political business cycle', *Review of economic studies*, 42, pp. 169-190

OECD (2005), Euro Area economic survey, Organisation for Economic Cooperation and Development, Paris

Patterson, K. (2000), An introduction to applied econometrics, Palgrave Macmillan, Bansingstoke

Perotti, R. Kontopoulos, Y. (2002), 'Fragmented fiscal policy', *Journal of Public Economics*, 86, pp. 191-222

Persson, T. and Svensson, L.E.O., (1989), 'Why a stubborn conservative would run a deficit: policy with time-inconsistent preferences', *Quarterly Journal of Economics*, 104(2), pp. 325-345

Persson, T. and Tabellini, G. (2002), 'Political institutions and policy outcomes: What are the stylised facts?, Mimeo, Institute for International Economic Studies

Persson, T. and Tabellini, G. (2004), 'Constitutional rules and fiscal policy outcomes', *American Economic Review*, 94, pp. 25-45

Poterba, J.M. (1996), 'Do budget rules work?', *NBER Working Paper Series,* No. 5550, National Bureau of Economic Research

Ricciuti, R., 2004, Political fragmentation and fiscal outcomes, *Public choice*, 118, pp. 365-388

Rodden, J. (2006), 'Achieving fiscal discipline in federations: Germany and the EMU', in Fiscal policy surveillance in Europe, Wierts, P. Deroose, S, Flores, E and Turrini, A., eds., Palgrave McMillan, Bansingstoke

Roubini, N. and Sachs, J. (1989). 'Government spending and budget deficits in the industrial economies', *NBER Working Paper Series*, No. 12919, National Bureau of Economic Research

Schelkle, W. (2007), 'EU fiscal governance: Hard law in the shadow of soft law?', *Columbia Journal of European Law* 13, 3, pp. 705-731

Schick, A. (2002), 'Does budgeting have a future', *OECD Journal on Budgeting*, 2(2), pp. 7-48

Shepsle, K.A. and Weingast, B.R. (1981), 'Political preferences for the pork barrel: a generalization', *American journal of political science*, 25, pp. 96-111

Schick, A. (2003), 'The performing state, reflection on an idea whose time has come but whose implementation has not', *OECD Journal on Budgeting*, 3 (2).

Stark, J. (2001), 'Genesis of a Pact', in Brunila, A., Buti, M. and Franco, D., eds., The Stability and Growth Pact – The acrchitecture of fiscal policy in EMU, Palgrave McMillan, Bansingstoke

Strauch, R., Hallerberg, M., and Hagen, J. von (2004), 'Budgetary forecasts in Europe – the track record of Stability and Convergence Programmes', *ECB Working Paper Series*, No. 307, European Central Bank, Frankfurt

Stevens, L. (2006), 'Fiscale Instrumentalisering', *Economisch Statistische Berichten*, 91, pp. 580-583

Studiegroep begrotingsruimte (2006), Vergrijzing en houdbaarheid, 12th report, sent to Parliament by the Dutch Minister of Finance

Sutherland, D., Price, R. and Joumard, I. (2005), 'Fiscal rules for sub-central level of governments: design and impact', *OECD Economics department working paper*, No 465, OECD, Paris

Tabellini, G. and Alesina, A. (1990), 'Voting on the budget deficit', *American Economic R*eview, 80, pp. 37-49

Tornell, A. and Lane, P.R. (1999), 'The voracity effect', *American Economic Review*, 89, pp. 22-46

Velasco, A., 'A model of endogenous fiscal deficits and delayed fiscal reforms', in Poterba, J and Hagen, J. von, eds., Fiscal institutions and fiscal performance, Chicago, University of Chicago Press,

Verbeek, M. (2004), A guide to modern econometrics, 2nd edition, John Wiley & Sons, Ltd

Wehner, Joachim. 'Assessing the power of the purse: an index of legislative budget institutions', *Political Studies*, 54(4), pp. 767-785

Weingast, B.R., Shepsle, K.A., and Johnson, C. (1981), 'The political economy of benefits and costs: A neoclassical approach to distributive politics', *Journal of political economy*, 89(4), pp. 642-664

Wibbels, E. and Rodden, J. (2006), 'Business cycles and the political economy of decentralized finance: lessons for fiscal federalism in the EU', in Fiscal policy surveillance in Europe, in Wierts, P. Deroose, S, Flores, E and Turrini, A., eds., Palgrave McMillan, Bansingstoke

Wierts, P. (2005), Expenditure Composition and Institutional Reform in EU Countries: a Policy Perspective, *Presupuesto y Gasto Público*, 39, pp. 29-48

Wierts, P., Dersoose, S, Flores, E. and Turrini. A., eds. (2006), Fiscal policy surveillance in Europe, Palgrave McMillan, Bansingstoke

Wierts, P. (2007), 'The sustainability of euro area debt: a re-assessment', *DNB Working Paper*, No. 134, De Nederlandsche Bank, Amsterdam

Wirtschaftspolitische Blätter (2006), Special issue on fiscal spending rules, *Wirtschaftspolitische Blätter,* 53

Woldendorp, J., Keman, H., and Budge, I. (2000), Party government in 48 democracies: 1948-1998, Norwell, MA: Kluwer Academic Publishers.

Wyplosz, C. (1997) 'EMU: why and how it might happen', *Journal of Economic Perspectives*, 11(4), pp. 3-22

Wyplosz, C. (1999), 'Economic policy coordination in EMU: strategies and institutions', Paper presented to The Fourth Franco-German Forum, Bonn

Wyplosz, C. (2005), 'Fiscal policy: institutions versus rules', *National Institute Economic Review*, No. 191, pp. 70-84

Yläoutinen, S., 2006, 'Fiscal Frameworks in the Central and Eastern European Countries', *Finish Ministry of Finance Discussion Paper*, No. 72, Helsinki