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Sticking to fiscal plans: the role of institutions

Jürgen von Hagen

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Abstract The rules-based fiscal framework of the EMU relies heavily on the development of medium-term fiscal plans by the EU governments. In this paper, I present an empirical analysis of the deviations from the plans presented in the annual Stability and Convergence Programs. I focus on projections for real GDP growth and general government balances, revenues and spending at different time horizons. I show that deviations from the projections presented in these Programs since 1999 can be explained by institutional factors, i.e., the form of fiscal governance and the stringency of fiscal rules.

Keywords EMU · Fiscal institutions · Fiscal policy · Stability and convergence programs · Stability and growth pact

JEL Classification H62 · H63 · H87

1 Introduction

The framework for the conduct of fiscal policy in the European Monetary Union (EMU) as defined by the Maastricht Treaty and the *Stability and Growth* Pact (SGP) relies heavily on fiscal rules, that is, publicly announced, numerical guidelines and constraints for major aggregates of the annual budget. Within this framework, the governments of the member states are required to develop medium-term fiscal plans showing how these aggregates are expected to develop and explaining the policies adopted to achieve the planning targets. Since 1998, all member governments of the EU have reported such medium-term plans on an annual basis in the *Stability and Growth Programs* or *Convergence Programs* they submit to

J. von Hagen (✉)
IIW, University of Bonn, Lennestrasse 37, 53113 Bonn, Germany
e-mail: vonhagen@uni-bonn.de

the European Commission.[1] The quality and reliability of these fiscal plans and their ability to guide the public's expectations of fiscal policy obviously depend on the intention and the performance of the governments regarding the achievement of the targets they announce.

A number of recent empirical studies have investigated the quality of the projections of important budgetary parameters European governments publish in this context, evaluating them as forecasts of fiscal outcomes. Brück and Stephan (2006) look at the national forecasts of the annual budget balance published in the European Commission's *European Economy* for 1995 to 2004. They argue that the introduction of the SGP caused the emergence of a *political forecasting cycle*: Euro area governments issue budget balance forecasts which are significantly upwards biased in periods closely before elections. Furthermore, they find that coalition governments and governments leaning to the political left are associated with overly optimistic forecasts on the budget balance.[2] Piña and Venes (2007) use the fiscal forecasts reported by all EU member countries bi-annually in the context of the Excessive Deficit Procedure (EDP). They show that budget balance forecast errors are systematically and positively affected by GDP growth forecast errors and find a negative impact of elections on the forecast errors, although this effect is not significant in all specifications. Piña and Venes also find that the average forecast errors are significantly negative when the actual realization is reported by a government whose ruling parties were in opposition when the forecast was made, and that the bias may depend on the design of the budget process, i.e., the framework within which governments make decisions over their annual budgets.

Strauch et al. (2004) use data from all Stability and Convergence Programs in the 1990s and until 2002 to analyze the bias and efficiency of the governments' projections for real GDP growth and the budget balance. They find that some countries systematically publish too optimistic and others too cautious forecasts. Forecast errors of the budget balance are affected by the cyclical position of the economy and the design of the budget process.[3] Governments operating under a budgetary framework that emphasizes numerical targets tend to have overly cautious projections for the budget balance, a result which is confirmed by Annett (2006) with data for the EU-12 countries from 1999 to 2004. Strauch et al. also show that these projections are not efficient in the sense of using all available information. Finally, Jonung and Larch (2006) focus on the properties of the real GDP growth forecasts governments use as inputs into their fiscal projections. They find that there is a tendency in European countries to overestimate growth. This tendency is particularly pronounced as elections approach. Jonung and Larch show that the forecasts published by governments relying on independent forecasting agencies have a smaller bias and recommend that all governments in EMU should be asked to use forecasts from independent agencies. In sum, this research has shown that there is considerable variation in the forecasting performance of the EU member state governments and that the projections are often biased and inefficient.

[1] Member states participating in the European Monetary Union submit Stability and Growth Programs, while the others submit Convergence Programs. Even before 1998, governments were required to submit Convergence Programs containing medium-term fiscal plans. Not all governments, however, submitted such programs on an annual basis. Governments of member states not belonging to EMU now submit Convergence Reports on an annual basis, too.

[2] In recent, unpublished work, Javier Perez points out that Brück and Stephan wrongly interpret forecasts made by EU Commission staff as forecasts made by the national governments, and they do not explain why the Commission might have an incentive to "cheat" on fiscal forecasts.

[3] For studies of the forms of fiscal governance in Europe see Hallerberg and von Hagen (1999) and Hallerberg et al. (2007, 2009).

These findings cast some doubt on either the governments' ability to produce good forecasts or their willingness to disclose all the information they have.[4]

This literature tacitly assumes that fiscal forecasts are made by "the government", a unified actor, and that they are published to guide the expectations of the general public. It is then natural to expect (and demand) that the projections be unbiased and use all available information, and, thus, to test for efficiency and unbiasedness in ways similar to tests for the *rationality* of economic forecasts presented by Gebhard Kirchgässner (1984a, 1985, 1991, 1993).[5] In the context of the European fiscal framework, however, there are several reasons why this may not be the best way of thinking about the issue. First, the fiscal projections considered are embedded in fairly technical reports which do not catch much attention in the media nor the public debate. Second, these reports are submitted to the European Commission which uses them together with a host of other information in its assessment of the sustainability of the member states' public finances. The Commission itself does not have the resources to make its own forecasts for each member state and, therefore, must rely heavily on the information conveyed to it by the member states.[6] However, the Commission's assessment of a member country's performance under the SGP can lead to *early warnings* about the country's fiscal policy and its likelihood of staying within the limits of the SGP, and, ultimately to a recommendation to ECOFIN, the Council of Finance Ministers, to declare that the country has an "excessive deficit". These warnings and declarations do catch the public's attention and, therefore, carry political costs for the government concerned. Governments, therefore, have incentives to avoid such statements.

Third, the executive branches of the national governments in the EU are not unified actors. They consist of cabinets made up of a number of ministers headed by a prime minister. Depending on the political system, these ministers come from the same or from different political parties. Either way, they represent different political constituencies and interests, all competing for public funds. Among the ministers, only the minister of finance has the resources and administrative capacity to produce the economic and fiscal forecasts published by the government. The minister of finance is also typically responsible for managing the annual budget process. This gives him a considerable informational and strategic advantage over the other cabinet members, which he can use to pursue his political agenda.

This view of the political environment in which they are made suggests a different interpretation of the fiscal projections. Specifically, it seems plausible that the finance minister, who produces the projections, uses them strategically to influence the assessment of the European Commission of his government's fiscal performance and the behavior of the other ministers in the budget process. Note that, in an environment of asymmetric information, using a projection strategically is consistent with the assumption that the other actors are

[4] A very early study in this context is found in von Hagen and Harden (1994) who consider the bias and precision of government revenue and expenditure forecasts taken from the European Commission's bi-annual *Economic Forecasts*. Based on data from 1980 to 1991, the authors show that relatively high-debt countries and high-deficit countries in the EU tended to have overly optimistic and relatively imprecise revenue forecasts. The difference between high and low-debt and deficit countries was statistically significant. In contrast, expenditure forecasts did not vary systematically with the debt or deficit position of the countries. Furthermore, the authors show that countries with relatively good budget institutions had significantly more precise expenditure and revenue forecasts.

[5] The properties of economic forecasts have been a subject of Kirchgässner's research over the years. Most recently, he has investigated the stickiness of such forecasts in Kirchgässner and Müller (2006).

[6] This does not, of course, exclude the possibility that the Commission's staff has its own views on the economy of a member state and can judge the plausibility of its forecasts within limits.

rational.[7] In the next section, I derive some more specific hypotheses about the implications of this view, focusing in particular on the role of different designs of the budget process.

2 Political economy of fiscal projections

In this section, I derive some hypotheses about the properties of fiscal projection errors based on political economy considerations. I will first consider the relationship between the member states and the European Commission and then turn to the relationship among the ministers of a national government.

The fiscal framework of the Maastricht Treaty obliges the governments of the member states unconditionally to maintain the sustainability of public finances. The Treaty itself expresses this commitment in terms of avoiding excessive deficits and obliges the European Commission to monitor the member states' compliance with that commitment. A government exceeding the threshold of 3% of GDP for the annual budget deficit will be subject to a review by the Commission which may lead to a recommendation to the European Council to declare that the country does have an excessive deficit. In practice, this threshold has come to be interpreted as an upper limit on deficits in the public debate. The provisions of the Treaty have been refined and tightened in the SGP which commits the governments to keep their budgets close to balance or in surplus and requires them to submit annual Stability and Growth Reports (Convergence Reports for EU members who have not joined the euro) to the Commission explaining their intentions for how to keep that commitment in the medium term (the current and the next two fiscal years). If a country deviates from its previously submitted program in the direction of larger deficits, the Commission may issue a public statement asking for a correction of its fiscal policies.

The political cost of public reprimand by the Commission obviously creates an incentive for governments to avoid such outcomes; otherwise, the framework would have no bite in imposing more discipline on national fiscal policies. But the prospect of a public reprimand also creates incentives for the governments to present their fiscal projections in ways that reduce the risk of being chided in public. Assume that a government has an internal deficit forecast based on a macro economic model and all currently available information indicating that the deficit it in two years' time will exceed the 3% threshold. It seems very unlikely that the government would reveal that forecast in its Stability and Growth Report, since doing would suggest that it expects to violate the very rules it has promised to observe and this would invite criticism from the Commission. To avoid that, the government would rather publish budgetary projections consistent with its commitments under the European fiscal framework. Thus, budgetary projections will be biased in the direction of close to balance or in surplus. Since there is little room for adjustment of fiscal policy in the budget year when the projections are submitted, this tendency should be stronger for projections one and two years ahead.

The European fiscal framework gives a number of reasons why deviations from this goal may be excused. In its assessment of a country's fiscal performance, the Commission has to take into account the cyclical stance of the economy and other circumstances which are not controlled by the government as well as the likelihood of a timely return to budget balance. Thus, economic growth weaker than projected can serve as an excuse for a deviation in the direction of higher deficits. This creates an incentive for governments to overstate

[7] For the compatibility of optimal government behavior and political business cycles with the rationality of voters see Kirchgässner (1983, 1984b).

their growth expectations. Furthermore, since government spending can be controlled more directly than revenues and automatic stabilizers in Europe operate mainly on the revenue side of the budget, the tendency to submit projections biased in the direction of budget balance should be stronger for revenues than for expenditures.

Let us now turn to the relationships within the executive branch of the government. A growing literature has pointed to the spending and deficit bias arising from the common pool externality of the government budget. Behind this externality is the fact that the revenues flowing into the budget come from taxes imposed on taxpayers in general, while the majority of the expenditures financed out of the budget are targeted at specific groups of voters or political constituencies. The discrepancy between those who benefit from individual public policies and those who pay for it implies that the former do not realize the full marginal cost of funding and, therefore, ask for higher levels of spending than they would otherwise.[8] As a consequence, individual cabinet members, who represent groups of political constituency, have a tendency to bid for excessive levels of spending and deficits. The literature has shown both theoretically and empirically that this bias can be reduced by designing the budget process such that the externality is internalized by the decision makers involved. In the European context, there are two institutional approaches, or "modes of fiscal governance" to achieving that (Hallerberg et al. 2007, 2009). The *delegation* approach refers to an institutional setting that vests the finance minister with significant agenda setting and control powers over the other members of the executive branch of the government. This is based on the idea that the finance minister is responsible for the budget as a whole and, therefore, internalizes the common pool externality. In the EU today, Austria, Germany, Spain, France, Greece, Italy, and the United Kingdom follow this approach, though with different degrees of stringency (Hallerberg et al. 2007). The *contracts* approach refers to an institutional setting focusing on numerical targets for the main budgetary aggregates such as the budget balance, total spending, and the total allocations for each spending ministry, negotiated among all members of the executive branch of the government at the start of the annual budget process and often derived from or anchored in the coalition contract under which the government was formed. In this setting, the externality is revealed and internalized through the process of negotiating fiscal targets. In the EU, the governments operating under *contracts* are those of Belgium, Denmark, Ireland, Luxembourg, the Netherlands, Portugal, Finland, and Sweden. The minister of finance is responsible for managing the budget process and has important information advantages and control powers in this setting, but he is not strong as an agenda setter in the budget process. As explained in Hallerberg et al. (2007), the choice between these two institutional approaches depends on a country's electoral system and the resulting, typical party composition of the executive: The *contracts* approach is more adequate for multi-party coalitions and relatively competitive electoral systems, whereas the delegation approach is more adequate for single-party governments or two-party coalitions in less competitive electoral systems.[9]

A second, important distinction in this context is between strong and weak fiscal rules. I define *fiscal rules* as a budgetary framework that puts heavy emphasis on numerical targets for multiple periods and which is characterized by conditional provisions regarding the steps

[8] See von Hagen and Harden (1995) and Krogstrup and Wyplosz (2010) for expositions of the basic model, and Velasco (1999) for a dynamic version of the model.

[9] An alternative approach to the common-pool problem focuses on the role of electoral institutions and, in particular, the degree of direct democracy to contain public spending and debts; see e.g., Feld and Kirchgässner (2001). I do not pursue this line of argument here. In Hallerberg et al. (2009), we show that there is a link between the choice and effectiveness of budgetary institutions and electoral systems.

to be taken to adjust the budget to unforeseen changes in economic circumstances during the fiscal year (see von Hagen 2006). While the distinction between *contracts* and *delegation* emphasizes the nature of the negotiations among the ministers and the enforcement of the contract, the distinction between strong and weak *fiscal rules* focuses on the degree of political commitment to the numerical targets, the length of the time horizon covered by the rule, and the nature of the conditional adjustment rules. In practice, there is some overlap between these two characterizations of budgetary institutions. As shown in von Hagen (2006), EU countries following a relatively strong *contracts* approach typically have stronger fiscal rules than others, too. Yet, the correlation is not perfect. Among the EU-15 countries, those applying strong fiscal rules during the sample period are Belgium, Ireland, Luxembourg, the Netherlands, Portugal, and the United Kingdom.

A first hypothesis flowing from these considerations concerns the forecast for GDP growth produced by the finance minister. Since this forecast is an indicator of the resources that will be available in the coming fiscal year, the finance minister has an incentive to submit relatively low forecasts to discourage his cabinet colleagues from asking for large amounts of spending.[10] Thus, one may expect that real GDP growth projections submitted by finance ministers are biased downward. Furthermore, the bias should be stronger for projections relating to the next fiscal years than for the current year for which the budget has already been decided. The incentive to use growth projections strategically should be greater for finance ministers operating under the *contracts* approach than for finance ministers operating under the *delegation* approach, since the latter can use their agenda-setting power to control the budget bids of the other ministers, while the former will find it difficult to negotiate a new fiscal contract when GDP growth is less than expected. However, when *contracts* are combined with strong fiscal rules, the renegotiation problem is less severe and the incentive to use growth projections strategically should be smaller.

The design of the budget process is likely to affect a government's ability and willingness to stick to a medium-term fiscal program. Budget processes of the *contract* type imply a stronger commitment to medium-term programs than a framework of delegation, as deviations from the program imply a need for costly renegotiation among the parties involved in the contract. This suggests that fiscal contracts lead to smaller deviations from such programs. At the same time, one may also expect that governments operating under fiscal contracts are less able to react to unforeseen economic developments than governments operating under delegation, unless they have fiscal rules for dealing with such situations. This would lead to larger deviations under fiscal contracts. To overcome this weakness, some governments operating under the *contract* mode implement fiscal rules prescribing the reaction to unforeseen developments ex ante (see von Hagen 2006).

This reasoning leads to some further hypothesis regarding the properties of fiscal projection errors. The first is that governments operating under a *contract*-type budget process should have projections for the budget balance and revenues which are biased downward. Such a bias would make positive deviations from the projections more likely, and negotiations about the use of revenues larger than projected are probably politically less difficult and costly than negotiations about the budget cuts required by revenues smaller than projected. This tendency should be even stronger for governments operating under a *contract*-type combined with strong fiscal rules. Finance ministers operating under the *delegation*

[10] Note, again, that this does not assume that the spending ministers are non-rational. The information advantage allows the finance minister to use his forecast strategically within limits, i.e., subject to the condition that it must seem reasonable to the spending ministers. Furthermore, if the spending ministers anticipate a downward bias of the growth projection and incorporate that bias in their budget bids, the bias may become part of the equilibrium of the negotiations.

approach have more powers to adjust the budget to unforeseen events and, therefore, have less reason to bias their budget-balance and revenue projections downwards.

3 Empirical analysis of growth and fiscal projection errors

In this section, I use data from the annual Stability and Convergence programs to analyze the deviations between projected and actual outcomes for real GDP growth and the general government budget balance, revenues and expenditures relative to GDP. I thus extend the analysis in Strauch et al. (2004) focusing on the EMU period starting in 1999.

3.1 Data

The data are taken from the annual Stability and Growth Programs and Convergence Programs of the EU-15 countries from December 1998 to December 2004. They contain projections for real GDP growth as the key economic forecast, together with projections of the general government balance, general government revenues and general government spending as ratios of GDP. All data are annual. I use projection horizons of zero, one, and two years, where zero means that a projection is being made for the fiscal year during which the projection is published. Usually, the publication takes place rather late in the year. Actual realizations are from the Statistical Annex of *European Economy* (2007). Note that the projections submitted by the national governments apply to the same variables and follow the same statistical definitions for all countries, assuring the comparability of the national aggregates. For the subsequent analysis, I have seven Programs for each country and, hence, 105 observations for all variables.[11]

Let x_t be a variable for which a projection is presented in a Stability and Growth Program or a Convergence Program, and x_t^P the projection. With some abuse of language, I call $u_t^x = x_t - x_t^P$ the projection error, keeping in mind that the deviation between the actual value and the projection is not necessarily an "error" in the sense of being due entirely to a lack of information. Note that a positive error means that the projection underestimated the actual realization, while a negative error implies an overestimation of the actual realization.

A projection error for fiscal variables consists of two elements. One is the endogenous change in the variable projected due to unforeseen changes in the economic environment. The other is the change in this variable due to discretionary policy measures. Separating the two requires an identification of how the fiscal variable under consideration reacts to unforeseen changes in economic circumstances. Taking the projection error for real GDP growth as the main indicator of the latter, one might regress the fiscal projection error on the real GDP growth projection error and define the residual as a proxy for discretionary policy changes. This, however, amounts to assuming that discretionary policy does not or cannot react systematically to unforeseen changes in real GDP growth during the year. Since I do not want to make such a restrictive assumption, I use the budgetary elasticities calculated by the OECD to construct proxies for the discretionary part of the fiscal projection errors. Let $\beta_{x,y}$ be the elasticity of the fiscal variable x with respect to real GDP growth, y, as estimated

[11] I focus entirely on budgetary flows in this analysis. Discrepancies between the annual budget balance and the annual change in public debt, which might arise from stock-flow adjustments and other accounting practices to "hide" deficits outside the budget, therefore do not affect our analysis and are beyond the scope of this paper. For an empirical analysis of such practices in the context of the Stability and Growth Pact see von Hagen and Wolff (2006).

by the OECD (van den Noord 2000).[12] I define $\delta_t^x = u_t^x - \beta_{x,y} u_t^y$ as the discretionary part of a fiscal projection error, where u_t^y is the projection error for real GDP growth. Intuitively, the discretionary part of the projection error is the raw projection error, u_t^x, corrected for the impact of unforeseen changes in real GDP growth through the automatic stabilizers built into the revenue and expenditure side of the budget. In doing so, I rely on the assumption that the OECD estimates use valid and good instruments to solve the simultaneity problem arising in the estimation of the elasticities.

Note that this approach also corrects the fiscal projection error for any bias that the government might have introduced in the growth projection. For example, if $\beta_{x,y} > 0$ and the projections for the fiscal variable and real growth are both biased upward biased, the average of the discretionary part of the fiscal projection error will be smaller than the average of the raw projection error, indicating that the discretionary bias in the fiscal projection is smaller than the total bias.

In the empirical analysis below, I am particularly interested in the impact of the type of budget process on the projections for real GDP growth and fiscal aggregates. As explained in Hallerberg et al. (2007, 2009), all EU-15 countries belong to one of two groups in the post-1998 sample, namely countries with governments operating under the *delegation* approach and countries with governments operating under the *contracts* approach.[13] I test for the impact of the form of fiscal governance using a dummy variable (contracts) which is one for countries with governments operating under the contracts approach and zero otherwise. Thus, the reference case is countries operating under the *delegation* approach.

With regard to fiscal rules, I use the classification proposed in von Hagen (2006) describing the stringency, enforcement of and commitment to numerical rules in the budget process. This allows me to distinguish between a group of countries with relatively strong fiscal rules (Belgium, Luxembourg, the Netherlands, the United Kingdom, Portugal, and Ireland) and the group of remaining countries, which have relatively weak rules. Below, I use a "rules" dummy which is one for the first group and zero for the other. Note that, where both the delegation and the rules dummies are used in the regressions below, the reference case comprises the countries with governments operating under the *delegation* approach and relatively weak fiscal rules, i.e., Austria, France, Germany, Italy, and Spain.

Following the earlier literature, I control for the impact of national elections on growth and fiscal projection errors. For this purpose, I use the national election dates in *National Elections*. Finally, I use the output gap lagged relative to the year when the projection was made to control for the cyclical position of the economies. These data are taken from the European Commission's AMECO data base.

3.2 Average projection errors

Tables 1 and 2 report some descriptive statistics for the projection errors and the discretionary deviations. Average real GDP projection errors are significantly positive on average for the current year (horizon of zero), close to zero for one year ahead and negative on average for two years ahead. This last observation is consistent with Jonung and Larch (2006). Average projection errors for the budget balance are significantly negative on average for all horizons, indicating that governments tend to show overly optimistic projections in their

[12] The elasticities for Luxembourg are taken from Bouthaineville et al. (2001).

[13] In earlier years, a third approach existed under which neither fiscal contracts nor a finance minister vested with strong agenda-setting powers existed. See Hallerberg et al. (2009).

Table 1 Descriptive statistics: projection errors

	Horizon	Mean	*t*-value	RMSE
Real GDP growth	0	0.34	3.89***	0.91
Balance	0	−0.32	−2.64***	1.26
Revenues	0	−0.68	−3.02***	2.33
Expenditures	0	−0.33	−1.53	2.21
Real GDP growth	1	0.05	0.34	1.45
Balance	1	−0.39	−2.24**	1.80
Revenues	1	−0.46	−1.86*	2.54
Expenditures	1	−0.09	−0.43	2.26
Real GDP growth	2	−0.19	−1.20	1.50
Balance	2	−0.59	−2.62***	2.32
Revenues	2	−0.20	−0.74	2.76
Expenditures	2	0.39	1.54	2.57

Source: own calculations

*Statistical significance of level of 10 percent

**Statistical significance of level of 5 percent

***Statistical significance of level of 1 percent

Table 2 Descriptive statistics: discretionary deviations

	Horizon	Mean	*t*-ratio	RMSE
Balance	0	−0.49	−3.77***	1.33
Revenues	0	−0.73	−3.05***	2.45
Spending	0	−0.24	−1.11	2.23
Balance	1	−0.40	−2.52**	1.62
Revenues	1	−0.46	−1.84*	2.58
Spending	1	−0.07	−0.31	2.15
Balance	2	−0.50	−2.56**	2.01
Revenues	2	−0.16	−0.56	2.83
Spending	2	0.35	1.45	2.45

Source: own calculations

*Statistical significance of level of 10 percent

**Statistical significance of level of 5 percent

***Statistical significance of level of 1 percent

Stability and Convergence Programs. As Table 1 suggests, this tendency to be overly optimistic on average relates principally to a too optimistic projection for general government revenues for the current and the next year. Projection errors for general government expenditures are sizeable on average, but, due to the fairly large RMSEs, the averages are not statistically significant. RMSEs are indeed large for the fiscal variables. For example, the raw data for general government revenues indicate that the 95% confidence interval related to official projections amount to approximately +/−5% of GDP. Confidence intervals for general government spending are of similar size. This suggests that the precision of the fiscal projections is rather limited.

Table 2 presents the descriptive statistics for the discretionary deviations contained in the projection errors. Again, I find that the mean deviations for general government balances and revenues are significantly negative and that the RMSEs are fairly large.

3.3 Econometric estimates

In this section, I present econometric estimates of panel models explaining the projection errors for real GDP growth, the general government budget balance, general government

Table 3 Real GDP growth projection errors

Model	1	2	3	4
Horizon	0	1	2	2
Constant	0.26**	−0.11	−0.20	−0.31*
(s.e.)	(0.10)	(0.14)	(0.17)	(0.18)
Contracts	−0.08	−0.43**	0.43**	0.86***
(s.e.)	(0.15)	(0.19)	(0.21)	(0.21)
Rules	0.26	0.52**	0.52**	0.64**
(s.e.)	(0.17)	(0.21)	(0.21)	(0.32)
Election	−0.10	−0.29	−0.24	−0.26
(s.e.)	(0.18)	(0.23)	(0.25)	(0.25)
Output gap lagged	0.07	−0.33**	−0.33**	−0.28**
(s.e.)	(0.07)	(0.13)	(0.13)	(0.14)
Rules ∗ contracts				−1.08***
(s.e.)				(0.44)
R^2	0.22	0.54	0.54	0.55

Source: own calculations

*Statistical significance of level of 10 percent

**Statistical significance of level of 5 percent

***Statistical significance of level of 1 percent

revenues, and spending. All panels use time fixed effects to account for the impact of common cyclical movements and economic shocks. Using country-fixed effects is not possible in our context, since they would absorb the effect of the institutional dummies as institutions do not change over the sample period. To correct for cross-sectional heterogeneity, nevertheless, all regressions use estimators with cross-sectional, panel-corrected standard errors.[14]

Table 3 presents the results for real GDP growth projection errors. For a projection horizon of zero, I find a no systematic influence neither of the institutional dummies, nor the electoral dummy on the projection error. Corresponding to Table 1, the average projection error is significantly positive. For a projection horizon of one year, the results are different. The average projection error is negative but statistically insignificant. However, governments operating under a contracts approach have a positive and significant forecast bias, and for governments operating under strong fiscal rules, the average error is positive and even larger. The negative coefficient on the lagged output gap indicates that governments issue overly optimistic growth projections when the output gap in the preceding year was positive, and overly pessimistic projections when the output gap in the preceding year was negative. The election dummy has a negative but statistically insignificant coefficient.

Turning to the two-year-ahead projections in column 3 of Table 3, the results are similar, except that the effect of fiscal rules is no longer statistically significant. In column 4, I make the additional distinction between countries operating under the *contract* approach with strong and weak fiscal rules. In this specification, the coefficient on the rules dummy is positive and strongly significant. In contrast, the coefficient on the multiplicative dummy for strong rules and contracts is negative and very significant, too. Using a Wald test, I cannot reject the hypothesis that the sum of the two coefficients is zero (p-value = 0.57). The effect

[14] The estimates use the panel estimator in Eviews 6. Additional correction for autocorrelation did not change the results and are not reported below.

Table 4 Budget balance projection errors

Model	1	2	3	4	5
Horizon	0	1	1	2	2
Constant	−0.58***	−0.75***	−0.83***	−1.4***	−1.28***
(s.e.)	(0.19)	(0.25)	(0.27)	(0.30)	(0.32)
Contracts	0.05	0.79***	1.05***	1.31***	1.69***
(s.e.)	(0.26)	(0.32)	(0.39)	(0.38)	(0.45)
Rules	0.80***	0.51	1.13**	0.19	1.12**
(s.e.)	(0.27)	(0.33)	(0.48)	(0.39)	(0.56)
Election	−0.16	−0.86***	−0.87***	−0.69	−0.71
(s.e.)	(0.29)	(0.40)	(0.29)	(0.46)	(0.45)
Output gap lagged	−0.08	−0.10	−0.09	−0.09	−0.06
(s.e.)	(0.15)	(0.20)	(0.20)	(0.23)	(0.23)
Rules ∗ contracts			−0.91		−1.36*
(s.e.)			(0.64)		(0.74)
R^2	0.21	0.32	0.33	0.42	0.43

Source: own calculations

*Statistical significance of level of 10 percent

**Statistical significance of level of 5 percent

***Statistical significance of level of 1 percent

of elections remains statistically insignificant, and the lagged output gap retains its negative coefficient with weak statistical significance.[15]

Altogether, the results suggest that, for in-year projections, governments have a tendency to issue overly pessimistic growth forecasts regardless of the design of their budgetary institutions. For growth projections with a horizon of one and two years, however, these institutions do make a difference. In line with our hypotheses above, growth projections are biased downwards for governments operating under a contracts approach, but not for governments operating under a delegation approach. Strong fiscal rules mitigate the incentive for overly pessimistic growth forecasts. Only in the case of two-year-ahead projections there is weak evidence that governments operating under *delegation* submit too optimistic projections as suggested by the relationship between governments and the European Commission.

Next, I turn to the projection errors for general government budget balances. The results are reported in Table 4. At the projection horizon of zero, the intercept is negative and statistically significant, indicating that, on average, EU governments project a too large value for the budget balance within the year. The only other, significant effect is for governments operating under strong fiscal rules; there the coefficient is positive. Since the total projection bias for these countries is the sum of the intercept and the coefficient on the rules-dummy, I use a Wald test for the sum of the two being zero. The hypothesis is not rejected (p-value = 0.47). The effects of elections and the cyclical stance of the economy are not statistically significant.

At the projection horizon of one year, the intercept remains statistically significant and negative. As it turns out, the estimates become more precise when I add the product of the contracts and the rules dummies as a regressor to the model. This multiplicative dummy singles out countries with governments operating under a *contracts* approach and strong fiscal rules. The intercept now refers to governments operating under delegation and weak

[15] Including the interaction between rules and contracts did not change the results at the zero and one-year projection horizons.

Table 5 Revenue projection errors

Model	1	2	3	4	5	6
Horizon	0	0	1	1	2	2
Constant	−0.86**	−1.34***	−0.69*	−1.16***	−0.94**	−1.44***
(s.e.)	(0.39)	(0.41)	(0.41)	(0.41)	(0.46)	(0.48)
Contracts	1.16**	2.45***	1.72***	3.07***	2.22***	3.43***
(s.e.)	(0.53)	(0.51)	(0.53)	(0.51)	(0.60)	(0.60)
Rules	−0.76	2.31***	−1.17**	2.01***	−1.10	1.70***
(s.e.)	(0.56)	(0.55)	(0.58)	(0.44)	(0.71)	(0.58)
Election	−0.21	−0.14	−0.58	−0.64	0.34	0.39
(s.e.)	(0.58)	(0.54)	(0.65)	(0.60)	(0.64)	(0.60)
Output gap lagged	−0.13	−0.05	−0.13	−0.03	−0.15	0.01
(s.e.)	(0.29)	(0.27)	(0.30)	(0.29)	(0.38)	(0.37)
Rules ∗ contracts		−4.53***		−4.71***		−4.22***
(s.e.)		(0.77)		(0.47)		(0.98)
R^2	0.09	0.24	0.13	0.26	0.19	0.30

Source: own calculations

*Statistical significance of level of 10 percent

**Statistical significance of level of 5 percent

***Statistical significance of level of 1 percent

fiscal rules, the contracts dummy to governments operating under contracts and weak rules, and the rules dummy to governments operating under delegation and strong rules. Adding the multiplicative dummy to the model increases the precision of the coefficient estimate for the rules dummy. The intercept now remains significantly negative. Both the contracts dummy and the rules dummy have positive and significant coefficients. Using a Wald test, I do not reject the hypothesis that the sum of the intercept and the contract or rules dummy is zero. Thus, governments operating under *delegation* have a tendency to submit too large projections of the budget balance one year ahead, while governments operating under *contracts* or strong fiscal rules submit projections which are correct on average. For the one-year ahead projections, there is also a tendency to submit too large projections in election years. Governments facing elections try to persuade voters of their competence in fiscal policy by announcing larger budget balances than they achieve. As before, the cyclical position of the economy has no significant impact. At the two-year horizon, the results are similar, except that elections have no significant impact.

Table 5 presents the results for revenue projections. Here, again, adding the multiplicative dummy for contracts and rules turns out to be important. The intercept is statistically significant and negative at all time horizons. Both the contracts and the rules dummy have positive and statistically significant coefficients at all time horizons, and the sum of their coefficients and the intercept is statistically different from zero (hence, positive) at the zero and one-year horizons. In contrast, the multiplicative dummy has a negative and statistically significant coefficient. To obtain the total effect of strong rules and contracts, one must add the coefficients on the contracts dummy, the rules dummy and the multiplicative dummy. This sum is not significantly different from zero at all three horizons, so that the total effect

Table 6 Spending projection errors

Model	1	2	3	4	5	6
Horizon	0	0	1	1	2	2
Constant	−0.42	−0.96***	−0.12	−0.56*	0.11	−0.28
(s.e.)	(0.35)	(0.31)	(0.32)	(0.30)	(0.38)	(0.39)
Contracts	1.00*	2.45***	0.85	2.11***	0.60	1.71***
(s.e.)	(0.61)	(0.42)	(0.53)	(0.43)	(0.54)	(0.49)
Rules	−1.18*	2.27*	−1.35**	1.64**	−1.00*	1.62*
(s.e.)	(0.66)	(1.19)	(0.60)	(0.81)	(0.61)	(0.93)
Election	0.25	0.33	0.36	0.30	1.09*	1.04*
(s.e.)	(0.54)	(0.68)	(0.54)	(0.49)	(0.59)	(0.55)
Output gap lagged	−0.06	0.04	0.04	0.13	0.15	0.23
(s.e.)	(0.26)	(0.25)	(0.25)	(0.24)	(0.29)	(0.28)
Rules ∗ contracts		−5.09***		−4.42***		−3.88***
(s.e.)		(1.29)		(0.99)		(1.11)
R^2	0.07	0.28	0.16	0.31	0.20	0.29

Source: own calculations

*Statistical significance of level of 10 percent

**Statistical significance of level of 5 percent

***Statistical significance of level of 1 percent

for these countries is the same as the intercept. Elections play no role, nor does the cyclical stance of the economy.

The results thus show that governments operating under *delegation* and weak rules submit too large revenue projections on average, and so do governments operating under *contracts* and strong fiscal rules. Governments operating under *contracts* and weak rules and governments operating under *delegation* and strong rules, in contrast, submit too low revenue projections on average.

Table 6 reports the results for government spending. Overall, they strongly resemble the results for government revenues, with two differences. Here, the Wald tests for the sum of the coefficients on the intercept and the rules dummy never rejects the null of zero. Governments operating under delegation and strong rules do not exhibit a bias in their spending projections. Electoral effects are only weakly significant and positive at the two-year horizon.

3.4 Explaining discretionary deviations

In Table 7, I report estimates for the discretionary deviations of the overall balance and expenditures from their projected levels. As before, I find that governments operating under delegation have significantly negative deviations from projections for the budget balance on average, while governments operating under strong rules have significantly positive deviations on average. Thus, the tendency for excessive optimism in the former and excessive caution in the latter group is not entirely due to growth projection errors. Election years lead to weakly significant deteriorations of the discretionary part of balance projection errors

Table 7 Discretionary deviations

Model	1	2	3	4	5	6
Horizon	Budget balance			Spending		
	0	1	2	0	1	2
Constant	−0.70***	−0.79***	−1.13***	−0.94***	−0.54*	−0.27
(s.e.)	(0.21)	(0.28)	(0.32)	(0.33)	(0.29)	(0.37)
Contracts	0.05	0.84**	1.22***	2.51***	2.17***	1.94***
(s.e.)	(0.27)	(0.38)	(0.43)	(0.42)	(0.41)	(0.47)
Rules	0.70***	0.90*	0.81*	2.36***	1.72**	1.72*
(s.e.)	(0.27)	(0.48)	(0.48)	(1.17)	(0.78)	(0.88)
Election	−0.10	−0.68*	−0.54	0.30	0.10	0.84
(s.e.)	(0.30)	(0.40)	(0.32)	(0.50)	(0.48)	(0.53)
Output gap lagged	−0.11	0.04	0.03	0.08	0.10	0.18
(s.e.)	(0.17)	(0.21)	(0.24)	(0.26)	(0.23)	(0.27)
Rules ∗ contracts		−0.84	−0.69	−5.13***	−4.39***	−4.26***
(s.e.)		(0.19)	(0.67)	(1.28)	(0.96)	(1.05)
R^2	0.17	0.19	0.29	0.27	0.28	0.27

Source: own calculations

*Statistical significance of level of 10 percent

**Statistical significance of level of 5 percent

***Statistical significance of level of 1 percent

and affect spending positively for projections two years ahead. Revenue projection errors affect the discretionary deviation of the budget balance positively in all countries, but governments operating under delegation partially offset this effect. Spending projection errors affect the discretionary deviation of the balance negatively, but their effects are partially offset by countries operating under strong fiscal rules and, even more so, by countries operating under delegation.

The reaction of discretionary spending deviations to revenue projection errors is positive in all countries at the two-year horizon. Here, I find some interesting asymmetries in the reactions. Governments operating under strong fiscal rules respond positively to revenue projection errors, but more strongly to negative errors than to positive ones. Thus, when revenues are weaker than projected, spending adjusts strongly in this group. When revenues are stronger than projected, spending is allowed to exceed projections as well. Governments operating under delegation, in contrast, do not respond to revenues stronger than projected but, at the zero and one-year horizons, they cut back spending below projected levels when revenues are weaker than projected.

Within fiscal years, real GDP growth projection errors affect discretionary spending deviations positively, but the effect is offset by governments operating under delegation. At the two-year horizon, I find that discretionary spending deviations of governments operating under strong fiscal rules and under delegation respond negatively to negative real GDP projection errors. This may reflect the use of government spending to conduct anti-cyclical policies in economic downturns, but not during upswings.

4 Conclusions

The fiscal framework of EMU, with its strong emphasis on numerical targets and medium-term fiscal plans, requires that governments produce consistent fiscal programs and are willing and able to stick to them. In this paper, I have analyzed the properties of the deviations from the governments' fiscal plans as given in the annual Stability and Convergence Programs, focusing especially on the impact of budgeting institutions.

I find, first, that the fiscal projections reported in the Stability and Growth and the Convergence Programs are not very informative as indicators of future fiscal outcomes. Second, I analyze the properties of real GDP projection errors and find that growth projections of governments operating under delegation are biased upwards, while growth projections of governments operating under strong fiscal rules are systematically biased downward. I find a similar tendency regarding government revenue projections. These results are consistent with those reported by Jonung and Larch (2006). They suggest that governments operating under strong fiscal rules tend to be overly cautious in their growth forecasts, and, therefore, that it is easier to stick to strong fiscal rules when growth is unexpectedly strong than when it is expectedly weak. Governments operating under contracts and relatively weak fiscal rules do not seem to have that tendency. This suggests that weaker rules leave these governments more room to manage fiscal policy in times when growth is weaker than projected.

Governments operating under delegation, in contrast, deliver growth projections which are biased upward. They seem to base their fiscal plans on assumptions which are too optimistic in the underlying economic scenario. At the same time, governments operating under delegation should find it easier to adjust fiscal policies to changes in the economic environment since they do not have to negotiate fiscal adjustments among the partners of a coalition. Note, also, that several among these governments did not stick to the rules of the Stability and Growth Pact during the period under consideration. One interpretation of this result is, therefore, that such governments use overly optimistic growth projections in order to avoid explaining to the public how they intend to adjust their fiscal policies and return to the budgetary guidelines of the Stability and Growth Pact.

Third, I find that governments operating under delegation have a stronger tendency to offset the effects of revenue projection errors on the fiscal balance than governments operating under strong or weak fiscal rules. I also find that governments operating under contracts or strong rules deviate from their spending projections in the same direction as their revenues deviate from projected levels. For governments under delegation, such a pattern does not hold. These results suggest that fiscal rules limit the ability of government to respond to changes in economic circumstances that were unforeseen when the projection were made more than an institutional framework of delegation. The observed tendency of governments operating under strong rules to be overly cautious in projecting growth, revenues, and balances is consistent with that. Such a bias reduces the probability of having larger deficits than intended ex post, which is attractive given that the EMU framework penalizes deficits but not surpluses.

In sum, I find that differences in fiscal rules and fiscal governance explain a large part of the deviations of European governments from their fiscal projections. Our results suggest that, within the fiscal framework of EMU, a trade-off exists between delegation on the one hand and contracts and strong rules on the other. Governments operating under contracts and strong rules use overly cautious projections to assure that they stay within the limits of the SGP. In contrast, governments operating under delegation have a strong tendency to be too optimistic in their growth and fiscal projections, which may be interpreted as a tendency to take these limits less serious. Neither group seems to regard the Stability and Convergence

Programs as an opportunity to publish true (unbiased) forecasts. This underscores the point that these programs are used strategically. At the same time, the ability to manage fiscal flows after the projections have been made seems to be greater in the group of governments operating under delegation than in the group of governments operating under contracts and strong fiscal rules. Governments operating under delegation are, therefore, not necessarily more likely to go beyond the limits of the SGP, as they can react to unforeseen economic and fiscal developments. In the end, what matters most is the governments' performance relative to the target of deficits close to balance or in surplus, not relative to the targets spelled out in the annual Stability and Convergence Programs.

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References

Annett, A. (2006). Enforcement and the stability and growth pact: how fiscal policy did and did not change under Europe's fiscal framework. *Working Paper 06/116*, Washington, DC: International Monetary Fund.

Bouthaineville, C., Cour-Thimann, Ph., van den Dool, G., Hernandez de Cos, P., Langenus, G., Moor, M., Momigliano, S., & Tujula, M. (2001). Cyclically adjusted budget balances: an alternative approach. *ECB Working Paper 77*.

Brück, T., & Stephan, A. (2006). Do Eurozone countries cheat with their budget deficit forecasts? *Kyklos*, *59*, 3–15.

European Commission (2007). *Statistical annex. European Economy 2007*. Brussels: European Commission.

Feld, L. P., & Kirchgässner, G. (2001). Does direct democracy reduce public debt? Evidence from Swiss municipalities. *Public Choice*, *109*, 347–370.

Hallerberg, M., & von Hagen, J. (1999). Electoral institutions, cabinet negotiations, and budget deficits within the European Union. In Poterba, J., & von Hagen, J. (Eds.), *Fiscal institutions and fiscal performance* (pp. 209–232). Chicago: University of Chicago Press.

Hallerberg, M., Strauch, R. R., & von Hagen, J. (2007). The design of fiscal rules and forms of governments in EU countries. *European Journal of Political Economy*, *23*, 338–359.

Hallerberg, M., Strauch, R. R., & von Hagen, J. (2009). *Fiscal governance in Europe*. Cambridge: Cambridge University Press.

Jonung, L., & Larch, M. (2006). Improving fiscal policy in the EU: the case for independent forecasts. *Economic Policy*, *21*(47), 491–534.

Kirchgässner, G. (1983). The political business cycle if the government is not myopic. An integration of the long-run and short-run models of the political business cycle. *Mathematical Social Sciences*, *4*, 243–260.

Kirchgässner, G. (1984a). Wie gut sind die Prognosen der Arbeitsgemeinschaft wirtschaftswissenschaftlicher Forschungsinstitute in der Bundesrepublik Deutschland? *Weltwirtschaftliches Archiv*, *120*, 279–300.

Kirchgässner, G. (1984b). On the theory of optimal government behavior. *Journal of Economic Dynamics and Control*, *8*, 167–195.

Kirchgässner, G. (1985). Sind die Prognosen der Arbeitsgemeinschaft wirtschaftswissenschaftlicher Forschungsinstitute schwach rational? Eine Antwort auf Neumann und Buscher. *Weltwirtschaftliches Archiv*, *121*, 331–345.

Kirchgässner, G. (1991). Sind die Prognosefehler der Konjunkturprognosen autokorreliert? *ifo Studien*, *37*, 151–158.

Kirchgässner, G. (1993). Testing the weak rationality of forecasts with different time horizons. *Journal of Economic Forecasting*, *12*, 541–558.

Kirchgässner, G., & Müller, U. K. (2006). Are forecasters reluctant to revise their predictions? *Journal of Forecasting*, *25*, 401–413.

Krogstrup, S., & Wyplosz, C. (2010, forthcoming). A common pool theory of deficit bias correction. *European Economic Review*.

Piña, A. M., & Venes, N. (2007). The political economy of EDP fiscal forecasts: an empirical assessment. *Working Paper*, School of Economics and Management, Technical University of Lisbon.

Strauch, R., Hallerberg, M., & von Hagen, J. (2004). Budgetary forecasts in Europe: the track record of stability and convergence programs. *European Central Bank Working Paper 307*, Frankfurt: European Central Bank.

Velasco, A. (1999). A model of endogenous deficits and delayed fiscal reforms. In Poterba, J., & von Hagen, J. (Eds.), *Fiscal constitutions and fiscal performance* (pp. 37–57). Chicago: University of Chicago Press.

van den Noord, P. (2000). The size and role of automatic fiscal stabilizers in the 1990s and beyond. *OECD Economics Department Working Paper 230*, Paris: OECD Publishing.

von Hagen, J. (2006). Fiscal rules and fiscal performance in the European Union and Japan. *Monetary and Economic Studies*, *24*, 25–60.

von Hagen, J., & Harden, I. H. (1994). National budget processes and fiscal performance. *European Economy Reports and Studies*, *3*, 311–418.

von Hagen, J., & Harden, I. H. (1995). Budget processes and commitment to fiscal discipline. *European Economic Review*, *39*, 771–779.

von Hagen, J., & Wolff, G. (2006). What do deficits tell us about debt? Empirical evidence on creative accounting with fiscal rules in the EU. *Journal of Banking and Finance*, *30*, 3259–3279.