Fiscal institutions, fiscal policy and sovereign risk premia in EMU

Mark Hallerberg · Guntram B. Wolff

Abstract We investigate the effect of fiscal institutions such as the strength of the finance minister in the budget process and deficits on interest rate spreads of Eurozone countries. Deficits significantly increase risk premia measured by relative swap spreads. The effect of deficits is significantly lower under EMU. This effect partly results from neglecting the role of fiscal institutions. After controlling for institutional changes, fiscal policy remains a significant determinant of risk premia in EMU. Better institutions are connected with lower risk premia. Furthermore deficits matter less for risk premia in countries with better institutions. Markets acknowledge that better institutions reduce fiscal difficulties rendering the monitoring of annual developments less important.

1 Introduction

Fiscal rules have gained considerable prominence over the last decade. Especially in Europe, where policymakers and voters are concerned alike about large and persistent deficits, fiscal rules are often seen as a way to increase fiscal discipline. A recent European Commission Report (European Commission 2006) finds that numerical fiscal rules can increase fiscal discipline. Others, however, worry that the effectiveness of simple numerical targets may be limited because governments find ways to circumvent the targets, such as shifting spend-

M. Hallerberg
Hertie School of Governance, Berlin, Germany

M. Hallerberg
Emory University, Atlanta, GA, USA

G.B. Wolff (✉)
Deutsche Bundesbank and University of Pittsburgh, Wilhelm-Epstein-Str. 14, 60431 Frankfurt, Germany
e-mail: guntram.wolff@gmx.de

ing to non-restricted items (e.g., von Hagen 1991; Bunch 1991; Kiewiet and Szakaly 1996; Dafflon and Rossi 1999; Milesi-Ferretti 2003, and von Hagen and Wolff 2006). Furthermore, the effectiveness of numerical targets crucially depends on the enforcement of penalties for violating them, as suggested by Bohn and Inman (1996) for the US. For Europe, inconsistent compliance with the Stability and Growth Pact's fiscal rules suggests that enforcement mechanisms are weak.

A related literature on "forms of fiscal governance" suggests that the institutional framework in which budgetary processes are embedded has important effects on fiscal outcomes. Some fiscal rules, institutions, and norms work better in some states rather than in others because of the underlying politics of a country. In particular, a strong finance minister is able to centralize the budget process when there are few or no important ideological differences within the coalition. Alternatively, when the differences are large, explicit fiscal rules in the form of fiscal contracts among the coalition partners can provide the same level of centralization (e.g., von Hagen and Harden 1995; Hallerberg et al. 2007a). This literature on fiscal institutions contrasts with another that contends that markets can successfully discipline governments. The expectation is that markets will require higher interest rates to lend to more profligate governments to compensate lenders for the increased risk of default. If governments are not credible to lenders that they will repay the loan, markets will not lend anything to them. Market discipline, therefore, should be all that is needed to insure that governments maintain fiscal discipline. The institutional structure that is used to make budgets in this case is irrelevant as markets assure fiscal discipline. In this paper, we bring together these two lines of research.

We contribute to the literature in four respects. First, we test for the effects of European Economic and Monetary Union (EMU) on risk premia in Eurozone government bond markets and show that it is important to control for institutional change when assessing EMU's effects on the responsiveness of risk premia to fiscal fundamentals. Second, we assess the impact of good institutions on risk premia. We focus both on the role of the finance minister, who is arguably the most visible governmental actor to markets, as well as to the overall "quality" of fiscal institutions based on the fiscal governance approach. If better institutions improve the long-term fiscal prospects, they should have beneficial effects beyond their direct effects on the fiscal performance in a given year. Fiscal institutions are therefore not "irrelevant" or epiphenomenal. We indeed find that markets lower their risk assessment following institutional improvements. Third, individual country deficits should be less important in countries with better institutions, as financial markets believe that they are not driven by a systematic bias but rather reflect temporary effects. Our regression results also confirm this hypothesis. Finally, we note that investigating the relevance of institutions with financial market data provides the benefit that endogeneity problems are less of a concern. We test these hypotheses in the standard regression framework developed in Codogno et al. (2003) and Pagano and Thadden (2004).

The next section provides a critical review of the literature. Section 3 outlines the empirical approach for testing the relevance of institutions, while Sect. 4 summarizes the results. The last section concludes.

2 Literature review

Before considering institutional and market-based arguments, it is important to understand the nature of the problem. Von Hagen (1992) argues that excessive deficits and excessive spending arise because of a common-pool resource problem. In this view, politicians and constituencies benefit from specific spending programs, while they impose the costs on a

common pool. This means that actors consider the full benefits of additional spending but only the part of the overall tax burden that their constituencies bear. Actors then ask for more spending than they would have had they considered the full tax implications of their decisions. Due to this negative externality, the individually rational strategies generate budgets that are sub-optimal from the perspective of the group. In an inter-temporal version of the model, spending will be high and financed by deficits leading to even higher tax costs for future generations (Velasco 2000).

Accordingly, excessive deficits and debt levels can be reduced if fiscal institutions are designed to address this underlying incentive problem. A centralized budget process matches the costs and benefits of individual spending programs. One institutional way to do this is to strengthen the finance minister where this minister considers the full tax implications of any spending. "Strong" in this case depends upon the powers of this minister: a "strong" minister has, among other powers, agenda-setting power in the budget process, the right to negotiate on ministry budgets bilaterally with each spending minister, and the ability to cut unilaterally any ministry's budget. While we provide institutional detail for all countries in our sample later, a useful example is the Finance Minister of France. In practice, this minister provides a "framework letter" to the spending ministers that sets the amount those ministers should expect to receive in the coming fiscal year. Discussions on that amount occur bilaterally between the relevant spending minister and the finance minister, not before the full cabinet. For the perspective of this paper, a strong finance minister may be useful to markets for an additional reason not covered in the fiscal governance literature (see e.g., von Hagen and Harden 1995; Hallerberg 2004; Hallerberg et al. 2007a). This minister is the public voice of the government on fiscal matters. Financial pages analyze what finance ministers say, and finance ministers make statements in hopes of influencing markets.

Yet the fiscal governance literature argues that there is an alternative way to centralize the process besides delegating strategic powers to a finance minister (von Hagen and Harden 1995; Hallerberg 2004; Hallerberg et al. 2007a). Commitment to "fiscal contracts" in the form of (usually) multi-annual fiscal targets similarly can work. Here the coalition partners address the tax externality when they negotiate the contracts across all spending dimensions. Such contracts are to be expected in countries where the ideological differences among coalition partners are usually large. The reason is that coalition partners are unlikely to give power to one person or ministry when they have reason to believe that the person does not share the same priorities. In the "contract" states, the finance minister is not the most relevant player in the budget process and other features of the budget process should be looked at.

In sum, we will test two versions of the institutional argument. The first looks at the strength of the finance minister only. The expectation is that markets pay attention to finance ministers, so this person is important in all countries. The second considers whether a country is best characterized as either an expected "delegation" or "contract" state. It then matches the expectation with the fiscal institutions in place in practice. Countries with low or zero ideological distance should have institutions that strengthen the finance minister, i.e., they are expected "delegation" states. Countries with high ideological distance, however, should focus instead on multi-annual fiscal targets, i.e., they are expected "contract" states.

Several empirical studies on the effects of budget institutions and centralization exist. Crain and Miller III (1990) provide a detailed study of different parts of the budget process and the interactions among them on spending growth. They find strongly negative and significant effects of institutions (e.g., item-reduction vetoes) on spending growth. Moreover, the effectiveness of rules depends on whether constitutional balanced budget rules are in

place respectively whether states have separate legislative budgets. Crain and Muris (1995) show that dispersion of spending authority leads to higher spending whereas centralization lowers spending. Volkerink and de Haan (2001) provide evidence that government fragmentation in a sample of OECD countries leads to larger deficits, while Hallerberg (2004) does the same with the sample of European Union countries from 1973 to 1998.

Before moving on to the literature about markets, we would like to point out that there is a potential advantage our study has over previous studies of fiscal institutions. Alesina and Perotti (1996) survey the literature on budget processes and find that overall there is support to the hypothesis that budget institutions significantly influence fiscal outcomes. However, they also make clear that many studies suffer from endogeneity problems. In a related literature, Acemoglu (2005) outlines the difficulties of dealing with endogeneity issues when assessing the causal effects of institutions/constitutions. While there are econometric techniques to deal with the issue, they often turn out to be inefficient in practice. The use of financial market data is one way to overcome endogeneity concerns. As it is unlikely that countries change their institutions because of risk premia in government bond markets, institutions are exogenous to shocks in risk premia. Since one is able to control for actual fiscal outcomes, the effects of institutions are neither driven by reverse causality nor by an omitted variable bias, but reflect the causal impact of institutions on markets' assessment of government risk. Financial market data thus constitute an opportunity to test for the beneficial impact of institutions.

The literature on fiscal institutions contrasts with another literature that considers the role of markets in disciplining bad governmental behavior. Market actors monitor governments. They also determine the interest rate at which they are willing to finance public deficits, or whether they are willing to lend additional money at all. Governments for their party cannot run budget deficits if they cannot borrow. The strongest disciplining markets at the sub-national level are probably in the United States. There is some evidence that markets have played an important role in disciplining developing countries in some contexts as well (Wibbels 2005). In the European context, it is clear that markets pay some attention to what governments are doing (Afonso and Strauch 2007; Bernoth et al. 2004 and Heppke-Falk and Wolff 2008). Yet there has been increasing frustration among some policy-makers that markets seemingly do not react sufficiently to deteriorations of public finances in euro-zone countries (Schuknecht 2004). Also, it is feared that potential reactions will come too late and then too strongly.

Given this backdrop, there are few studies that bring together financial market monitoring and fiscal institutions. If the institutions matter as much as the literature suggests, markets should consider the quality of a given country's institutions when they assess default probabilities. The only work we know of considers just the American context. Poterba and Rueben (1999, 2001) analyze the role of state fiscal institutions on interest rates in the U.S. municipal bond market. They show that institutions affect interest rates beyond their indirect effect on the actual fiscal state measured by e.g., the debt level. Lowry and Alt (2001) specify a similar regression equation and show that fiscal institutions in American states have real effects on bond rates. Johnson and Kriz (2005) show that expenditure limits and stricter balanced budget rules lower interest costs because they lower the credit risk.

3 Empirical approach

3.1 A testable framework

We investigate the effects of budget institutions and fiscal policy on risk premia in European government bond markets. Our estimation equation can be motivated by the following sim-

ple framework. Suppose a risk-free investor has the choice between a risk-free investment, on which she earns a risk free interest rate $1 + r^*$ and an investment in a risky bond of country i with an expected default probability θ. Under risk-neutrality and the no-arbitrage assumption, the expected return on both investments has to be equal, thus:

$$(1 + r^*) = (1 - \theta)(1 + r_i) \tag{1}$$

which can be rewritten as:

$$\frac{r_i - r^*}{(1 + r_i)} \approx r_i - r^* = \theta, \tag{2}$$

where the approximation holds, if interest rates are small.[1] The interest spread between a country and a risk-free country is thus a function of the expected probability of default.

We have three main hypotheses regarding the expected probability of default. The first hypothesis is related to the change in the monetary regime under Economic and Monetary Union. Hypothesis (1a): EMU reduces the link between fiscal performance and risk premia. If there is an expectation in markets that the European Union will bail out countries in EMU that risk default, then risk premia should not respond to changes in fiscal policy. A possible reason for a higher bail-out expectation could be that greater financial integration increases cross-border losses. However, since institutions improved over the time period and this institutional change is part of the explanation for converging risk premia, then the effects of EMU should be weaker in the regressions controlling for institutional quality.[2] Hypothesis (1b): Including institutional data should therefore result in stronger relevance of fiscal policy under EMU compared to regressions without institutional controls.

Hypothesis (2a): Stronger finance ministers lead to lower sovereign risk premia. Hypothesis (2b): The stronger the state's actual fiscal institutions fitting the expected form of fiscal governance (either delegation or contracts), the lower the default risk premia. Hypothesis 2a focuses just on the strength of the finance minister. Our expectation is that this minister is most important to markets in all states. However, there is another reason to focus only on the power of the finance minister in one analysis. A recent article suggests that a strong finance minister can best address common pool resource problems and that fiscal rules are not useful (Krogstrup and Wyplosz 2006). If they are right, then only the strong finance minister index should matter. Hypothesis 2b suggests that institutions best suited for the expected form of fiscal governance matter.

Hypothesis (3a): The annual budget balance has less effect on default risk premia the stronger the finance minister. Hypothesis (3b): The annual budget balance has less effect on default risk premia the stronger the actual fiscal institutions fitting the expected form of fiscal governance (either delegation or contracts). There are at least two reasons for these expectations. First, the common pool spending bias should be lower in countries with more centralized fiscal institutions. Markets should therefore recognize that budget balance figures lose some of their information content on likely future fiscal stances. The general time path of deficits is expected to be lower and therefore bonds are priced with less reference to

---

[1]Especially, when concentrating on low-interest rate countries like the EU, this is a reasonable assumption conventionally applied in the related literature.

[2]In particular, Heppke-Falk and Wolff (2008) suggest that the weakening of the relevance of fiscal policy for risk premia under EMU found in Bernoth et al. (2004) might either result from a significant improvement of the fiscal institutions in Europe or from a perceived increase in the likelihood of a bail-out.

annual fiscal behavior. Second, more robust institutions should strengthen the credibility of government promises about future fiscal behavior.[3]

Econometrically, this suggests that we perform three different regressions. The first regression excludes any domestic institutional variable. The main hypothesis to test here is whether the EMU time-dummy had an effect. Second, we include the institution as an additional variable to assess the risk premia reducing effect of institutions. This regression allows us to examine the effects of institutions to test Hypotheses 2a and 2b. It also allows to test Hypothesis 1b. In a third regression, we include an interaction term between the relevant institution and the deficit to test Hypotheses 3a and 3b.

3.2 Estimation approach

Accordingly we define our estimation equation as

$$spread_{it} = \alpha_1 deficit_{it} + \alpha_2 debt_{it} + \alpha_3 I_{it} + \alpha_4 I_{it} * deficit_{it}$$
$$+ \alpha_5 EMU + \alpha_6 EMU * deficit_{it} + \alpha_7 EMU * debt_{it} + Z_{it}\alpha_8 + \varepsilon_{it} \quad (3)$$

where the spread variable is calculated following Favero et al. (1997) and Codogno et al. (2003) as the component of yield differentials not related to exchange rate factors measured by the relative asset swap of a country, defined as

$$spread_{it} \equiv (R_t^i - R_t^{GER}) - (RSW_t^i - RSW_t^{GER}) \quad (4)$$

where R_t^i are the redemption yields to maturity of 10 year bonds issued of country i with respect to Germany (R_t^{GER}), and RSW are the 10-year fixed interest rates on swaps denominated in currency i and in deutschmarks respectively.[4] Germany is the benchmark country. The spread is measured at a quarterly frequency and data are taken from Datastream. I_{it} is one of the two institutional indicators described below, deficit and debt are measured in % of GDP and relative to the benchmark country. *EMU* is a dummy taking the value 1 as soon as the country has the euro. Finally, Z_{it} is a vector of control variables for market liquidity, and market risk aversion. The *liquidity* variable serves to estimate the liquidity premium. We assume that the total volume of supply of a security has a positive effect on its liquidity. Following this reasoning, we assume as Bernoth et al. (2004) and Gómez-Puig (2006) do that liquidity depends on relative market size. Thus, the liquidity premium is assumed to be proportional to the ratio of the debt issued by a government relative to the total debt of EU countries issued. Empirical research shows that the *investors' risk aversion* towards credit risk determines the co-movement of spreads.[5] Since investors' risk aversion is not

---

[3]We also thought about testing whether debt levels become less relevant with better institutions. Here, the case is less clear. Debt levels are a state variable. Large debt levels in countries with good institutions still represent a burden of repayment for governments. This should still be reflected in risk premia. The weakening of risk premia through better institutions should therefore be less pronounced.

[4]The swap rate is a fixed interest rate for a variable interest rate. Following the expectation hypothesis and the uncovered interest parity, the expected devaluation of a currency and the inflation rate is included in this rate. In fact, after the introduction of the euro, the difference in the swap rate to Germany is virtually zero.

[5]Dungey et al. (2000) provide strong evidence of a common international factor in many yield differentials. Codogno et al. (2003) and Pagano and Thadden (2004) also note considerable co-movement of yield spreads, probably driven by international risk factors. Bernoth et al. (2004) confirm as well that interest differentials between EU countries are significantly affected by international risk factors and that the USA and Germany enjoy a 'safe haven' status.

directly observable, we use, similar to Codogno et al. (2003), Favero and Giavazzi (2004), and Bernoth et al. (2004), the yield spread between low grade US corporate bonds (BBB) and benchmark US government bonds as an empirical proxy. The corporate yield spreads variable, which measures the difference between 7 to 10 year low grade corporate bonds (BBB) and 7 to 10 year benchmark government bonds in the USA, is provided by Merrill Lynch.[6]

In terms of model specification, we perform a Hausman test, which clearly indicates that a fixed effects model needs to be estimated instead of a random effects model. Our first specification is therefore simple fixed effects. Bond spreads are likely to be autocorrelated. This suggests the need for a lagged dependent variable to correct for the autocorrelation. Indeed, the lagged dependent variable is highly significant when included in all models, which suggests an empirical reason to include it as well to avoid omitted variable bias. Nickell (1981) points out that this introduces a bias of its own because the lagged dependent variable is by construction correlated with the fixed effects. This bias, however, decreases in T. Using Monte Carlo simulations, Beck and Katz (2004) find that the Nickel bias is low (two % or less) once $T = 20$, and they advise that one includes a lagged dependent variable if T is at least 20. Given that T is above 40 in our sample and we have both theoretical and empirical reasons to include it in the first place, we focus on this specification with panel-corrected standard errors when interpreting the results. Judson and Owen (1999) compare the performance of different dynamic panel estimators in typical macroeconomic data-sets and also conclude that for unbalanced samples the least square estimator with country dummies and lagged dependent variable performs best. The bias for the coefficients on the independent variables is minor in any of the estimators. For each of the institutional configurations, we also include a simple fixed effects specification without the lagged dependent variable for comparison purposes.

To test Hypotheses 3a and 3b explicitly, we include regressions with an interaction term between deficits and the institutional index. We are interested in the conditional coefficient of the effect of fiscal deficits given the strength of the fiscal institutions. A budget deficit in a country with weak institutions should affect bond prices while a deficit in a country with strong institutions should not. This requires the calculation of conditional coefficients. As Greene (2003: 123-24) explains in his classic econometrics textbook, the interpretation of conditional coefficients includes more than just looking at the interaction term. The conditional standard error in particular depends both on the values of the interacted variables and a covariance that must be calculated (see also Brambor et al. 2006 for a careful discussion of the interpretation of interaction models).

3.3 Measuring budget institutions

There are several ways to consider how to measure the concept of "good budget institutions." In this paper, we focus on two concepts only.[7] The first focuses on the power of the finance minister. Markets might focus on the role of the most public person on budgetary matters

---

[6]A variable that measures the respective corporate bond spread for the complete Euroarea is not available, but the empirical literature on sovereign bond spreads of emerging markets shows that spreads are sensitive to US risk factors (see, e.g., Barnes and Cline 1997; Kamin and von Kleist 1999; Eichengreen and Mody 2000). Therefore, data on US corporate-government bond yield spreads can be used as a good proxy for the overall investors' risk attitude.

[7]In an earlier version of the paper, we looked at a number of different indicators, including more extensive ways of measuring the strength of the finance minister that included the strength of the parliament. A referee correctly noted that the various indices were both highly correlated and yielded similar results. We therefore

in government, the finance minister. We compute an index *MinFin* that includes only values for the ability of the finance minister to affect the budget. The strongest finance minister is found in France while the weakest is in the Netherlands.[8]

Second, the fiscal governance literature contends that one index is not appropriate for all countries. It argues that two different approaches overcome the deficit bias inherent in frag-mented budgetary decision-making depending upon the underlying political structure: the delegation approach or the contract approach. The delegation approach rests on the delega-tion of power to the finance minister, while the contract approach is based on binding fiscal targets usually embedded in coalition agreements. Hallerberg et al. (2007a) argue that the different approaches are more or less suited for different types of government. Delegating budgetary power to a finance minister is more suitable in single party governments, while in coalition governments a contract approach to the budget helps to restrict profligate fiscal policy. Accordingly, we compute a second index, the index *ideal*. It includes measures for delegated power for states where delegation institutions are expected to be optimal, which are countries where the ideological distance among coalition partners is zero or small. For states where the ideological distance is large, a measure for fiscal targets is used instead. It includes the sum of four measures of the use of multi-annual fiscal targets. Using this index, the Netherlands moves from having the weakest institutions to the strongest in 2004 given its extensive use of fiscal targets, while the weakest state is Spain.

To give the reader a sense for how these institutions vary, Table 1 includes the scores for the indices in 1991 and 2004 normalized to run between 0 and 1, with zero indicating

Table 1 Different measures of budget institutions in our set of countries

Country	Negotiating power of MF		"Ideal" rules	
	1993	2000/04	1993	2000/04
Austria	0.25	0.88	0.43	0.62
Belgium	0.75	0.75	1	1
Finland	0.31	0.75	0.88	0.88
France	1	1	0.91	.87/.81
Greece	0.06	0.88	0.22	0.74
Ireland	0.88	0.88	0.76	0.76
Italy	0.48	1/.88	0.69	.73/.69
Netherlands	0.67	0.69	0.88	.81/.94
Portugal	0.6	0.75	0.48	.54/.6
Spain	0.38	0.94	0.27	0.57
Average	0.54	.84/.83	0.65	.78/.79

Note: See the Appendix for more discussion about each index

use the versions of the indices in this paper that are most different. That is, we focus only on the strength of the finance minister in the formulation of the budget to test the strength of the finance minister, while we consider only fiscal targets when we consider fiscal rules in expected contract countries.

[8]The different indices are taken from Hallerberg et al. (2007a) and the construction is described in the Appendix (A).
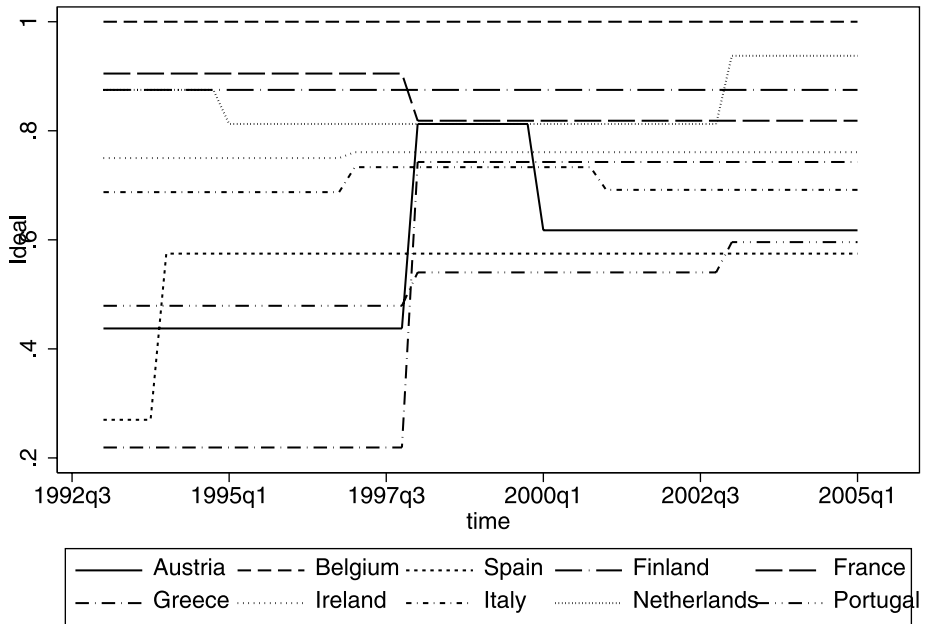
Fig. 1 Evolution of the strength of the "Ideal" institution

no institutions consistent with budget centralization while 1 indicates that a country has perfect institutions to overcome the deficit bias. Our dataset includes the twelve countries that are members of the Eurozone minus Luxembourg, for which no long-term government bond yields were available.[9] Germany is the reference country for the study.[10] The table indicates that the strength of fiscal institutions varies both across countries and across time.

Our sample starts with the first quarter 1993 and ends with the first quarter 2005. The start date is chosen so that we have the same number of years before the introduction as after the introduction of the euro in most countries of the sample. We only have knowledge of the institutional data until the end of 2004/early 2005 and therefore ended our sample here.

Since we rely on fixed effects regression, the prime interest is in the variation in time of the indices. Figure 1 shows the variation of the *ideal* index in the investigated period. As can be seen, many countries significantly changed the quality of their budget institutions in the 1990s. Greece, for example, witnessed strong improvements at the beginning of 1998 of *ideal*, but also of the simpler measure, the power of the finance minister. Portugal improved at the beginning of 1998 and subsequently at the beginning of 2003. The Netherlands had

---

[9]Public debt of Luxembourg is very low. Moreover, it was in monetary union with Belgium prior to 1999 and does not have a separate currency.

[10]Germany is the standard reference country. In addition, the fiscal institutions hardly changed at all in Germany, with the centralization and ideal indices moving up only slightly (from .57 to .62). Taking the institutional indices as difference to Germany thus does not affect the main results.

some weakening of their institutions at the beginning of 1995, but significantly improved their budgetary system by early 2003.[11]

The following case studies of Spain and Italy provide insights of when and under what circumstances the described institutions changed. In 1993, Spain's budget deficit was almost 7% of GDP. It began to improve by 1995, as economic growth picked up after the brief recession in the early 1990s, but, as a Financial Times article noted at the time, "international financial markets have been in an unforgiving mood towards Spain's economic difficulties" (May 23, 1995). Markets generally lacked confidence in the reform initiatives of the Gonzalez government. One reason for this lack of confidence may very well have been the signals that the fiscal rules and institutions sent to investors—as Table 1 indicates, Spain also had one of the weakest set of fiscal institutions in place. At the beginning of 1996, the new Prime Minister, Jose Maria Aznar, changed significantly the way governments make budgets. He strengthened the power of the Minister of Economy and Budget, with this minister now, among other powers, negotiating the budget bilaterally with his cabinet colleagues (Hallerberg 2004: 213). Overall, the strength of the finance minister increased and pulled up Spain's centralization of the budget process. Deficits fell notably in both 1996 and 1997.

Evidence from Italy reinforces the point. After the EMS crisis in Fall 1992, few observers believed that Italy could qualify for Economic and Monetary Union. Fiscal institutions were weak. The country had multi-party coalition governments with significant ideological differences among the parties. From the fiscal governance perspective, the country should have fiscal contracts in place, that is, institutions that support the execution of multi-annual expenditure targets. These institutions were relatively weak. By early 1996, matters had changed politically since 1992, however. A new electoral system meant that parties were encouraged to run as two opposing blocks, and this meant that the delegation form of fiscal governance would be most appropriate. Indeed, the newly elected Prime Minister, Romano Prodi, gave significant budget-setting powers to his Treasury Minister, Carlo Ciampi (Hallerberg 2004, Chapter 7). In summary, both case studies show how fiscal institutions changed in the mid-1990s to address fiscal imbalances. They also parallel other cases. In Austria, for example, there had been a period of consecutive grand coalition governments where the ideological distance among the two partners, the People's Party and the Social Democratic Party, was large and where detailed fiscal contracts would be the expected form of fiscal governance that would address the common pool resource problem. This changed in 2000 when the People's Party and the Freedom Party formed a coalition. The party positions of the coalition partners was much closer, and form of fiscal governance that would be most appropriate is delegation.[12] In none of the cases studied did we find a reference that the institutional change was determined by concerns about risk premia in financial markets. Compared to interest rates, risk premia are quite low in EU countries, which suggests that they are not a determinant of political discussions on institutional change. Evidence from others also suggests that market pressure was low during this period (Mosley 2000).

4 Empirical results

The main empirical results are presented in Table 6, where columns A–E give the results of static fixed effects regressions while F–J show the dynamic model with country dum-

---

[11]For details on these cases, see the Appendix.

[12]Our assessment on whether party positions are "close" comes from Hallerberg et al. (2007b), which in turn uses assessments from the Manifesto Project that codes the position of every party platform since World War II on a left-right scale.

mies and panel corrected standard errors.[13] We find that indeed deficits and debt levels significantly increase spreads in specifications with fixed effects and without the interaction terms (A). An increase of the deficit by 1% of GDP increases the relative spread by between 3 and 4 basis points. We also find the effects of deficits to be significantly weaker in EMU in specification (A), confirming previous results by Bernoth et al. (2004) and Heppke-Falk and Wolff (2008) with different data and providing support for Hypothesis 1a. Under EMU an equivalent deficit increase will increase the spread by only 1.5 basis points, this effect remains significant. Regarding the effects of debt levels under EMU, an F-test reports an insignificant effect on risk premia in bond markets. In the dynamic model, these numbers are somewhat smaller and fiscal policy becomes even less relevant under EMU (specification F).

Note, however, that in the first specification we are attributing all of the change over the period to EMU and not to institutional improvements. In regressions B and G we check whether the weakening of the effects of fiscal policy under EMU results from an omitted variable bias, the institutional quality. Including the institutional variables increases the effects of fiscal variables under EMU. An F-test on the joint effect of both the deficits and debt under EMU allows one to reject the null hypothesis of no relevance of these variables for risk premia. This result suggests that the institutional changes explain the weakening of the relevance of fiscal policy for risk premia found in regressions A and F. Once one controls for this previously omitted variable, fiscal policy remains significant under EMU confirming Hypothesis 1b.

The regression results for the role of the finance minister further confirm our hypotheses. Stronger finance ministers are connected with lower spreads. This effect is still valid even after controlling for country fixed effects and is thus not determined by unobserved country specific factors. An increase in the index by 1 standard deviation lowers the spread by 9 basis points *ceteris paribus*.

In regressions C and H, we also find Hypotheses 3a and 3b confirmed. Countries that have a strong finance minister have to pay lower risk premia for their current deficits. This probably reflects the perception of markets that any deficit that exists is not caused by a systematic bias resulting from inappropriate institutions but rather reflects a reaction to specific (short-run) events. Therefore, the deficit is seen as less harmful and increases spreads less.

With the interaction terms, the interest is in the marginal effect of deficits on spreads given the strength of fiscal institutions to test Hypotheses 3a and 3b. We therefore calculate the marginal effect of deficits prior to EMU as well as after EMU conditional on different values of the institutional indices. The conditional coefficients are visualized in Figs. 3 and 4. There are several notable features. Figure 3 shows that the marginal effects of deficits decrease with a stronger finance minster. This clearly confirms our third hypothesis. For a very strong finance minister, financial markets will not bother to change their default risk assessment when fiscal policy changes. For the negotiating power of the finance minister, our results indicate that financial markets do not care about deficits once the index passes a certain threshold. The deficits become marginally insignificant at a 5% level, once the power of the finance minister has passed a threshold of 0.85 before EMU and 0.75 after EMU.

Finally, the expectation from Hypotheses 2b and 3b is that the centralization index is not appropriate for all countries. Strengthening the finance minister in the Netherlands, for

---

[13]We also performed the dynamic regressions with standard errors, where it is assumed that observations are clustered by countries. The results do not change.

example, where detailed fiscal targets centralize the process instead of giving powers to one central player in the budget process, should not have the same effect. Indeed, for the *ideal* index (regressions D,E and I,J), the regression coefficient is somewhat larger than for the measure of the strength of the finance minister.[14] Quantitatively, an improvement of the institutional index *ideal* by one standard deviation lowers the risk premium by roughly 11 basis points for regression D. In Fig. 4, the conditional coefficients for the effects of deficits are positive when the fiscal institution is weak. They fall progressively as institutions strengthen, and they become statistically insignificant at around .89. Note that this is the case both in the pre-EMU period AND in the post-EMU period, and there is a slight shift downward of the effects of the fiscal institutions under EMU. These results indicate that when institutions are designed to fit the underlying political institutions, they have real effects on the bond spreads.

Overall, our empirical results therefore establish that fiscal institutions influence financial markets' risk assessment of government bonds. Financial markets most likely care because they know that these institutions play a pivotal role in solving deficit biases.

5 Conclusions

We investigate the relevance of budget institutions for risk premia contained in relative asset swap spreads of Eurozone countries with respect to Germany. We find that better institutions are connected with lower risk premia. Furthermore deficits matter less in countries with better institutions. The results are robust to controlling for country fixed effects. Furthermore, our empirical results suggest that the weakening of the effects of fiscal policy on risk premia under EMU previously reported in Bernoth et al. (2004) and Heppke-Falk and Wolff (2008) appears to result from neglecting the role of institutions. After controlling for the institutional improvements in Europe, fiscal policy remains a significant determinant of risk premia in sovereign bond markets. In addition, our results show that those institutions best suited for a given political system as derived in Hallerberg et al. (2007a) indeed have the strongest risk-reducing effects in financial markets.

Our results therefore confirm the hypotheses developed in the fiscal governance literature that budget institutions play a pivotal role in solving common pool resource problems using a different dependent variable, namely risk premia. The design of our study also avoids the potential endogeneity issues that could plague other studies that focus on changes in debts and deficits. Our findings also show that the role of institutions is acknowledged by financial markets when pricing default risk. This means in practice that adopting sound fiscal institutions can save governments money today because they increase the credibility of government policy to markets. Markets then are willing to lend money to the government on more favorable terms.

---

[14]As discussed earlier in the paper, both indices are normalized to lie between 0 and 1.

Appendix

A. The computation of the institutional indicator

This paper considers two ways of measuring fiscal institutions. The first focuses on the strength of finance ministers during negotiations of the budget. Hallerberg et al. (2007b) provide data for the EU-15 countries for the time period 1985–2004. Their dataset is based upon surveys to finance ministries, central banks, and relevant budgetary committees in parliament. We assume that the fiscal institutions remain the same for the first quarter of 2005, the last quarter in our sample, as they were in 2004. Here we provide descriptions of each variable. The scores for each country all appear in Hallerberg et al. (2007b). Note that in all cases we add the individual categories and standardize the aggregate scores to run between 0 (no centralization) and 1 (full centralization).

For the **strength of the finance minister**, we take the four indices that Hallerberg et al. (2007b) collect for the centralization of the budget process during the negotiation of the budget in cabinet (Table 2).

For the ideal form of fiscal governance, there are two steps. The first is to compute indices that correspond to the ideal institutions a given form of governance should have. For **delegation** states, the components of this index are as before: Cabinet Negotiations; Nature of General Constraint; Finance Minister Agenda-Setter; Budget Norms; Structure of Negotiations, plus the items that appear in the Table 3. For fiscal **contracts**, we use the "fiscal targets" index from Hallerberg et al. (2007b). The components of this index are in Table 4.

The second step is to calculate the expected form of fiscal governance. Which index is "ideal" for which country? Here we rely on Chapter 2 of Hallerberg et al. (2007b). They code the expected form of fiscal governance based upon the ideological distance among coalition partners based on the methodology presented in Tsebelis (2002). We reproduce below the list of countries relevant for our sample and their expected form of fiscal governance for the period starting 1993. If a country was an ideal delegation state, we use the delegation index discussed above. If it was an ideal contract state, we use the fiscal targets index.

Table 2 Components of strong finance minister index

Item	Coding
Nature of the General Constraint	4 Size of overall budget, expenditure cap, and deficit target 3 Overall Spending or Golden Rule 2 Deficits and debt 1 Overall Size 0 None
Finance Minister Agenda-Setter	4 MF proposes, no individual vote on budget bid 2 Spending Minister can ask for individual vote on bid, cabinet can override MF; 0 MF collects budget bids
Budget Norms	4 "Broad" 2.66 "Broad" and "specific" 1.33 "Specific" 0 Expenditure/deficit only
Structure of Negotiations	4 MF bilateral only 2 multilateral 0 all cabinet ministers involved

Table 3 Additional components of delegation index

Strength of Parliament

Amendments Limited	4 Yes 0 No
Amendments Offsetting	4 Any expenditure increases require expenditure cuts elsewhere 2 Expenditure increases require corresponding expenditure cuts and/or revenue increases 0 No
Amendments Can Cause Fall of Government	4 Yes 0 No
Expenditures in One Vote	4 Chapter by Chapter 0 Not Chapter by Chapter
Global Vote on Total Budget	4 Yes 0 No

Execution of the Budget

Finance Minister Block	4 Yes 0 No
Finance Minister Cash Limits	4 Yes 0 No
Transfers	4 Only within Departments, Require Finance Minister Consent, or not Allowed 3.2 Only within Departments 1.92 Only within Chapters 1.28 Limited, Require Finance Minister Approval .64 Limited 0 Unlimited
Budget Changes	4 No Changes Allowed 0 Changes Allowed
Carryover Provisions	4 Carryovers Not Possible 2.66 Limited, Require Finance Minister Approval 1.33 Limited 0 Unlimited

Table 4 Fiscal target index

Multi-Annual Target	4 Total Budget Size 2 Spending or Taxation 0 None
Planning Horizon	4 Five years 3 Four Years 2 Three Years 1 Two Years 0 None
Nature of Plan	Updated Based on Consistent Macro-economic Framework 3 Updated, but Not Based on Consistent Framework 2 Fixed Forecast 1 Ad Hoc Forecast 0 No Forecast
Degree of Commitment	4 Legal 3 Political 2 Indicative 1 Internal Only; 0 None

Table 5 Forms of governance

Country	Ideological range	Predicted form of governance
Greece	Small	Delegation
Spain	Small	Delegation
Portugal	Small	Delegation
Austria	Large 93-99, Small 00-05	Contract 93-99, Delegation 00-05
France	Small	Delegation
Belgium	Large	Contract
Ireland	Large 93-97, Small 98-	Contract 93-97, Delegation 98-
Netherlands	Large	Contract
Italy	Large 93-96, Small 97-	Contract 93-96, Delegation 97-
Finland	Large	Contract

B. Figures

Fig. 2 Relative asset swap spreads vs benchmark country Germany in basis points

Fig. 3 The marginal effect of deficits on risk premia before and under EMU conditional on the institutional strength measure by "MinFin". This *dashed lines* are 5%-confidence intervals for pre-EMU. For EMU, no confidence interval is plotted. Figure is derived from dynamic model
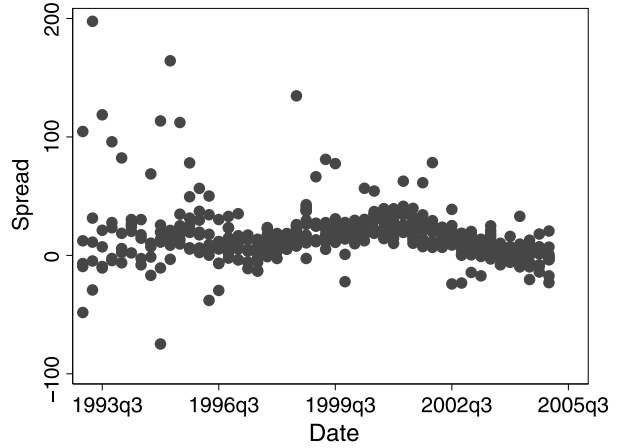

Fig. 4 The marginal effect of deficits on risk premia before and under EMU conditional on the institutional strength measure by "ideal". This *dashed lines* are 5%-confidence intervals for pre-EMU. For EMU, no confidence interval is plotted. Figure is derived from dynamic model
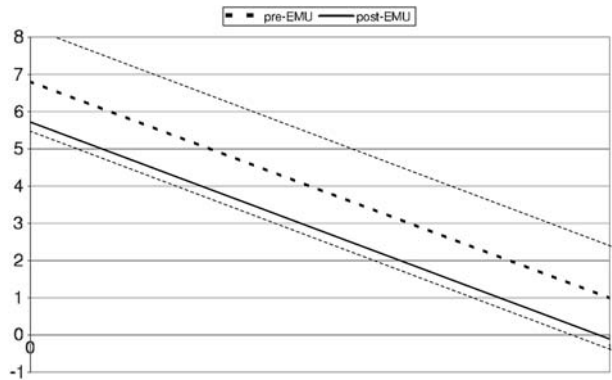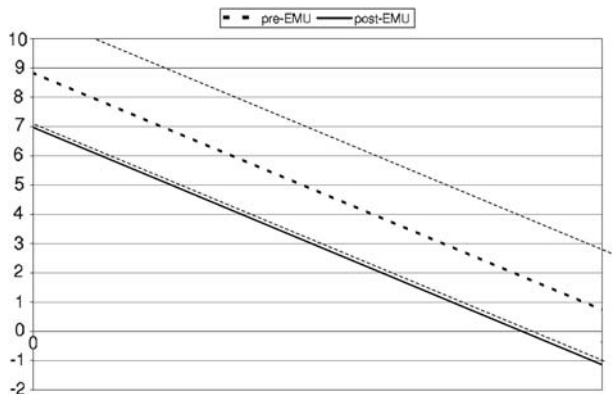
C. Estimation results

Table 6 The effect of institutions on spreads

Institution (I)	A	B MinFin	C MinFin	D ideal	E ideal	F	G MinFin	H MinFin	I ideal	J ideal
debt	**0.36**	**0.55**	**0.56**	**0.44**	**0.68**	**0.32**	**0.42**	**0.42**	**0.37**	**0.53**
	2.1	3.2	3.25	2.58	3.86	2.23	2.61	2.69	2.47	3.47
deficit	**4.15**	**2.53**	**11.24**	**3.77**	**13.19**	**3.17**	**2.51**	**6.81**	**3.01**	**8.85**
	4.1	2.36	3.78	3.72	5.43	3.44	2.88	2.77	3.3	5.36
liquidity	−2.75	**−4.91**	**−7.63**	−4.07	**−5.63**	−4.20	−5.18	**−6.54**	−4.88	**−5.92**
	−1.14	−2.02	−2.99	−1.67	−2.33	−1.74	−2.14	−2.63	−2.05	−2.49
liquidity*EMU	**−0.86**	**−0.86**	−0.64	**−1.15**	**−0.75**	−0.17	−0.18	−0.08	−0.32	−0.11
	−2.41	−2.44	−1.79	−3.09	−2	−0.4	−0.44	−0.19	−0.7	−0.25
corspread	**0.12**	**0.12**	**0.12**	**0.12**	**0.12**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**
	4.58	4.65	4.73	4.36	4.46	1.63	1.73	1.79	1.58	1.75
EMU	**9.38**	**15.58**	**13.64**	**14.40**	**13.79**	5.53	**8.30**	**7.48**	**8.15**	**8.04**
	2.32	3.67	3.22	3.28	3.2	1.29	1.67	1.52	1.61	1.61
debt*EMU	−0.14	**−0.19**	−0.16	−0.16	**−0.28**	−0.05	−0.07	−0.06	−0.06	−0.14
	−1.52	−2.02	−1.71	−1.7	−2.91	−0.53	−0.77	−0.64	−0.64	−1.38
deficit*EMU	**−2.50**	**−1.01**	0.02	**−1.92**	**−1.75**	**−2.23**	**−1.60**	**−1.10**	**−1.96**	**−1.87**
	−2.19	−0.86	0.02	−1.67	−1.55	−2.22	−1.62	−1.17	−1.93	−1.86
I		**−39.55**	**−24.86**	**−59.70**	**−38.67**		**−17.94**	**−11.73**	**−30.96**	**−20.50**
		−4.1	−2.34	−2.77	−1.78		−2.09	−1.46	−2.15	−1.45
I*deficit			**−11.85**		**−13.10**			**−5.83**		**−8.11**
			−3.13		−4.24			−2.11		−4.45
LDV						**0.46**	**0.44**	**0.43**	**0.45**	**0.43**
						6.27	5.75	5.52	6.03	5.68
N	420	420	420	420	420	411	411	411	411	411
r2	0.21	0.24	0.26	0.22	0.25	0.54	0.54	0.55	0.54	0.55

Notes: Panel fixed effects for regressions A–E, Regressions F–J include lagged dependent variable (LDV), country dummies and have panel corrected standard errors. *t*-values below the coefficient

References

Acemoglu, D. (2005). Constitutions, politics and economics: a review essay on Persson and Tabellini's 'The Economic Effects of Constitutions'. *Journal of Economic Literature*, *43*, 1025–1048.

Afonso, A., & Strauch, R. (2007). Fiscal policy events and interest rate swap spreads: evidence from the EU. *Journal of International Financial Markets, Institutions, and Money*, *17*(3), 261–276.

Alesina, A., & Perotti, R. (1996). Fiscal discipline and the budget process. *American Economic Review Papers and Proceedings*, *86*(2), 401–407.

Barnes, K., & Cline, W. (1997). *Spreads and risks in emerging market lending*. Institute of International Finance Working Paper, No. 97-1.

Beck, N., & Katz, J. (2004). *Time-series-cross-section issues: dynamics*. Mimeo, New York University.

Bernoth, K., von Hagen, J., & Schuknecht, L. (2004). *Sovereign risk premia in the European government bond market*. ECB Working paper, 369.

Bohn, H., & Inman, R. P. (1996). Balanced budget rules and public deficits: evidence from the U.S. states. *Carnegie-Rochester Conference Series on Public Policy*, *45*, 13–76.

Brambor, T., Clark, W., & Golder, M. (2006). Understanding interaction models: improving empirical analyses. *Political Analysis*, *14*, 83–100.

Bunch, B. S. (1991). The effect of constitutional debt limits on state governments' use of public authorities. *Public Choice*, *68*, 57–69.

Codogno, L., Favero, C., & Missale, A. (2003). Yield spreads on EMU government bonds. *Economic Policy*, *18*(37), 503–32.

Crain, W. M., & Miller III, J. C. (1990). Budget process and spending growth. *William and Mary Law Review*, *31*, 1021–1046; reprinted in Rowley, C. K., Shugart II, W. F., & Tollison, R. D. (Eds.) (2002). *The economics of budget deficits* (Vol. II). Edward Elgar: Cheltenham.

Crain, W. M., & Muris, T. J. (1995). Legislative organization of fiscal policy. *Journal of Law and Economics*, *38*, 311–333; reprinted in Rowley, C. K., Shugart II, W. F., & Tollison, R. D. (Eds.) (2002). *The economics of budget deficits* (Vol. II). Edward Elgar: Cheltenham.

Dafflon, B., & Rossi, S. (1999). Public accounting fudges towards EMU: a first empirical survey and some public choice considerations. *Public Choice*, *101*, 59–84.

Dungey, M., Martin, V., & Pagan, A. P. (2000). A multivariate latent factor decomposition of international bond yield spreads. *Journal of Applied Econometrics*, *15*, 697–715.

Eichengreen, B., & Mody, A. (2000). What explains changing spreads on emerging market debt?. In S. Edwards (Ed.), *NBER conference report series*. Capital flows and the emerging economies: theory, evidence, and controversies (pp. 107–134). Chicago: University of Chicago Press.

European Commission. (2006). Public finances in EMU. Directorate-General for Economic and Financial Affairs, Brussels.

Favero, C., & Giavazzi, F. (2004). *Inflation targeting and debt: lessons from Brazil?* NBER Working Paper, No. 10390.

Favero, C., Giavazzi, F., & Spaventa, L. (1997). High yields: the spread on German interest rates. *The Economic Journal*, *107*, 956–85.

Gómez-Puig, M. (2006). Size matters for liquidity: evidence from EMU sovereign yield spreads. *Economics Letters*, *90*, 156–162.

Greene, W. (2003). *Econometric analysis* (5th ed.). Upper Saddle River: Prentice Hall.

Hallerberg, M. (2004). *Domestic budgets in a united Europe: fiscal governance from the end of Bretton Woods to EMU*. New York: Cornell University Press.

Hallerberg, M., Strauch, R., & von Hagen, J. (2007a). The design of fiscal rules and forms of governance in European Union countries. *European Journal of Political Economy*, *23*(2), 338–359.

Hallerberg, M., Strauch, R., & von Hagen, J. (2007b): *Fiscal governance: evidence from Europe*. Manuscript.

Heppke-Falk, K. & Wolff, G. B. (2008). Moral hazard and bail-out in fiscal federations: evidence for the German länder. *Kyklos*, *61*(3)

Johnson, C. L., & Kriz, K. A. (2005). Fiscal institutions, credit ratings, and borrowing costs. *Public Budgeting and Finance*, pp. 84–103.

Judson, R. A., & Owen, A. L. (1999). Estimating dynamic panel data models: a guide for macroeconomists. *Economics Letters*, *65*, 9–15.

Kamin, S., & von Kleist, K. (1999). *The evolution and determinants of emerging market credit spreads in the 1990s*. Board of Governors of the Federal Reserve System, International Finance Discussion Papers, No. 653.

Kiewiet, D., & Szakaly, K. (1996). Constitutional limitations on borrowing: analysis of state bonded indebtedness. *Journal of Economics, Law, and Organization*, April, 62–97.

Krogstrup, S., & Wyplosz, C. (2006). *A common Pool theory of deficit bias correction*. CEPR discussion paper, No. 5866.

Lowry, R. C., & Alt, J. E. (2001). A visible hand? Bond markets, political parties, balanced budget laws, and state government debt. *Economics and Politics*, *13*(1), 49–72.

Milesi-Ferretti, G. (2003). Good, bad or ugly? On the effects of fiscal rules with creative accounting. *Journal of Public Economics*, *88*, 377–394.

Mosley, L. (2000). Room to move: international financial markets and national welfare states. *International Organization*, *54*, 737–773.

Nickell, S. (1981). Biases in dynamic models with fixed effects. *Econometrica*, *49*(6), 1417–1426.

Pagano, M., & Thadden, E.-L. V. (2004). The European bond markets under EMU. *Oxford Review of Economic Policy*, *20*(4), 531–554.

Poterba, J. M., & Rueben, K. (1999). State fiscal institutions and the U.S. municipal bond market. In J. M. Poterba & J. von Hagen, *Fiscal institutions and fiscal performance* (pp. 181–207). NBER, Chicago.

Poterba, J. M., & Rueben, K. (2001). Fiscal news, state budget rules, and tax-exempt bond yields. *Journal of Urban Economics*, *50*, 537–562.

Schuknecht, L. (2004). *EU fiscal rules, issues and lessons from political economy*. ECB working paper, No. 421.

Tsebelis, G. (2002). *Veto players: how political institutions work*. Princeton: Princeton University Press.

Velasco, A. (2000). Debt and deficits with fragmented fiscal policymaking. *Journal of Public Economics*, *76*, 105–125.

Volkerink, B., & de Haan, J. (2001). Fragmented government effects on fiscal policy: new evidence. *Public Choice*, *109*(3–4), 221–242.

von Hagen, J. (1991). A note on the empirical effectiveness of formal fiscal restraints. *Journal of Public Economics*, *44*, 199–210.

von Hagen, J. (1992). Budgeting procedures and fiscal performance in the European communities. *European economy – Economic Papers*, *96*

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

von Hagen, J., & Wolff, G. B. (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*(12), 3259–3279.

Wibbels, E. (2005). *Federalism and the market: intergovernmental conflict and economic reform in the developing world*. Cambridge: Cambridge University Press.