

IMF Working Paper

Fiscal Incentive Effects of the German Equalization System

Sven Jari Stehn and Annalisa Fedelino

IMF Working Paper

Fiscal Affairs Department

Fiscal Incentive Effects of the German Equalization System

Prepared by Sven Jari Stehn and Annalisa Fedelino¹

Authorized for distribution by Manmohan Kumar (FAD) and Ashoka Mody (EUR)

June 2009

Abstract

This Working Paper should not be reported as representing the views of the IMF.

The views expressed in this Working Paper are those of the authors and do not necessarily represent those of the IMF or IMF policy. Working Papers describe research in progress by the authors and are published to elicit comments and to further debate.

Does reliance on transfers weaken fiscal discipline and encourage pro-cyclical fiscal policies in recipient subnational governments? Using fiscal reaction functions for a panel of the German Länder, this paper finds a positive answer to both questions. Net-recipient states (Länder, benefiting from the transfer system) have not reduced primary expenditure significantly in response to rising deficits, but have instead relied on vertical transfers from the federal government to ensure debt sustainability. Moreover, they have pursued pro-cyclical policies, particularly by raising expenditures in good times. Net-contributing Länder (paying into the transfer system), in contrast, have ensured fiscal sustainability through spending adjustments; they have also been less pro-cyclical. Panel vector auto-regressions confirm these findings.

JEL Classification Numbers: H72, H74, H77

Keywords: Fiscal federalism and equalization, cyclicity and sustainability of fiscal policy

Author's E-Mail Address: sstehn@imf.org, afedelino@imf.org

¹ We would like to thank Mark De Broeck, Peter Claeys, Antonio Fatas, Frédéric Holm-Hadulla, Mohan Kumar, Ashok Mody, Franziska Ohnsorge, and Dan Stegarescu for useful comments and suggestions. All remaining errors are ours.

Contents	Page
I. Introduction	3
II. Fiscal Discipline and Fiscal Transfers: A Difficult Nexus	4
A. Germany's Transfer System.....	7
B. Potential Implications of Transfers	10
III. Framework, Methodology, and Data	13
A. The Inter-Temporal Budget Constraint.....	13
B. Cyclicalilty	14
C. Data	15
IV. Empirical Analysis.....	15
A. Univariate Analysis: Fiscal Reaction Functions	16
B. Multivariate Analysis: VARs.....	20
V. Policy Implications and Conclusions.....	23
 Tables	
1. Germany: Descriptive Statistics, 1985-2007	15
2. Fiscal Behavior of the Old Länder, 1985-2007	17
3. Behavior of Primary Expenditure for Länder, 1985-2007.....	18
4. Robustness Check I: Behavior of Primary Expenditure for Länder, 1985-2007	19
5. Robustness Check II: Behavior of Primary Expenditure	20
 Figures	
1. Subnational Shares in Total Spending and Revenue, 2006	5
2. Comparative Composition of Subnational Revenue.....	6
3. Net Contributing and Net Receiving Länder	9
4. Evolution of the Transfer System	9
5. Debt by Government Level.....	11
6: Länder Debt	12
7. Länder Behavior and Average Received Transfers, 1985-2007	20
8. Output Gap Shock.....	22
9. Primary Spending Shock.....	23
Appendix I	20
Appendix Table 6: Unit root tests.....	26
References.....	27

I. INTRODUCTION

Germany's federation relies on an extensive system of equalization transfers, both vertical—from the federal government (the *Bund*) to the states (the *Länder*)—and horizontal—among the *Länder*. While large degrees of equalization are not uncommon in countries, Germany's emphasis on *solidarity* across *Länder* comes with an almost complete absence of *Länder*'s taxing autonomy; this combination is believed to have blunted *Länder*'s incentives to be fiscally responsible. Indeed, Germany's recent but sustained accumulation of public debt—to which the *Länder* have made a sizable contribution, even before the current global crisis—raises the question whether the fiscal equalization system has set incentives for fiscal indiscipline across government levels. The answer, according to the literature on “soft budget constraint,” is not promising: strong reliance on transfers, and lack of own source revenue that would allow governments to internalize the costs of their spending decisions, weaken incentives to spend with due consideration for debt sustainability (Rodden et al, 2003, Bordignon, 2006). This is a relevant question given that Germany, along with other countries, faces significant age-related spending pressures over the medium term that will require fiscal space that the *Bund*, alone, cannot create in a sustainable way; over the shorter term, the costs of the recent and still unfolding global financial crisis add urgency to this question. Furthermore, transfer dependence may also induce procyclical fiscal behavior. Especially in good times, the central government may be willing (and find it politically attractive) to pass on revenue increases in the form of transfers, which tend to be spent (Wibbels and Rodden, 2006).

This paper looks at these two issues—medium-term fiscal discipline and short-term procyclicality—in the context of the German federation, and assesses how they interact with the design and scope of the German transfer system. While these are not “new” issues in the literature, the main contribution of this paper is to provide an analytical framework that allows to capture *jointly* the short-term and medium-term aspects of this debate.

Using estimated fiscal reaction functions, the paper confirms that reliance on transfers weakens fiscal discipline and encourages procyclical fiscal policy. Results show that net-recipient *Länder* (i.e., states that benefit from the equalization system) have not reduced primary expenditure significantly in response to rising deficits. Instead they have relied on vertical transfers from the federal government to ensure debt sustainability. Moreover, these *Länder* have pursued procyclical policies, particularly by raising expenditures in good times (and so has done the *Bund*, from which the vertical transfers originated). Net-contributing *Länder* (states that pay into the equalization system), in contrast, have ensured fiscal sustainability through spending adjustments and have been less procyclical. Impulse responses from an estimated panel vector auto-regression confirm these findings, and are consistent with the interpretation that the observed fiscal indiscipline in net-recipient *Länder* is due to the expectation of receiving substantial vertical transfers to finance more spending.

These results highlight the need for several reforms to help mitigate the costs of the distortions of the current transfer system: (a) reviewing (at least) vertical (federal) transfers; and (b) introducing mechanisms that strengthen incentives for fiscal discipline at the Länder level. While redesigning transfers is inevitably a political choice requiring detailed interventions that are beyond the scope of this paper, we propose two possible policy options to strengthen fiscal discipline. The first is granting increased revenue raising autonomy to the Länder; while our results do not directly identify this solution (and only point to the root of the problem), an extensive body of literature on transfer reliance suggests that such reforms would improve incentives in the Länder (Spahn, 2001, Rodden et al., 2003, Spahn and Werner, 2007, Feld and von Hagen, 2008). The second policy option, introducing credible fiscal rules at the Land level to replace the ineffective golden rule, would create a useful device to promote policy coordination and commitment across government levels (Sutherland et al., 2005, and Kumar and Ter-Minassian, 2007).

The paper is structured as follows. Section II provides a brief overview of the German transfer system and its implications. Section III illustrates the data and the methodology; the analysis is presented in Section IV. Based on recent developments in the system of intergovernmental system in Germany, Section V concludes.

II. FISCAL DISCIPLINE AND FISCAL TRANSFERS: A DIFFICULT NEXUS

Germany is a federation with three government levels: federal (Bund), states (Länder) and municipalities (Gemeinden). Originally composed of 10 Länder and West Berlin when the federation of West Germany was created in 1949, it encompassed five more Länder at the time of re-unification with East Germany in 1990; the sixteenth Land was created by merging East and West Berlin (Berlin is a city state, along with Bremen and Hamburg).²

The 1949 German Constitution (*Grundgesetz*) assigns competencies to the Bund and Länder. The Bund has exclusive competencies in some areas (among others, external affairs and defense, free movement of persons, immigration and emigration, air traffic, and telecommunications), while others represent joint competencies between the Bund and the Länder. For the latter, the Bund can legislate to fulfill the requirement of ensuring “equal living conditions” mandated by the constitution (article 72). This had led over time to an entanglement and overlap of legislative responsibilities between the federal government and the Länder, with laws often requiring approval by both chambers of parliament thus restricting autonomy to pursue their own policy goals.³

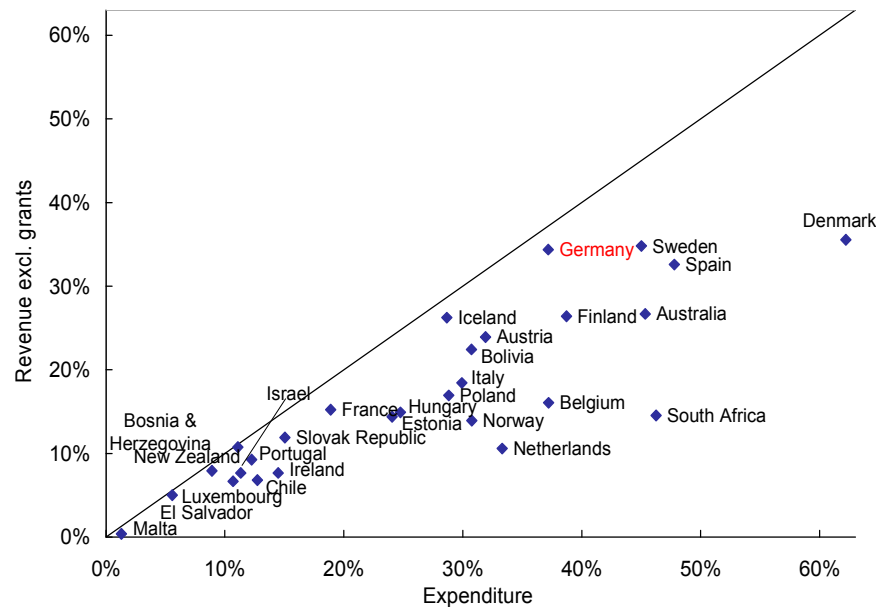
² There are also some 14,000 Gemeinden, not considered in this paper. For more detail and a historical perspective, see Spahn (2001), Spahn and Wittels (2003), and Feld and von Hagen (2008).

³ Feld and von Hagen (2008) report that, in 2006, half of new federal laws required approval by both chambers, the Bundestag (representing the federal government), and the Bundestag (representing the Länder).

The Federalism Reform Act of June 2006 considerably reduced this legislative overlap, by scaling down the number of federal laws requiring Bundesrat approval and establishing the right for the Länder to deviate from federal law in the area of administrative institutions and administrative procedures (Feld and von Hagen, 2008).⁴ From a fiscal standpoint, the most important change has been that Länder now have exclusive responsibility for their civil servants, in particular salaries and pensions. While this Act has marked an important political change in the German federation, it has shied away from reforming the fiscal relations across government levels.

From a fiscal perspective, Germany is at the high end of the decentralization spectrum, with a significant share of spending undertaken by subnational governments.⁵ In this respect, Germany is not very different from other countries (Figure 1). Still, this share only partially denotes the actual spending autonomy of the Länder, as these have had to comply with requirements and minimum spending standards mandated by the federal government.

Figure 1. Subnational Shares in Total Spending and Revenue, 2006



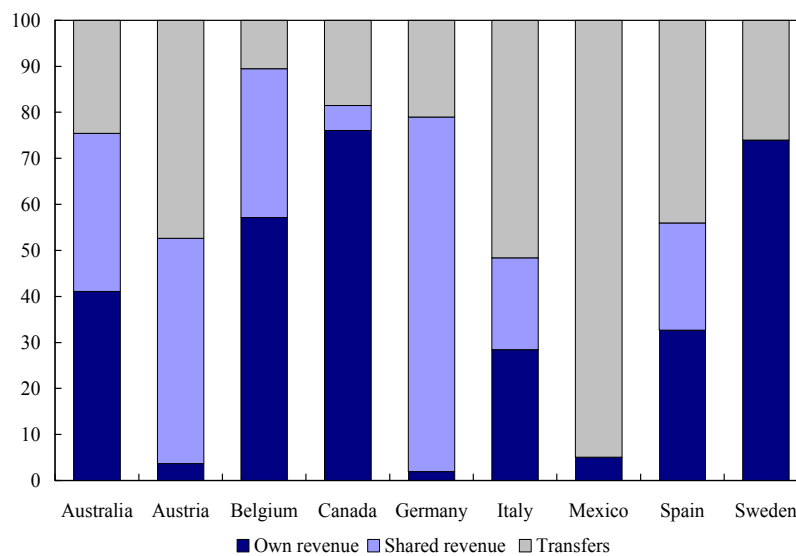
Source: IMF Government Finance Statistics.

⁴ The Federal Reform Act also abolished the prerogative of the federal government to pass “framing legislation” which had allowed the Bund to establish legislative guidelines in certain areas on which the Länder would legislate in more detail—for example, on public employment and university education.

⁵ Spending (or revenue) shares are possibly an inaccurate way to measure the degree of fiscal decentralization, as they do not take into account subnational spending and taxing autonomy.

Germany stands out, however, for how such spending is financed. First, the Länder have very limited tax autonomy (Figure 2). The tax law is identical for all Länder and municipalities;⁶ and even for taxes whose receipts accrue to the Länder, the latter have (almost) no discretion in setting tax rates and defining tax bases (Seitz, 2000, and Barette, Huber and Lichtblau, 2002). As a result, only about 2 percent of Länder’s resources can be considered “own source revenue” over which the states have some discretion —by far the lowest share among comparator countries. Stegarescu (2005) notes that, by adjusting Länder revenue shares for tax autonomy, Germany is much less decentralized than usually believed, also contradicting the common claim that federal countries are more decentralized than unitary ones.

Figure 2. Comparative Composition of Subnational Revenue



Source: OECD (2006). Note: Data refers to states for federal countries (Australia, Canada, Germany, and Mexico) and regions or second-tier governments for the remaining unitary countries. Therefore, municipal revenues are excluded in the case of Germany, among others.

Second, reflecting the principle of “equivalent living conditions” enshrined in the constitution, a complex fiscal transfer system ensures national homogeneity in revenue and almost complete equalization. Interregional solidarity is pushed to the point that recipient states may receive higher per capita resources than contributing states (Spahn and Werner, 2007).⁷ These issues are further explored below.

⁶ Municipalities are accorded some discretion in setting tax rates for municipal taxes, in particular the local business tax (Spahn and Werner, 2007).

⁷ This applies mainly to Bremen and Berlin (due to their city state privileges), as well as the new states (which receive vertical transfers primarily for special needs).

A. Germany's Transfer System

Following the collection of own-source revenues (*Ländersteuern*), Germany's transfer system consists of the following four stages (I-IV):

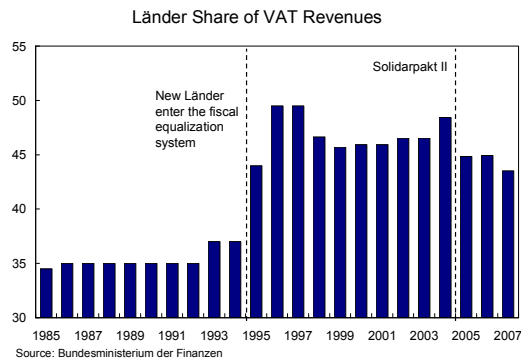
- I. **Vertical tax sharing.** This first stage allocates "joint taxes," including the three major taxes (VAT, personal and income taxes), across the three government levels. While income taxes are apportioned according to the constitution, the VAT shares are subject to standard legislation, and therefore have changed substantially over time. For example, the share of VAT revenues allocated to the Länder rose from 35 percent in 1985 to 49.5 percent in 1997, mostly due to the incorporation of the new Länder into the equalization system in 1995. In 2005, shares dropped reflecting the so called Solidarity Pact II, which reduced the amount of horizontal sharing (see below). In 2007, the VAT share for the ä stood at 43.5 percent (see chart).

Type of tax	Bund	Länder	Gemeinden
VAT	55.0	43.0	2.0
Personal income tax	42.5	42.5	15.0
Corporation tax	50.0	50.0	-

Source: Bundesministerium der Finanzen

- II. **Allocation of VAT revenue.** The Länder's share of VAT revenues is allocated in two steps:

- A minimum of 75 percent is distributed according to the Länder population shares (*Restverteilung der USt.*).
- The remaining 25 percent of the VAT share is used for the purposes of horizontal fiscal equalization (*USt. Ergänzungszuweisungen*).



- III. **Fiscal equalization among the Länder.** Every state's financial requirement is determined by comparing the state's index of financial strength (composed of the sum of state taxes plus 64 percent of local taxes) with its financial requirement (the product of the state's inhabitants and the average per capita nationwide state and local revenues).⁸ Länder with a higher financial strength than the financial requirement are mandated to transfer revenues to financially weak Länder, to raise their financial capacity per capita to at least 91 percent of the average (*Länderfinanzausgleich*).
- IV. **Supplementary federal grants.** These vertical transfers (*Bundesergänzungszuweisungen*) consist of two components. Type I grants provide additional assistance to poorer Länder to bring their financial capacities at least up to 97.5 percent of the national average. An

⁸ See Werner (2008) for details.

additional type II grant is paid to account for special needs, including structural adjustment in the eastern German Länder. Up to 2005 these grants included substantial “bail-out” transfers to the highly indebted states of Bremen and Saarland (see below).

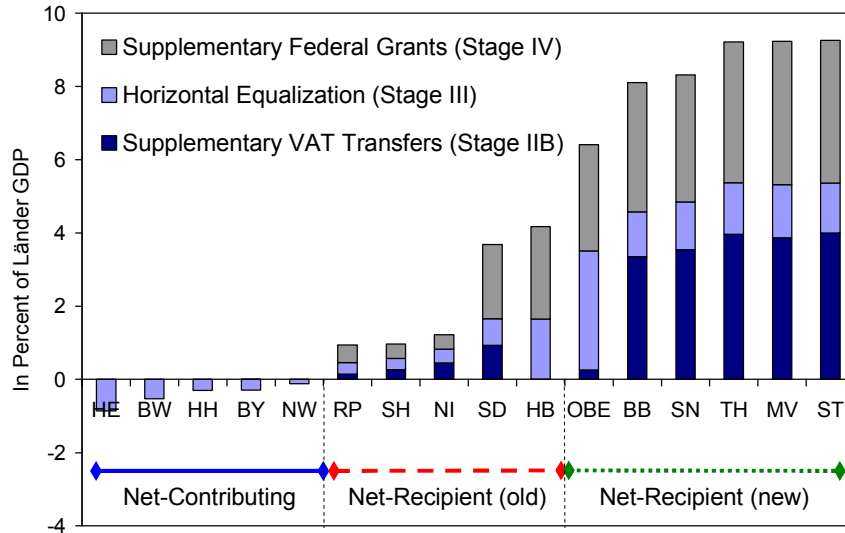
These complex four stages can be interpreted as a combination of vertical and horizontal transfers. The vertical transfers comprise the distribution of joint taxes (stage I), the allocation of VAT to the Länder per capita (stage II.A) and the supplementary federal grants (stage IV). The horizontal transfers comprise the supplementary VAT allocations (stage II.B) and the fiscal equalization among the Länder (stage III). Of these, the last three stages (IIB, III and IV) are explicitly designed to equalize financial capacity across the Länder.

	VERTICAL SHARING	HORIZONTAL SHARING
NO EQUALIZATION	<p>Stage I Vertical distribution of joint tax revenues</p> <p>Stage II.A Distribution of VAT on per capita basis (minimum 75 percent of VAT accruing to Länder)</p>	
EQUALIZATION	<p>Stage IV Supplementary federal grants (vertical transfers to further equalize revenues per capita, and to finance special needs)</p>	<p>Stage II.B Supplementary transfers to low-tax-receipt Länder (maximum 25 percent of VAT accruing to Länder)</p> <p>Stage III Horizontal sharing to further equalize revenues per capita</p>

As the system relies strongly on horizontal redistribution, it has created “net-contributing” and “net-recipient” Länder (the latter divided into new and old Länder, see Figure 3).⁹ Over time the transfer system has become increasingly more generous, both horizontally and vertically (Figure 4).

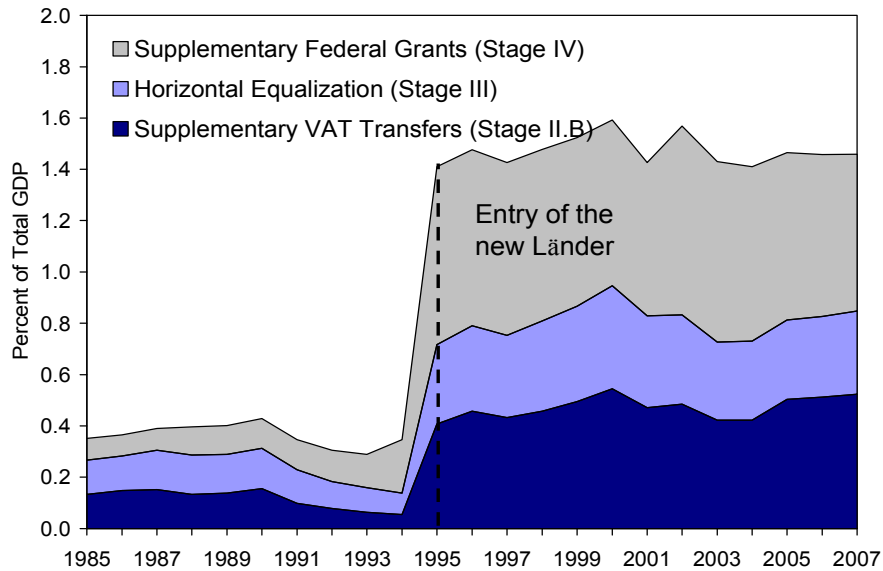
⁹ Between 1985 and 2007 the transfer system has, strictly speaking, created “neutral and net-contributing Länder,” as well as net-recipient ones (some Länder, such as Bayern, received small transfers early in the sample period).

Figure 3. Net Contributing and Net Receiving Länder
(Average, 1985-2007)



Source: Statistisches Bundesamt, Bundesrat, own calculations.
Note: See Appendix I for Länder's names.

Figure 4. Evolution of the Transfer System



Source: Statistisches Bundesamt, Bundesrat, own calculations.

Three important developments are noteworthy, corresponding to three distinct phases in fiscal relations between the Bund and the Länder. First, in 1988 the states of Saarland and Bremen turned to the Constitutional Court to mandate the Bund into transfer payments to cope with their high debt ratios (Seitz, 2000, provides details). They successfully claimed that their high debts were the result of adverse economic developments not under their

control, and that, unless they received payments from the Bund, they would be unable to carry out their constitutionally-determined spending mandates. In 1992, the Court ruled that states experiencing financial hardship were entitled to financial support (often referred to as “bail-out” payments). Second, the size of the fiscal equalization system expanded considerably in 1995 when the new Länder (including the city state of Berlin) entered the system (the so called Solidarity Pact I).¹⁰ Finally, following a successful legal challenge with the Constitutional Court by three richer Länder (Baden-W., Bavaria, and Hesse), a new Solidarity Pact II came into effect in 2005. Financial stress payments to Bremen and Saarland were to be discontinued, and supplementary transfers to Eastern Germany would be gradually phased out by 2019.¹¹

At the same time, in October 2006, in a landmark decision, the Constitutional Court rejected a bail-out claim by the city state of Berlin, which had sued the federal government stating that its extreme fiscal distress could not be escaped on its own (its debt had reached over 70 percent of its own GDP). Although too soon to say, many observers believe that this decision would significantly impact the behavior of Länder in the future, in particular by reducing their expectation for bail-out from the federal government.

B. Potential Implications of Transfers

The combination of heavy reliance on transfers and limited tax autonomy, present in Germany, is considered a mix with potentially adverse consequences. The literature identifies a number of possible implications, three of which are discussed below.

Soft budget constraint/pro-deficit pro-debt bias

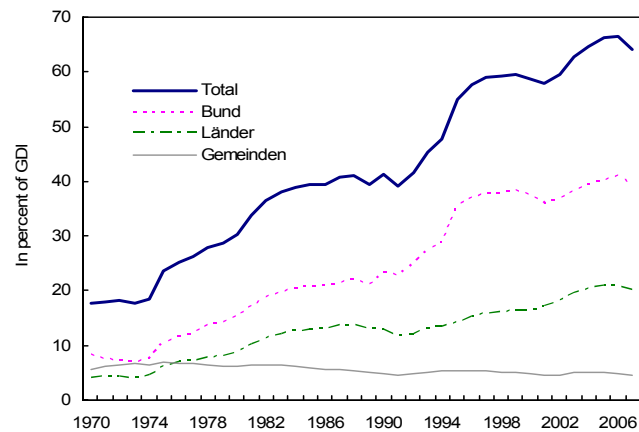
There seems to be a pro-deficit bias in federations/decentralized countries where transfer dependence is high (Rodden et al., 2003). Transfers induce a “common pool” problem, where recipients perceive that the costs of their spending decisions are funded by taxpayers in other jurisdictions, and therefore do not face incentives to use the money effectively. This, over time, leads to overspending and/or undertaxing, resulting in deficit and debt accumulation. This “soft budget constraint” problem arises when the central government cannot commit to a (consistent over time) budget constraint for subnational governments; these, in turn, expect to be rescued by the center if they pursue irresponsible fiscal policies, thus weakening their incentives to “behave” in the first place. The bail-outs of Bremen and Saarland in the early 1990s confirmed the presence of soft budgets.

¹⁰ Initially after unification, Eastern Länder were covered by separate transfers.

¹¹ The reform has also lowered the marginal transfers rate (the share of an additional euro in taxes that is transferred out), from 60-100 percent to 44-75 percent (Feld and von Hagen, 2008); and as shown in the chart above, the Länder VAT share was reduced.

Indeed, Länder have considerably contributed to the increasing debt of the German federation (Figure 5). Most of the strong increase in debt—from less than 20 percent of GDP in 1970 to above 60 percent of GDP to date—has been originated at Bund and Land level; at the municipal level (Gemeinden), debt ratios have actually been falling. During the Maastricht consolidation phase (second half of the 1990s), the overall debt was reduced due to consolidation at the federal level, with no contribution from the Länder or Gemeinden.

Figure 5. Debt by Government Level
(In percent of German GDP)



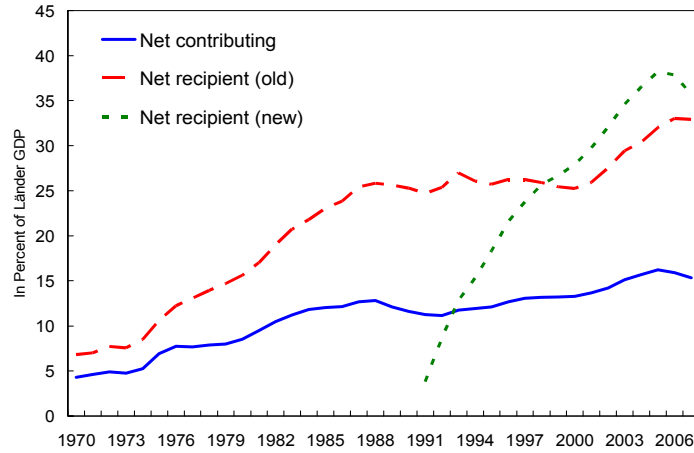
Source: Statistisches Bundesamt

Not all Länder have been equally “profligate.” The accumulation of debt has varied strongly across Länder: while the contributing Länder have displayed a gradual increase in debt, from 5 percent of own GDP in 1970 to around 15 percent of own GDP in 2007, the old net-recipient states have displayed very large increases in debt, from around 7 percent of own GDP in 1970 to above 30 percent of own GDP in 2007. The new members—all net-recipient states—have experienced a steep acceleration in debt since unification in 1991, to around 35 percent of own GDP in 2007 (Figure 6).

The perception of soft budget constraint—and the expectation of a federal bailout—are shared by both “borrowing” Länder and their creditors. There is evidence that markets have not exercised discipline on the less fiscally responsible Länder; on the contrary, Rodden (2007) and Heppke-Falk and Wolff (2008) show that these Länder have enjoyed higher credit ratings than more responsible peers, as markets, too, seem to expect bail-outs by the federal government, if Länder were to be in financial trouble.

In principle, the Länder (as well as the Bund) are constitutionally required to observe a “golden rule,” which allows borrowing only to finance investment to ensure fiscal

Figure 6: Länder Debt
(In percent of Land GDP)



Source: Statistisches Bundesamt.

sustainability. This rule, however, has clearly proven ineffective in disciplining Bund and Länder.¹² In an attempt to retain some flexibility during times of economic distress, the Constitution allows for a breach of the golden rule in times of “disturbance of macroeconomic equilibrium” (article 115 of the Constitution). Bund and the Länder have repeatedly invoked this escape clause, rendering the rule ineffective.

Procyclicality of subnational fiscal policies

Subnational fiscal policy tends to be procyclical (Wibbels and Rodden, 2006). While central governments themselves are prone implement procyclical fiscal policies, this tendency is likely to be more pronounced for subnational governments. First, these often rely on income-sensitive revenue; this is particularly the case when revenue sharing is based on income and consumption taxes, as in the case of Germany. Second, the central government may play a limited role in stabilizing subnational fiscal positions through transfers over the cycle; in fact, central governments find it easier to pass on windfall revenues to subnationals in good times by raising vertical transfers—thus exacerbating procyclicality. While the redistributive aspect of horizontal equalization typically has a countercyclical impact, in most federations vertical grants are found to be a-cyclical or procyclical. For Germany, Wibbels and Rodden (2006) find that supplementary vertical grants and overall Länder revenues are procyclical (see also von Hagen and Hepp, 2001). As a result, expenditures are strongly procyclical, driven mainly by good economic times, unlike in most other countries.

¹² For a discussion of budgetary rules, see Deutsche Bundesbank (2007).

Low incentive to raise taxes/promote growth of tax bases

For contributing Länder, the transfer system equalizes away the benefits from developing an above average capacity to raise revenue, and may dwarf incentives to promote productive activities resulting in higher tax bases/revenue capacity. Von Hagen and Hepp (2001) find a declining correlation of state tax revenue with state GDP over time, which is used as evidence of weakening incentives to collect revenue. Marginal transfer rates remain high, and affect incentives to collect taxes at the margin. Given limited tax autonomy, Länder may resort to tax administration mechanisms to compete and attract regional economic activities. This happens if shortfalls in revenue resulting from “lenient” tax administration are compensated via additional transfers. Spahn and Werner (2007) cite these effects, although note that these are difficult to quantify. Baretta et al. (2001) also find that equalizing transfers in Germany have a negative impact on tax enforcement and tax collection; as higher tax revenue in a given Land reduce the amount of equalizing transfers it receives, this mechanism acts as a “tax on the tax,” with a negative effect on tax revenue.

The rest of this paper evaluates the first two of these implications.

III. FRAMEWORK, METHODOLOGY, AND DATA

The key objective of fiscal policy is to ensure the sustainability of public finances and, subject to the achievement of this objective, contribute to the stabilization of economic shocks (see e.g., IMF, 2008). Such stabilization can be discretionary (deliberate policy responses to shocks) or automatic (when fiscal variables fluctuate endogenously with the cycle). Following a discussion of the government’s inter-temporal budget constraint, issues relating to the cyclicity of fiscal policy will be briefly discussed.

A. The Inter-Temporal Budget Constraint

The analysis of debt sustainability rests on a key fiscal relationship, the inter-temporal budget constraint, containing total revenues, TR , primary expenditure, G , and end-of-period government debt, B :

$$B_{i,t} = G_{i,t} - TR_{i,t} + (1 + \rho)B_{i,t-1} \quad (1)$$

where ρ is the interest rate, which for simplicity is assumed constant across time and Länder.

Consistency with the inter-temporal budget constraint (1) requires that government debt be stationary in first differences (Trehan and Walsh, 1988). The stationarity of ΔB in turn requires a long-run relationship between G , TR and B . From (1), the stationary linear combination is the state budget deficit D (including interest):

$$D_{i,t} = G_{i,t} - TR_{i,t} + \rho B_{i,t-1}$$

With the focus on the transfer system, total state revenues are broken down into three components:

$$TR_{i,t} = R_{i,t} + H_{i,t} + V_{i,t}$$

where:

- R denote the sum of state own-source revenues, the vertical distribution of joint tax revenues (stage I) and the 75 percent of VAT revenues that are allocated on a per capita basis (stage II.A). R will be referred to as *pre-transfer revenues*.
- H represents *horizontal transfers*, consisting of supplementary VAT transfers (stage II.B) and the net receipts during the horizontal sharing of revenues (stage III); and
- V are the *supplementary vertical transfers* from the Bund to the states (stage IV).

Given the need to ensure a stationary deficit, the deficit has the interpretation of an “error-correction term;” that is, a disequilibrium to which the fiscal instruments have to respond to ensure fiscal sustainability. Formally, when the fiscal variables are expressed as a vector X , the state deficit is given by a co-integrating relationship between these variables. Engle and Granger (1987) have shown that such process X has an error-correction representation:

$$\Delta X_{it} = \alpha_{it} + \gamma_i D_{it-1} + \sum_{k=1}^K \delta_i^k \Delta X_{it-k} + \varepsilon_{it} \quad (2)$$

where γ corresponds to the feedback on the deficit (the “error-correction term”) and the δ ’s capture the dynamics of the system, with lag length K .

B. Cyclicity

In addition to testing for fiscal sustainability, we are interested in the cyclicity of fiscal policy in the Länder. The budget balance, and its components, can move as a result of deliberate policy decisions (discretionary policy) or in response to the cycle (automatic stabilizers). While revenues have a strong cyclical component, government spending changes are mostly discretionary.¹³

To study the cyclical response of the budget balance and its components, the output gap (defined as actual minus potential output as a share of potential output) was constructed using a Hodrick Prescott filter (with a smoothing factor of 100). To avoid endogenous changes in

¹³ State expenditures—which consist to a large extent of personnel outlays—comprise a small automatic component (as no unemployment benefits are paid at the state level).

fiscal ratios to GDP, all fiscal variables were scaled by potential output. The deficit-to-potential-GDP-ratio in Land i is then given by:

$$d_{i,t} = g_{i,t} - r_{i,t} - h_{i,t} - v_{i,t} + \rho b_{i,t-1}.$$

C. Data

The analysis focuses on the ten old Länder over the period 1985–2007, excluding Berlin. East German states are excluded because these joined the transfer system only in 1995 and subsequently underwent enormous structural change. The period 1985–2007 is chosen because, as explained in Section II.A, these years witnessed a large increase in the generosity of the German transfer system—the effect of which is the focus of the paper.¹⁴ A robustness section below will explore alternative samples.

Table 1 presents descriptive statistics for all Länder, the net-contributing Länder and the net-recipient ones. The table shows that net-recipient Länder have higher primary expenditure despite similar pre-transfer revenues, and significantly higher debt ratios than the net-contributing Länder. The net recipient Länder, by construction, receive net inflows of shared VAT revenue, horizontal and supplementary vertical transfers. Finally, the table shows that net-recipient Länder have significantly higher deficits than net-contributing Länder. Panel unit root tests suggest a unit root in pre-transfer revenues, primary spending, debt and the transfer variables (Appendix Table 6). The deficit is clearly stationary.

Table 1. Germany: Descriptive Statistics, 1985–2007
(In percent of Länder GDP)

	g (Primary exp.)			r (Pre-trans. Rev.)			h (Hor. transfers)			v (Vertical transfers)			b (Debt)			d (Deficit)		
	All	Net- contr.	Net- rec.	All	Net- contr.	Net- rec.	All	Net- contr.	Net- rec.	All	Net- contr.	Net- rec.	All	Net- contr.	Net- rec.	All	Net- contr.	Net- rec.
Mean	11.6	10.3	12.9	8.9	8.9	8.8	0.3	-0.4	1.0	0.6	0.0	1.2	20.0	13.2	26.9	0.9	0.6	1.2
Median	10.9	9.7	11.8	8.2	8.3	8.2	0.2	-0.3	0.8	0.1	0.0	0.5	18.8	12.0	24.5	0.8	0.6	1.2
Max	19.5	16.3	19.5	16.0	15.6	16.0	1.7	-0.1	1.7	5.4	0.1	5.4	53.9	26.0	53.9	4.1	2.0	4.1
Min	8.0	8.0	9.9	5.2	6.1	5.2	-0.9	-0.9	0.5	0.0	0.0	0.0	4.7	4.7	14.9	-1.7	-0.6	-1.7
Std. Dev.	2.7	1.9	2.7	2.3	2.2	2.4	0.8	0.3	0.5	1.2	0.0	1.4	10.6	5.8	9.9	0.9	0.5	1.1

Note: A star denotes rejection at 5 percent level.

IV. EMPIRICAL ANALYSIS

The empirical analysis initially applies simple reaction functions for the budget balance and its components to provide a first assessment of the behavior of the Länder, followed by vector auto-regressions to examine the dynamic properties in response to shocks.

¹⁴ Data are taken from the *Statistische Bundesamt* and the *Drucksachen des Bundesrates*.

A. Univariate Analysis: Fiscal Reaction Functions

The discussion on the inter-temporal budget constraint showed that fiscal policy is sustainable if the budget deficit is stationary. The literature has frequently used simple reaction functions to study fiscal policy behavior where the deficit, or its components, are related to a fiscal sustainability indicator (debt stock or deficit) and a measure of the cycle.

In a seminal study, Bohn (1991) estimates a reaction function for the U.S. primary budget deficit to the existing debt stock. He finds a significantly negative relationship (i.e., rising debt has tended to reduce primary deficits) which indicate that fiscal in the U.S. policy has been adjusted to ensure debt sustainability—in other words, fiscal policy has been consistent with the inter-temporal budget constraint expressed in (1). Lane (2003) examines the cyclicity of fiscal policy by regressing government expenditure on GDP growth. He shows that government expenditure has been procyclical in a number of OECD countries (including Germany). Gali and Perotti (2003) provide a joint analysis of the sustainability and cyclicity of fiscal policy. They estimate the response of the cyclically-adjusted budget deficit to the existing debt stock and the output gap for a panel of OECD countries. They find that while fiscal policy has been sustainable, it has often been pro-cyclical.

Given the nonstationarity of the data, we express the fiscal reaction functions in error correction form (see equation (2)). In this format, the first difference of a fiscal variable of interest responds to the deficit (the error correction term, whose stationarity needs to be ensured), other variables (the cycle and dummy variables) and its own lagged values. A simple version of such an error correction model (with $K=1$) is a reaction function which relates alternative budget items, x , to the output gap, y , and the lagged deficit, d :

$$\Delta x_{it} = \alpha + \rho \Delta x_{it-1} + \gamma d_{it-1} + \beta y_{it} + \varepsilon_{it} \quad (3)$$

where x contains either the overall deficit, primary expenditure, pre-vertical-transfer revenues, horizontal transfers or supplementary vertical transfers. Taking the deficit as an example, the coefficient γ captures the error-correction response of the change in the deficit to the lagged deficit. A significantly negative coefficient indicates that the deficit has been stationary and that therefore fiscal sustainability has been ensured. The cyclicity of overall fiscal policy is captured by β ; a negative coefficient indicates counter-cyclical policy (i.e. the deficit falls with positive output gaps), while a positive coefficient implies procyclical fiscal policy. Finally, ρ captures the smoothing of fiscal policy decisions. When primary expenditure is considered, the coefficient γ indicates to what extent primary expenditure has been adjusted to ensure the sustainability of public finances. The cyclicity of expenditure is again captured by β , where a positive coefficient indicates procyclical policy.

Results

The model is estimated by panel OLS without state fixed effects, as their inclusion is rejected.¹⁵ Table 2 summarizes the results.¹⁶ We present panel estimates of equation (3) for each of the Länder groups, including all Länder (columns (1) to (5)), the net-contributing Länder (columns (6) to (10)) and the net-recipient Länder (columns (11) to (15)). Equation (3) is estimated for each of the change in the deficit (Δd), primary expenditure (Δg), pre-transfer revenues (Δr), horizontal transfers (Δh) and supplementary vertical transfers (Δv). The results show that on average the old Länder have ensured fiscal sustainability, as the reaction of the change in the deficit to the lagged deficit has been significantly negative. The stabilizing response originates from a combination of primary expenditure, pre-transfer revenue and supplementary vertical transfer adjustment. The responsiveness of pre-transfer revenues to existing deficits likely results from the variation in the share of VAT revenues allocated to the Länder over time. Horizontal transfers have not responded systematically to the deficit. Overall, fiscal policy has been a-cyclical with no significant response of the deficit to the cycle. This is because the counter-cyclical response of revenues to the cycle has been offset by pro-cyclical expenditure policy. These findings are broadly in line with other recent studies (e.g., Wibbels and Rodden 2006, Berger and Holler 2007, Claeys et al. 2008).

Table 2. Fiscal Behavior of the Old Länder, 1985–2007

Dependent variable:	All Laender					Net-contributing Laender					Net-recipient Laender				
	Δd	Δg	Δr	Δh	Δv	Δd	Δg	Δr	Δh	Δv	Δd	Δg	Δr	Δh	Δv
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
d(-1) (lagged deficit)	-0.22 <i>-4.38</i>	-0.09 <i>-3.08</i>	0.12 <i>3.24</i>	0.01 <i>0.31</i>	0.12 <i>4.11</i>	-0.28 <i>-3.27</i>	-0.27 <i>-4.25</i>	0.02 <i>0.21</i>	0.05 <i>1.51</i>	0.00 <i>1.20</i>	-0.25 <i>-3.42</i>	-0.07 <i>-1.65</i>	0.16 <i>3.56</i>	0.00 <i>0.04</i>	0.12 <i>4.11</i>
y (output gap)	0.02 <i>1.08</i>	0.06 <i>4.40</i>	0.05 <i>2.95</i>	-0.01 <i>-0.64</i>	0.01 <i>0.78</i>	0.02 <i>0.99</i>	0.04 <i>2.91</i>	0.04 <i>1.87</i>	0.01 <i>1.22</i>	0.00 <i>0.92</i>	0.02 <i>0.50</i>	0.07 <i>2.99</i>	0.05 <i>2.21</i>	-0.02 <i>-1.37</i>	0.01 <i>0.78</i>
R-squared	0.18	0.13	0.09	0.03	0.08	0.16	0.23	0.05	0.05	0.10	0.21	0.11	0.14	0.05	0.08
No. of observations	230	230	230	230	230	115	115	115	115	115	115	115	115	115	115

Note: Estimated by OLS. Italics denote t-values. All variables are expressed in percent of trend GDP. Constants and lagged dependent variables (one lag) are included but not reported.

The fiscal behavior is markedly different between net-contributing and net-recipient Länder. While both groups have ensured fiscal sustainability overall, the source of the adjustment that has ensured fiscal sustainability has varied between net-contributing and net-recipient Länder. Net-contributing Länder have closed fiscal imbalances through primary expenditure

¹⁵ We evaluate the joint significance of cross sectional effects using the likelihood ratio. Notice that, despite the presence of lagged dependent variables, dynamic panel data methods are not required as the time dimension of the sample sufficiently exceeds the cross sectional dimension (see Arellano and Bond, 1991).

¹⁶ We report t-values based on ordinary standard errors. Consideration of White cross-section, period or diagonal standard errors left the results qualitatively unchanged.

adjustment. Net-recipient Länder, in contrast, have not adjusted primary spending significantly to the deficit but instead relied on pre-transfer revenues and supplementary vertical transfers to ensure fiscal sustainability. Government spending has been more procyclical in net-recipient than net-contributing Länder (which in turn stems from procyclical behavior in good times, see below). Pre-transfer revenues have increased with the output gap, as would be expected, but only mildly so, since much of the increase in revenues is shared. Horizontal and supplementary vertical transfers have not responded significantly to the cycle.

The behavior of primary expenditure

As Länder have some discretion over setting primary expenditure, their behavior is examined in more detail using variations of the baseline specification (see Table 3). Robustness checks include the addition of time fixed effects and estimation using instrumental variables.

The baseline results confirm the earlier findings. Interestingly, it is shown that the procyclicality originates from increasing spending during good times. Controlling for possible endogeneity between the output gap and spending with instrumental variable estimation leaves the findings qualitatively unchanged.¹⁷ In the presence of time fixed effects spending decisions appear a-cyclical, suggesting that the procyclicality stems from symmetric shocks across all Länder.

Table 3. Behavior of Primary Expenditure for Länder, 1985–2007
(Dependent Variable: Change in Primary Expenditure)

	All old Laender				Net-contributing Laender				Old net-recipient Laender			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Lagged deficit (d(-1))	-0.09 <i>-3.08</i>	-0.10 <i>-3.24</i>	-0.09 <i>-2.80</i>	-0.11 <i>-3.77</i>	-0.27 <i>-4.25</i>	-0.27 <i>-4.25</i>	-0.26 <i>-3.83</i>	-0.24 <i>-3.51</i>	-0.07 <i>-1.65</i>	-0.08 <i>-1.95</i>	-0.06 <i>-1.44</i>	-0.13 <i>-2.99</i>
Output gap (y)	0.06 <i>4.40</i>		0.08 <i>2.85</i>	-0.01 <i>-0.25</i>	0.04 <i>2.91</i>		0.06 <i>2.14</i>	0.02 <i>0.48</i>	0.07 <i>2.99</i>		0.10 <i>1.99</i>	-0.01 <i>-0.12</i>
Upturn (y>0)		0.10 <i>4.58</i>				0.06 <i>2.20</i>				0.15 <i>4.04</i>		
Downturn (y<0)		0.00 <i>-0.08</i>				0.03 <i>0.80</i>				-0.04 <i>-0.94</i>		
R-squared	0.13	0.15	0.12	0.42	0.23	0.23	0.22	0.48	0.11	0.17	0.09	0.49
No. of observations	230	230	230	230	115	115	115	115	115	115	115	115
Estimation method	OLS	OLS	IV	OLS	OLS	OLS	IV	OLS	OLS	OLS	IV	OLS
Fixed effects				Time				Time				Time

Note: Italics denote t-values. All variables are expressed in percent of trend GDP. Constants and lagged dependent variables (one lag) are included but not reported.

¹⁷ Granger causality tests comfortably indicate that the causality runs from the output gap to primary spending, and not vice versa, indicating that endogeneity concerns are not statistically important.

Table 4 presents robustness checks on the behavior of primary expenditure with regard to the cyclical adjustment and scaling of the variables under consideration (columns (1) to (3) repeat the familiar baseline specification). One possible criticism of the results in Tables 2 and 3 is their use of cyclically adjusted data (i.e., the output gap). The motivation to do so was to eliminate the endogeneity problem inherent in expressing variables on both sides of the equation in terms of GDP (which moves in response to changes in the cycle). Ignoring this issue and expressing primary expenditure and the deficit as a share of actual GDP, and using the real growth of GDP as a proxy for the cycle, leads to a similar, though less precise, distinction between net-contributing and recipient Länder (columns (4) to (6)). Similar conclusions are obtained when the fiscal variables are expressed as real growth rates (columns (7) to (9)).¹⁸

Table 4. Robustness Check I: Behavior of Primary Expenditure for Länder, 1985–2007
(Dependent Variable: Change in primary expenditure, for scaling see table)

	(percent of trend GDP)			(percent of GDP)			(real growth rate)		
	All	Net- contr.	Net- Rec.	All	Net- contr.	Net- Rec.	All	Net- contr.	Net- Rec.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Lagged deficit (d(-1))	-0.09 <i>-3.08</i>	-0.27 <i>-4.25</i>	-0.07 <i>-1.65</i>	-0.12 <i>-3.95</i>	-0.29 <i>-4.39</i>	-0.09 <i>-2.21</i>	-0.29 <i>-4.48</i>	-0.35 <i>-4.03</i>	-0.22 <i>-2.19</i>
Output gap (y)	0.06 <i>4.40</i>	0.04 <i>2.91</i>	0.07 <i>2.99</i>						
Growth (g)				-0.08 <i>-5.61</i>	-0.08 <i>-4.62</i>	-0.09 <i>-3.91</i>	0.35 <i>3.16</i>	0.37 <i>2.53</i>	0.30 <i>1.79</i>
R-squared	0.13	0.23	0.11	0.17	0.23	0.17	0.12	0.19	0.07
No. of observations	230	115	115	230	115	115	230	115	115

Note: Italics denote t-values. Constants and lagged dependent variables (one lag) are included but not reported.

Table 5 presents an additional set of robustness checks with regard to the sample under consideration.¹⁹ The baseline specification considers all ten old Länder between 1985 and 2007 (reproduced for convenience in columns (1) to (3)). Given the abovementioned structural changes surrounding the entry of the new Länder into the transfer system in 1995, the baseline specification is re-estimated for the shorter sample 1995-2007. While statistically somewhat less clear cut, the baseline findings remain unchanged (columns (4) to (6)). As the baseline specification includes two city states—Bremen and Hamburg—we rerun the regressions for the eight non-city states and find similar results (columns (7) to (9)).²⁰

¹⁸ Considering growth rates in real per capita terms leads to very similar results (not shown).

¹⁹ We also included intercept dummies for the unification period, but their inclusion left the main results of the baseline specification unchanged.

²⁰ One reason for excluding the city states is that their fiscal data, unlike that of the non-city states, includes the municipalities.

Finally, we re-estimate the reaction functions for the net-recipient states excluding the two states that have received the bail-out payments (Bremen and Saarland). As it might be expected, column (10) shows that their exclusion weakens the difference to the net-contributing states. However, if the sample is restricted after 1995, the net-recipients response to the deficit—unlike the net contributors—is again insignificant (column (11)).

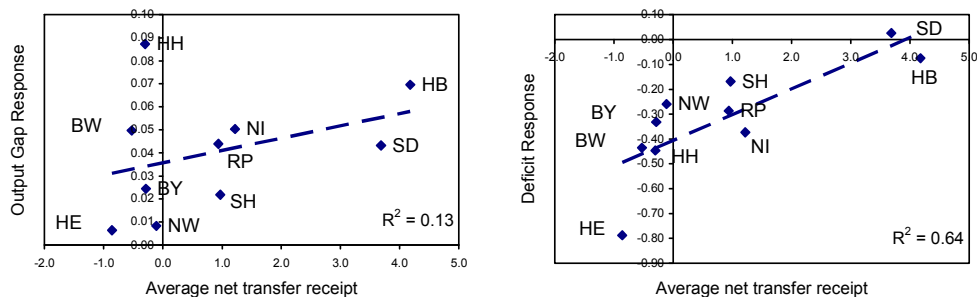
Table 5. Robustness Check II: Behavior of Primary Expenditure
(Dependent Variable: Change in primary expenditure, percent of trend GDP)

	Baseline (1985-2007)			Shorter Sample (1995-2007)			Excluding City States (1985-2007)			Net-contr. excl. bail-outs	
	All	Net- contr.	Net- Rec.	All	Net- contr.	Net- Rec.	All	Net- contr.	Net- Rec.	1985- 2007	1995- 2007
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Lagged deficit (d(-1))	-0.09 <i>-3.08</i>	-0.27 <i>-4.25</i>	-0.07 <i>-1.65</i>	-0.14 <i>-3.26</i>	-0.31 <i>-3.20</i>	-0.11 <i>-2.00</i>	-0.06 <i>-1.87</i>	-0.17 <i>-2.52</i>	-0.05 <i>-0.92</i>	-0.26 <i>-2.78</i>	-0.25 <i>-1.70</i>
Output gap (y)	0.06 <i>4.40</i>	0.04 <i>2.91</i>	0.07 <i>2.99</i>	0.04 <i>1.48</i>	0.02 <i>0.44</i>	0.06 <i>1.21</i>	0.05 <i>4.22</i>	0.04 <i>2.72</i>	0.06 <i>3.00</i>	0.04 <i>2.06</i>	0.00 <i>0.08</i>
R-squared	0.13	0.23	0.11	0.10	0.17	0.09	0.12	0.18	0.11	0.31	0.17
No. of observations	230	115	115	130	65	65	184	92	92	69	39

Note: Italics denote t-values. Constants and lagged dependent variables (one lag) are included but not reported.

Further, equation (3) can be estimated for each of the Länder separately. While the short sample requires care in interpreting these results, the estimates offer insights into Länder-specific behavior. Figure 7 plots the estimated coefficients for primary expenditure against average net transfers received over the sample period. The figure confirms earlier findings: Länder receiving higher net transfers have adjusted expenditure more to the existing fiscal imbalance (right panel) and been less procyclical (left panel).

Figure 7. Länder Behavior and Average Received Transfers, 1985–2007



Note: The diamonds denote the point estimate of the coefficient. The dashed line shows a linear trend line, and R^2 denotes the fit of the trend.

B. Multivariate Analysis: VARs

The univariate approach is extended to a vector auto-regression (VAR) to explore the dynamic behavior of the whole system of fiscal variables and assess the system's response to

shocks.²¹ An unrestricted panel VAR containing the output gap, primary expenditure, pre-transfer revenues, horizontal transfers, supplementary vertical transfers and the debt stock is estimated. While the output gap enters in levels, the fiscal variables enter in differences. The VAR is estimated with OLS; a lag length of two is chosen (based on the Schwartz information criterion). Impulse responses are then computed using a Cholesky decomposition, assuming an ordering as follows: the output gap, pre-transfer revenues, primary expenditure, horizontal transfers, supplementary vertical transfers and public debt. The ordering of these variables is clearly subject to discretion. While some of the quantitative results are sensitive to the ordering of the variables, nonetheless the qualitative conclusions are robust to such ordering.

Results

Figures 8 and 9 display dynamic responses of the estimated model to unit shocks of a selected variable.²² As horizontal transfers showed no relevant dynamics behavior, for simplicity the pre-transfer revenues (r) and the horizontal transfers (h) are summed together, creating “pre-vertical-transfer revenues” ($r + h$). The thick solid and dashed lines present impulse responses for net-contributing and net-recipient Länder respectively. The one-standard error band is depicted by the corresponding thin solid and thin dashed lines.

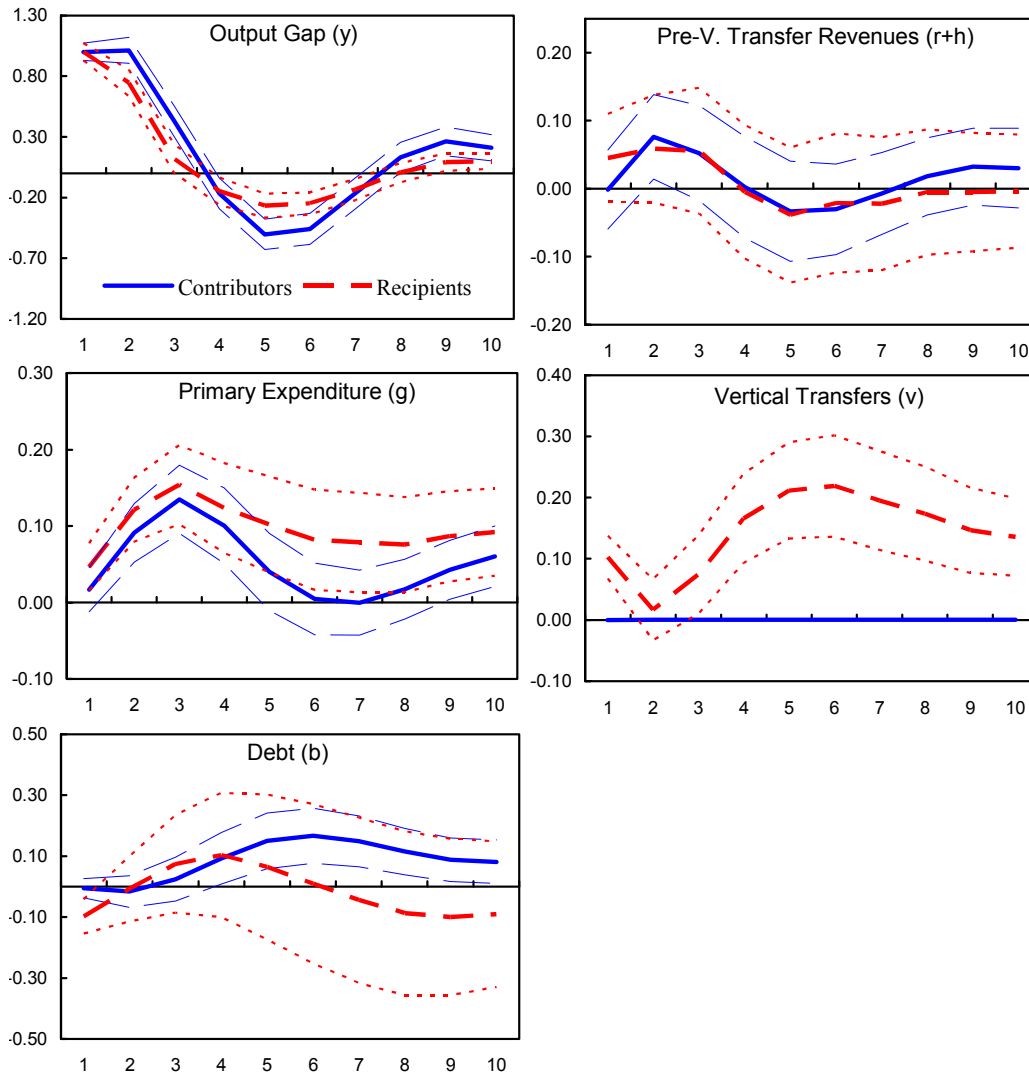
Output gap shock

Figure 8 displays the fiscal responses to a positive output gap shock. Primary spending is strongly pro-cyclical and highly persistent in the net recipient states and less pro-cyclical and more transient in the net contributing states. Pre-vertical-transfer revenues remain broadly unchanged in both net-contributing and net-recipient states. Importantly, net-recipient states benefit from a large increase in supplementary vertical transfers to finance the increase in spending (while contributing states receive no transfers, by construction). Debt in the net-contributing states rises slightly, but remains broadly unchanged in the net-recipient states as a result of the large increase in the supplementary vertical transfers. Additional results show that the procyclicality of spending is again due to upturns, while there is no significant response of spending during downturns (results are not reported here).

²¹ For a recent application of this approach to German municipalities, see Buettner (2007).

²² The figures show the response of the output gap and cumulative responses of the changes in the fiscal variables (i.e. the response of the level of the fiscal variables).

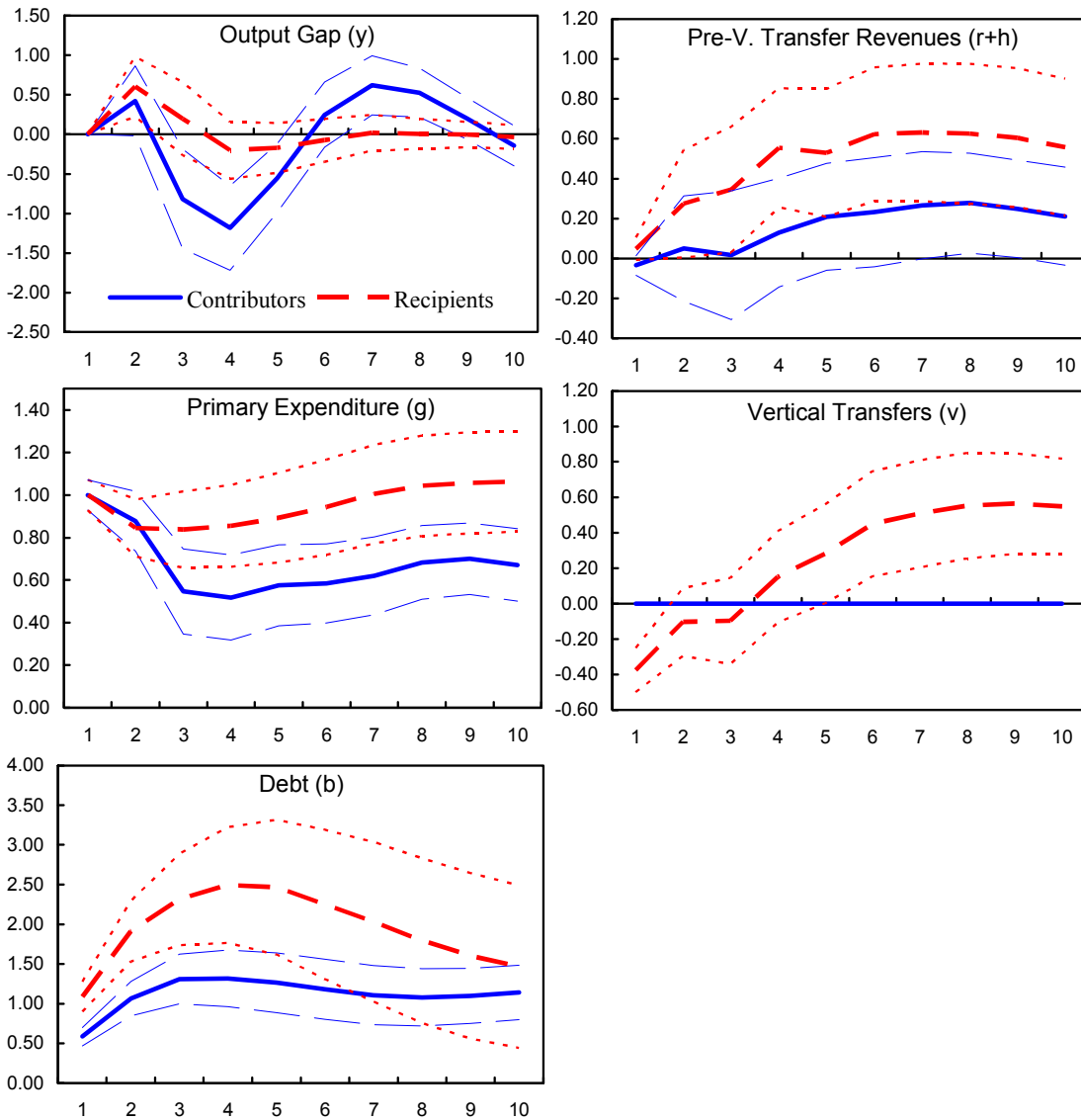
Figure 8. Output Gap Shock
(Cumulative responses to one percentage-point shock, periods denote years)



Primary expenditure shock

Figure 9 shows the impulse responses to a primary spending shock. Net-contributing states reverse some of the initial spending increase, see a modest increase in their pre-vertical-transfer revenues, and, as a result, accumulate some debt. Net recipient states, in contrast, keep primary spending permanently higher and temporarily accumulate large amounts of debt. Given the openness of the states, the small output-gap effect of the primary spending shock is not surprising. Large inflows of pre-vertical-transfer revenues and supplementary vertical transfers finance the increase in spending and help reduce debt significantly. These results suggest that the observed fiscal indiscipline in net-recipient Länder may be due to the expectation of receiving substantial vertical transfers to finance increased expenditure.

Figure 9. Primary Spending Shock
(Cumulative responses to one percentage-point shock, periods denote years)



V. POLICY IMPLICATIONS AND CONCLUSIONS

Germany's constitutional mandate for "equality of living conditions" had marked its system of intergovernmental fiscal relations and imposed a high degree of equalization across Länder, achieved via a complex system of both horizontal redistribution and vertical transfers from the federal government. Spahn (2001) calls the solidarity embedded in the German system a "sacred cow," suggestive of the political challenges that would arise with any attempt to modify transfer design and mechanisms. However, such high degree of equalization has come at its costs.

The results of this paper confirm that reliance on transfers weakens fiscal discipline and encourages procyclical fiscal policy. Länder benefiting from the transfers (net-recipient) have not reduced expenditures in response to rising deficits, but relied on vertical transfers to ensure sustainability. Moreover, these Länder have pursued procyclical policies, particularly by raising expenditures in good times. Net contributing Länder (that is, Länder that have paid into the horizontal redistribution system on a net basis), in contrast, have ensured fiscal sustainability through spending adjustment and have been less procyclical.

How can Länder soft budget constraints be hardened and their procyclical bias reduced? We put forward three main policy implications.

First, vertical transfers appear to be the main driver of the net recipients' fiscal indiscipline and procyclicality. Thus, modifying their design—and in particular reducing the Bund's tendency to pass on “windfalls” in good times—may mitigate some of their unintended effects. From this point of view, the decision to discontinue bail-out payments to Bremen and Saarland from 2005 onward, as implied by the Solidarity Pact II, is a welcome step. On the other hand, some of the recent changes in the Solidarity Pact, which increased the size of vertical transfers, do not move in the right direction. This policy suggestion derives directly from the analysis in this paper.

Second, the procyclical bias could be mitigated by the introduction of a credible fiscal rule. In Germany, the golden rule has become hollow as in practice it has not been observed. A desirable fiscal rule would reduce procyclicality of expenditure (especially in good times) and ensure the operation of the automatic stabilizers on the revenue side. Either an expenditure rule or a structural deficit rule would have this effect. A sound design and management of such a rule would need to be buttressed by the adoption of consistent recording and reporting standards across Länder. This would also enhance surveillance of fiscal developments more generally; and strengthen accountability.

Finally, we follow the literature on fiscal federalism in suggesting a more fundamental area of reform. While the design of the transfer system matters, its interaction with other aspects of intergovernmental fiscal relations is relevant too. Some degree of tax discretion—by assigning Länder own revenue instruments—would allow the Länder to internalize the cost of their spending programs, thus generating stronger incentives for fiscal responsibility. Standard practice in most countries allows piggybacking on existing central taxes. In Germany, Länder could be granted some bounded autonomy in setting tax rates. The choice of which taxes would be best suited to tax assignment depends on a number of factors, such as mobility of the tax base (excessively mobile bases may lead to harmful tax competition), horizontal balance (assigning bases that tend to have a large geographical variance would raise equity concerns), visibility of the tax (the more visible the better, to enhance accountability of politicians to taxpayers in a given jurisdiction), and administrative cost

(some taxes require centralized collection due to their complexity). These and other factors would need to be weighed in the case of Germany.²³

Given its political and legislative complexity, reforming Germany's system of intergovernmental fiscal relations is a difficult task. While the last round of negotiations in the Federalism Commission left these key questions essentially untouched, the reform process has recently gained momentum. The Constitutional Court's decision to reject a bail-out claim by the city state of Berlin is a positive development. Whether this decision credibly eliminates bail-out expectations and hence induces net-recipient states to behave responsibly, however, remains to be seen.

The Federalism Commission recently agreed to introduce a structural deficit rule at the federal and state level, which will require a structurally balanced budget for the states from 2020. A statewide surveillance system has been set up to monitor the adherence of the rule and issue early warnings. If the newly created Stability Council can ensure compliance (via strict control and credible sanctions) it could be an effective tool to improve fiscal incentives at the Länder level. However, to gain the political support of the net-recipient states, the proposal contains substantial "consolidation payments" (that is, vertical transfers) to financially stressed Länder—consisting of the familiar "old" states of Bremen, Saarland, and Berlin (as well as Sachsen-Anhalt and Schleswig Holstein). In return for these payments, scheduled to be temporary until 2020, recipient states would commit to consolidate their budgets to achieve a position of structural balance. While receiving these consolidation payments, these states are not eligible for bail-out payments. Our analysis would suggest that these consolidation payments, by virtue of their design, risk undermining the very incentives for fiscal discipline that the reform aims to achieve; and that more fundamental changes to Germany's system of intergovernmental relations are called for to avoid a repetition of past problems and imbalances.

²³ See Buttner and Schwager (2000) for a critical evaluation of the equity and efficiency effects of a personal income tax surcharge by the states. Allowing a surcharge on the VAT could lead to tax competition and cross-border trade distortions, given the mobility of the tax base. It could also be very complex to administer.

Appendix I

Appendix Table 6: Unit root tests

	g (Primary exp.)			r (Pre-trans. Revenue)			h (horizontal transfers)			v (Vertical transfers)			b (Debt)			d (Deficit)		
	All	Net- contr.	Net- rec.	All	Net- contr.	Net- rec.	All	Net- contr.	Net- rec.	All	Net- contr.	Net- rec.	All	Net- contr.	Net- rec.	All	Net- contr.	Net- rec.
Exogenous variables: Individual effects																		
Im et al W-stat	2.0	1.3	1.5	-0.2	-0.6	0.3	-1.9 *	-0.7	0.0 *	-0.7	-	0.8	4.4	2.8	3.5	-3.0 *	-2.2 *	-2.1 *
ADF - Fisher Chi-sq.	8.3	4.1	4.3	16.4	9.5	6.9	32.5 *	11.3	0.0 *	19.3	-	5.0	5.0	2.3	2.6	38.3 *	19.6 *	18.7 *
PP - Fisher Chi-sq.	6.9	3.1	3.8	15.3	8.9	6.5	32.5 *	11.1	0.0 *	39.6 *	-	6.1	6.1	2.8	3.3	38.7 *	20.6 *	18.2
Exogenous variables: Individual effects, linear trend																		
Im et al W-stat	-1.3	-1.2	-0.6	-2.4 *	-1.8 *	-1.5	-0.3	-0.7	0.6	1.6	-	2.9	2.9	1.7	2.4	-	-	-
ADF - Fisher Chi-sq.	26.6	13.8	12.8	33.7 *	18.1 *	15.6	26.2	12.8	0.2	11.0	-	3.1	4.7	2.7	2.0	-	-	-
PP - Fisher Chi-sq.	26.7	12.9	13.8	33.8 *	18.8 *	15.1	26.7	13.1	0.2	24.7 *	-	3.1	6.4	3.6	2.8	-	-	-

Note: A star denotes rejection at 5 percent level.

Länder Codes

BW= Baden-Württemberg, BY= Bayern, BE= Berlin, BB= Brandenburg, HB= Bremen, HH= Hamburg, HE= Rheinland-Pfalz Hessen, MV= Mecklenburg-Vorpommern, NI= Nieder-sachsen, NW= Nordrhein-Westfalen, RP= Rheinland-Pfalz, SD= Saarland, SN= Sachsen, ST= Sachsen-Anhalt, SH= Schleswig-Holstein and TH= Thüringen.

References

- Arellano, Manuel and Steven Bond, 1991, "Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations," *Review of Economic Studies*, 58, 1991, 277–297.
- Baretti, Christian, Bernd Huber, and Karl Lichtblau, 2001, "A Tax on Tax Revenue: The Incentive Effects of Equalizing Transfers: Evidence from Germany" *International Tax and Public Finance*, 9, 631–649, 2002.
- Berger, Helge and Anika Holler, 2007, "What determines fiscal policy? Evidence from the German states" CESifo Working Paper No. 2062.
- Bohn, Henning, 1998, "The Behavior of U.S. Public Debt and Deficits", *Quarterly Journal of Economics*, 113, pp. 949–63.
- Bohn, Henning, 1991, "Budget Balance through Revenue or Spending Adjustment" *Journal of Monetary Economics*, 27, 333–359.
- Bordignon, Massimo 2006, "Fiscal Decentralization: How to Harden the Budget Constraint" in *Fiscal Policy Surveillance in Europe*, edited by Wierds P., S. Deroose, E. Flores, and A. Turini, Palgrave MacMillan.
- Buettner, Thiess and Robert Schwager, 2000, "Länderautonomie in der Einkommensteuer: Konsequenzen eines Zuschlagsmodells" ZEW Discussion Papers 00–50, ZEW.
- Buettner, Thiess, 2007, "Equalization Transfers and Dynamic Fiscal Adjustment: Results for German Municipalities and a U.S.-German Comparison" *Institute for Federalism and Intergovernmental Relations, Working Paper, No. 2007–07*.
- Buettner, Thiess and David Wildasin, 2006, "The Dynamics of Municipal Fiscal Adjustment" *Journal of Public Economics*, vol. 90(6-7), 1115–1132.
- Claeys Peter, Raúl Ramos, and Jordi Suriñach, 2008, "Fiscal Sustainability across Government Tiers" *IEEP*, 5:139–163.
- Deutsche Bundesbank, 2007, "Reform of German Budgetary Rules" in Monthly Report, October 2007, 47–68.
- Engle, Robert F. and Clive Granger, 1987, "Co-integration and Error Correction: Representation, Estimation, and Testing", *Econometrica*, 55(2), 251-76, (March).

- Feld Lars. P. and Von Hagen Jürgen, 2008, “Federal Republic of Germany” in *A Global Dialogue on Federalism* Volume IV of “The Practice of Fiscal Federalism: Comparative Perspectives” edited by Anwar Shah, McGill-Queen’s University Press.
- Franco, Daniele and Stefania Zotteri, 2008. “Ensuring Fiscal Sustainability: Which Role for Fiscal Rules? The Experience of European Countries” paper presented at the conference on Sustainability and Efficiency in Managing Public Expenditures, Honolulu, Hawaii, July 2008.
- Galí, Jordi and Roberto Perotti, 2003, “Fiscal Policy and Monetary Integration in Europe” *Economic Policy*, 37, pp. 535–572.
- Hauptmeier, Sebastian, 2007, “The Impact of Fiscal Equalization on Local Expenditure Policies—Theory and Evidence from Germany” ZEW (Center for European Economic Research), Discussion Paper No. 07–081.
- Heppke-Falk, Kirsten H. and Guntram B. Wolff, 2008, “Moral Hazard and Bail-out in Fiscal Federations: Evidence for the German Länder” *Kyklos*, 61(3).
- Holm-Hadulla, Federic, 2008, “Fiscal Equalization and the Local Tax Structure” Institute for Economic Research, Munich (mimeo).
- IMF, 2008, “Fiscal Policy as a Countercyclical Tool”, *World Economic Outlook*, Chapter 5, October 2008.
- Kumar, Manmohan and Teresa Ter-Minassian, 2007, *Promoting Fiscal Discipline*, International Monetary Fund.
- Lane, Philip R., 2003, “The Cyclical Behavior of Fiscal Policy: Evidence from the OECD” *Journal of Public Economics*, 87, 2661–2675.
- Rodden, Jonathan A., 2006, “Achieving Fiscal Discipline in Federations: Germany and the EMU,” in *Fiscal Policy Surveillance in Europe*, edited by Wiertz P., S. Deroose, E. Flores, and A. Turini (Palgrave MacMillan).
- Rodden, Jonathan A., Gunnar S. Eskeland, and Jennie Litvack. 2003. *Fiscal Decentralization and the Challenge of Hard Budget Constraints* Cambridge, MA: MIT Press.
- Seitz, Helmut, 2000, “Subnational Government Bailouts in Germany” Inter-American Development Bank, Research Network Working paper o. R-396.

- Spahn, Paul Bernd, 2001, "Maintaining Fiscal Equilibrium in a Federation: Germany" August, mimeo.
- Spahn, Paul Bernd and Jan Werner, 2007, "Germany at the Junction Between Solidarity and Subsidiarity" in *Fiscal Fragmentation in Decentralized Countries: Subsidiarity, Solidarity, and Asymmetry* edited by Richard Bird and Robert Ebel, Edward Elgar.
- Stegarescu, Dan, 2005, "Public Sector Decentralization: Measurement Concepts and Recent International Trends" *Fiscal Studies* 26(3).
- Sutherland, Douglas, Robert Price and Isabelle Joumard, 2005, "Sub-central Government Fiscal Rules" OECD Economic Studies No. 41, 2005/2.
- Trehan, Bharat and Carl E. Walsh, 1988, "Common Trends, the Government's Budget Constraint, and Revenue Smoothing" *Journal of Economic Dynamics and Control*, 12, 425–444.
- Von Hagen, Jürgen and Ralf Hepp, 2001, "Regional Risk-Sharing and Redistribution in the German Federation" CEPR Discussion Paper 2662 (January).
- Werner, Jan, 2008, "Financial Equalization among the States in Germany" Institute of Local Public Finance, Working Paper 02–2008 (January).
- Wibbels Eric and Jonathan Rodden, 2006, "Business Cycles and the Political Economy of Decentralized Finance: Lessons for Fiscal Federations in the EU" in *Fiscal Policy Surveillance in Europe*, edited by Wiertz P., S. Deroose, E. Flores, and A. Turini (Palgrave MacMillan).