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Fiscal Supervision and the Soft Budget Constraint: Evidence from Germany

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Does Fiscal Oversight Matter?*

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10 June 2014

Abstract

Using a panel of municipalities in the German state North Rhine-Westphalia from 2003 to 2011 we can identify the role of fiscal oversight to contain government debt. We exploit a gradually introduced reform which made it temporarily likely for some local governments to avoid the effective control of their budget by the supervision authorities. The quasi-experimental evidence shows that the withdrawal of oversight has a significant and sizeable effect on per capita debt of local governments that were previously constrained. Fiscal restraints are important, and oversight and enforcement are key issues for their success.

JEL classification: H72, H74, R10

Keywords: Fiscal oversight, fiscal rules, local government debt

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1 Introduction

Fiscal rules to constrain state and local government debt exist in many countries. The costs and benefits of such provisions and potential sources of their ineffectiveness have been debated by Alesina and Perotti (1996), Poterba (1996), Drazen (2004), and Wyplosz (2012), among others, and the empirical literature has focussed on assessing whether fiscal restraints are actually effective in constraining government debt, Grembi et al. (2014). An important issue in this debate is the question to what extent fiscal restraints are self-enforcing once in place, in the sense that individual jurisdictions will voluntarily observe the constraints, or whether it is necessary to oversee and enforce the existing rules to operate effectively. Empirically, little is known about the importance of oversight and enforcement of fiscal rules, given the scarcity of appropriate data and the challenge to properly identify the effects of oversight given that the oversight decision, just as the decision to implement fiscal restraints, is potentially endogenous.

In this study we analyze empirically the importance of fiscal oversight and the enforcement of fiscal restraints for local government in the German state of North Rhine-Westphalia (NRW). Within this state a system of fiscal oversight is in place to oversee local government budgets in order to assess whether the foreseen revenue and spending plans are compatible with the balanced-budget rule and to assure that local governments comply with the fiscal rule that local governments are not allowed to borrow except for capital investment and for balancing short-term liquidity.¹ We can study quasi-experimental evidence on the oversight process by exploiting a reform in the accounting rules of local government. This reform replaced traditional cameralistic public sector accounting by a system of accrual accounting between 2004 and 2009. The switch allowed many municipalities to temporarily escape fiscal oversight, since they were granted a temporary buffer allowing many of them to "virtually" balance their budgets. This enables us to identify the effect of fiscal supervision, or more precisely its absence. Our identification strategy is based on the difference-in-difference method and exploits the fact that the municipalities in NRW implemented the accrual accounting system gradually. While only few municipalities implemented the reform early on, especially in the year 2008 a large share of municipalities was already subject

¹We explain the institutional setting in detail in Section 2.1.

to the new rules while many others were still treated according to the old system. This variation permits us to evaluate the impact on local government debt by comparing the difference between those municipalities that were previously subject to strict regulation, and were artificially relieved from oversight for a brief period, and those municipalities that continued to be under fiscal oversight. We contrast this to those municipalities which had not been restricted by the overseeing authorities also before the reform.

Our results provide strong evidence for the quantitative importance of fiscal oversight and enforcement of fiscal restraints in a federal system. The temporary lifting of oversight as a consequence of the virtual buffer allowance results in a significant debt increase for previously restricted municipalities. This is not the case for those municipalities that could previously budget unrestrictedly. Our baseline results which only consider those municipalities that switched either in 2008 or 2009 suggest that previously restricted local governments that were assigned a virtual buffer to balance their budget increased their debt by at least EUR 220 per capita in 2008. Given that the average per capita debt of the group of restricted and switching municipalities was EUR 1.100 in 2007, this increase of 20% is substantial. Our results also provide additional support for the importance of fiscal rules themselves. If these did not matter in the first place, oversight and enforcement should be irrelevant. Thus our results are in line with the quasi-experimental evidence of Grembi et al. (2014) who confirm the importance of fiscal restraints for local government in Italy.

From a theoretical perspective, our results may be explained by various factors. On the one hand, policy makers may choose higher levels of debt for political-economic reasons. On the other hand, within a federal system, the state governments may have strong incentives, or explicit *de iure* obligations, to provide funding to local government if these entities are facing financial problems. Since these *ex post* incentives or explicit legal liabilities to provide assistance can be foreseen, they can generate *ex ante* incentives for excessive spending. Kornai (1986) coined the term "soft budget constraint" for this problem and it has been extensively studied by Epple and Spatt (1986), Wildasin (1997), Qian and Roland (1998), Maskin (1999), Buettner and Wildasin (2006), Bordignon and Turati (2009), Pettersson-Lidbom (2010), and Baskaran (2012) among others. In our analysis we cannot discriminate between these potential explanations as

we cannot observe bailout expectations. While the state government of NRW is de facto liable for local government debt, grants to municipal governments in NRW have traditionally been rule-based and not discretionary. Nevertheless, the institutional design of fiscal relations and fiscal restraints within a federal setting may address a potential challenge of soft budget constraints or just act as an instrument to counteract political-economic inefficiencies. Our results may thus alternatively be interpreted as supporting the notion that the challenge of soft budget constraints in federal systems is an empirically highly relevant issue. Moreover, supervision at the state level is important in controlling debt at the local government level and underlines the importance of oversight supervision to address the challenge of soft budget constraints in federations, whenever bailouts cannot de iure or de facto be excluded. A federal system without credible hard budget constraints or effective supervision is unlikely to be effective in avoiding excessive debt.²

The rest of the paper is structured as follows. Section 2 describes the institutional setting and our panel dataset. Section 3 lays out our econometric framework. Section 4 presents the results and robustness checks, while Section 5 concludes the paper.

2 Institutional setting, data and descriptive statistics

2.1 Institutional setting

Apart from the federal level and sixteen states (*Länder*), the local level in the German federal system is subdivided into about 400 counties (*Landkreise*) and over 11,000 municipalities as of 2011. Four large states (Baden-Wuerttemberg, Bavaria, Hesse and North Rhine-Westphalia) feature administrative districts (*Regierungsbezirke*), an additional mid-level division between states and counties

²Other aspects of local government finances in Germany are discussed by Fossen et al. (2014) who analyze spatial interdependence of local government debt in Germany and find interaction effects between debt of nearby municipalities, and Egger and Koethenbuerger (2010) who find a positive effect of council size on fiscal spending but no significant effect on debt for Bavarian municipalities.

mostly concerned with regional administrative tasks.

With 17.5 million inhabitants in 2011 North Rhine-Westphalia (NRW) is the most populous state in Germany. Due to several redivisions and amalgamations in the 1960s and 1970s its 396 municipalities are relatively large and embrace approximately 45,000 inhabitants on average. In the period under study the five administrative districts Arnsberg, Detmold, Düsseldorf, Köln, and Münster consisted of 31 counties (*Kreise*), 23 urban districts (*kreisfreie Städte*), 255 larger municipalities belonging to counties (*kreisangehörige Städte*) and 127 smaller municipalities belonging to counties (*kreisangehörige Gemeinden*).

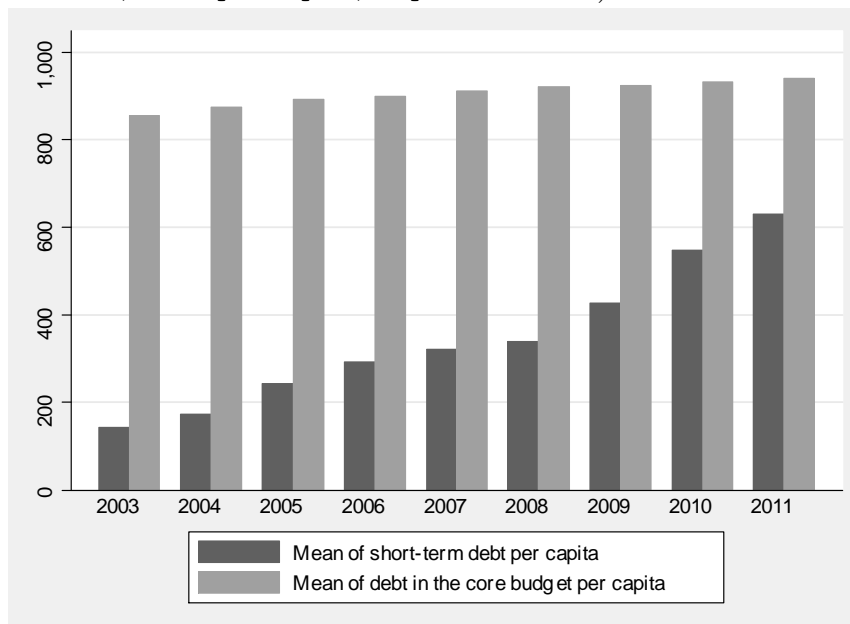
Municipalities have a constitutionally guaranteed right of self-government. However, their competences are limited by national and state laws. A substantial part of local expenditures is employed for mandated duties with autonomy over the spending levels (e.g. expenditures for schools and kindergartens) or municipalities are obliged to solely execute responsibilities determined by federal or state law (e.g. some social expenditures). In areas like general administration, cultural institutions, recreation and sport facilities, hospitals, local infrastructure, and public transport, municipalities have considerable discretion in their budgeting.

Local governments are financed through transfers by higher levels, e.g. state-allocated grants, and through tax revenues. Municipalities participate in a revenue sharing scheme which provides them with fixed shares of the local revenue from income taxation and VAT. However, local authorities have no discretion over the tax rates of these taxes. Municipalities are, within limits, free to set tax rate multipliers for three local taxes: a tax on business profits and two property taxes (on agricultural land and on business and private land).

In general, local governments are not allowed borrow. However, there are two exceptions from this fiscal restraint. First, local governments are free to borrow to finance investment. We refer to this as "debt in the core budget".³ Second, the municipalities are allowed to assume short-term debt to ensure liquidity. In NRW especially the latter debt category has emerged dramatically over the time period under consideration from EUR 143 per capita in 2003 to EUR 630 per

³Since the 1990s there have been increased outsourcing efforts for municipal responsibilities such as energy and water supply. Part of the total local long-term debt (*Schulden im Vermögenshaushalt*) is therefore allocated to local public companies. This kind of debt is less important for our analysis as it cannot be controlled by municipalities directly and on short notice.

Figure 1: Level of short-term debt and debt in the core budget (2003-2011, municipalities NRW, EUR per capita, in prices of 2005)



capita in 2011 (in prices of 2005) as shown in Figure 1. Heinemann et al. (2009) point out that the extent and persistence of short-term debt indicate that they are more and more used abusively to finance deficits. As they are less strictly regulated and not controlled directly by the local council⁴, the distinction against debt in the core budget has been discussed extensively. Note that the switch to accrual accounting did not lead to a modification of the rules for these cash credits. We mostly focus on short-term debt as our main variable of interest since this variable is an indicator to what extent local governments evade the constraint of the fiscal rule that forbids local government to engage in debt financing beyond capital investment.

In Germany the state governments are legally required to guarantee local public services and those obligations that are mandated by federal or state law. Whether the states are legally fully liable for existing local government debt is debated. However, the so-called principle of communality (*Bündisches Prinzip*) has been permanently upheld by the German courts with respect to fiscal obligations of the federal and state governments vis-à-vis each other, and this principle

⁴The municipal council determines the maximum amount of short-term debt but the mayor takes the actual borrowing decision.

is generally seen as applying also to the relationship between state and local government. Accordingly, it is commonly assumed that local government debt is backed by the respective state governments. In the history of the Federal Republic of Germany, there has not been a single case where a state government has ultimately not assumed the liabilities of a failing municipality.⁵

Despite chronic deficits in many municipalities, their creditors are generous with accommodating them with cash credits. Ade (2013) investigates that creditors mostly ignore the financial situation when charging interest rates. This lack of credit constraints may be regarded as a direct consequence of the liability of the state governments. Alternatively, the benign financing conditions may be explained by access to credit from local public banks (*Sparkassen*), which are largely controlled either by individual or jointly by a group several municipalities. This finding is in contrast to federations with credible local government budget constraints and borrowing risk, see Capeci (1994) who studies the borrowing costs of municipalities in New Jersey.

Since 1991 a system of fiscal supervision of local government has been in place in NRW that requires each municipality to present its budget to a supervision authority. The supervision is carried out at the county level, except for the urban districts, which are supervised by the administrative districts. The supervising authorities have substantial power. They are required to demand budget consolidation plans (*Haushaltssicherungskonzepte*) from all municipalities in financial distress, which are those municipalities that are unable to balance their budget. The consolidation plan must indicate how the municipality can again balance the budget within a period of four years.⁶ If the supervision authority decides that the consolidation plan is not sufficiently effective or credible, it does not approve the plan and the municipality is put under direct fiscal supervision, i.e. its fiscal actions can be restricted by the supervision authority. Municipalities that are restricted in such a way are not allowed to reduce tax rates and need the ap-

⁵In NRW the non-existence of insolvency procedures for municipalities is regulated by the municipal code (§ 128 GemO NRW).

⁶In the cameralistic accounting system the budget consolidation plan was approved if it could be shown that revenues can cover expenditures (without deficits from previous years) not later than in the fourth year after the financial year. With accrual accounting a balanced budget had to be achieved within three years following the financial year. In 2011 this time period was extended to ten years.

proval of the supervision authority for all additional expenditures that are not mandated by state or federal legislation, and the authority can require further austerity measures. Even a complete take-over of the municipality's fiscal affairs is possible.

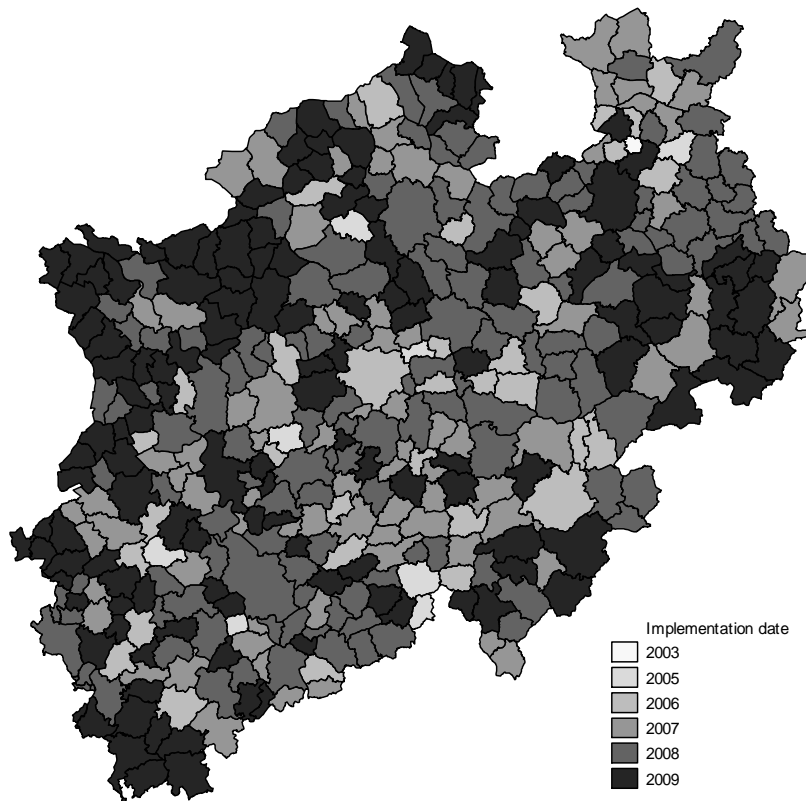
Our analysis exploits an institutional change that temporarily freed many previously regulated municipalities from effective budget control to identify the effect of the supervision on local government debt. In 1999, the Interior Ministers of the German states agreed to reform local government budget law in all states. NRW was the first state to enact these reforms by law in 2004 and implemented double-entry bookkeeping (accrual accounting) in municipal finance. All local governments had to introduce the new budgetary, control and reporting framework compulsory by 2009. As shown in Table 1 selected municipalities introduced the accrual accounting system in 2003 and 2005. These were mainly "model" municipalities due to an evaluation procedure. However, most municipalities switched to the new system after 2007. Figure 2 illustrates the regional switching pattern.

Table 1: Implementation of accrual accounting in NRW

Year	Freq.	Percent
2003	1	0.25
2005	8	2.02
2006	33	8.33
2007	83	20.96
2008	132	33.33
2009	139	35.10
Total	396	100.00

Apart from a shift from the traditional cameralistic accounting system on a cash-basis to a resource-based accrual accounting system with private sector accounting principles, the reform changed the conditions for the approval of local governments' budgets by the supervision authorities. In particular, the reform granted switching municipalities a one-time possibility to create an equalization reserve (*Ausgleichsrücklage*) in the opening balance. Up to one third of the equity capital but no more than one third of the mean revenues and general grants in the three years before adopting the reform could be designated to the equalization

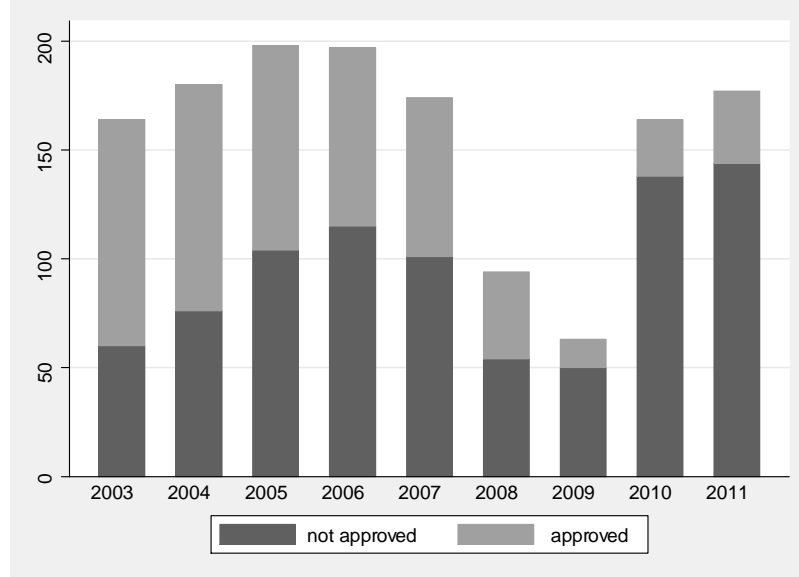
Figure 2: Implementation date, map NRW



reserve. For nearly all municipalities the second criterion was the binding one. Except for a single case all municipalities chose the maximum reserve amount.⁷ Under the new rules the requirement of a balanced budget could now be fulfilled in two ways without provoking action by the supervision authorities: Either by actually balancing the budget, or virtually by covering the actual deficit by resorting to the equalization reserve. Thus, upon switching, the reserve could be used as a buffer by the switching municipalities. This provided most of the municipalities that were previously restricted by the supervising authorities an opportunity to act unrestrictedly, at least until the equalization reserve was depleted. In some cases, the reserve was immediately depleted in the first year, such that these municipalities did not avoid supervision. However, more than two thirds of the municipalities which had to present a budget consolidation plan in the year before implementing the reform were not obligated to do so in the year after. This is also reflected in Figure 3, which shows the overall number of approved and unap-

⁷This municipality switched to accrual accounting in 2007 and is excluded from our estimations.

Figure 3: Approved and not approved budget consolidation plans of municipalities (2003-2011)



proved budget consolidation plans in the period under study. The importance of supervision drops drastically in the years 2008 and 2009. The renewed increase in supervision after 2009 can be attributed to the effects of the financial crisis and the depletion of the equalization reserve by many municipalities. The reform allows us to analyze the effect of relaxing supervision on local borrowing and compare the behavior of those municipalities with temporarily gained freedom from supervision with those municipalities that remained in the old system and did not benefit from the buffer. This comparison is particularly interesting for those municipalities that were previously restricted by fiscal oversight.

2.2 Data and descriptive statistics

The basic balanced panel dataset consists of all 396 municipalities in NRW, over nine years (2003–2011). To analyze the effects of fiscal oversight we mostly restrict our attention to the subsample of 271 municipalities which implemented accrual accounting in the years 2008 and 2009. Additionally, we also consider an enlarged panel that also contains the 89 municipalities which changed the accounting system in 2007 and the 33 municipalities that already switched in 2006.

In our data we can distinguish between per capita debt of the core budget and short-term debt. We focus on short-term debt in the analysis as this part of debt is not backed by capital investment, shows substantial dynamics in the study period and represents a de facto breach of the fiscal rule in place, since local government is legally not allowed to assume debt to balance its budget. The data have been combined from different sources. Municipality-level financial data are obtained from the state’s statistical office (*Landesbetrieb Information und Technik Nordrhein-Westfalen*), and have been deflated using the consumer price index for NRW. Additionally, we collected data on the change of the accounting system from the official opening balance sheets of the municipalities, especially on the effective date of the reorganization and on the size of the equalization reserve. Information on whether a municipality was obligated to present a budget consolidation plan, and, if so, whether it has been approved, was extracted from publications of the statistical office and completed by information from municipalities. Table 2 provides descriptive statistics of our data set.

Table 2: Summary statistics (2003-2011)

Variable		Mean	Std. Dev.	Min.	Max.
Population	Metric	45,125.76	87,375.34	4116	1,007,119
Switch 2003	Binary	0.003	0.05	0	1
Switch 2005	Binary	0.02	0.14	0	1
Switch 2006	Binary	0.09	0.28	0	1
Switch 2007	Binary	0.21	0.41	0	1
Switch 2008	Binary	0.33	0.47	0	1
Switch 2009	Binary	0.35	0.48	0	1
Admin. Düsseldorf	Binary	0.17	0.38	0	1
Admin. Köln	Binary	0.23	0.42	0	1
Admin. Münster	Binary	0.21	0.41	0	1
Admin. Detmold	Binary	0.18	0.39	0	1
Admin. Arnsberg	Binary	0.21	0.41	0	1
Urban district	Binary	0.06	0.23	0	1
Large municipality	Binary	0.62	0.48	0	1
Small municipality	Binary	0.32	0.47	0	1
Equalization reserve	EUR per capita	410.20	108.52	0	1,036.65
Consolidation plan presented	Binary	0.37	0.48	0	1
Consolidation plan not approved	Binary	0.23	0.42	0	1
Debt in the core budget	EUR per capita	900.96	632.89	0	5,271.97
Short-term debt	EUR per capita	342.89	676.41	0	7,571.07
Tax multiplier property A	Metric	223.99	38.49	145	402
Tax multiplier property B	Metric	394.89	40.28	230	590
Tax multiplier business	Metric	416.25	23.68	310	515
Fiscal capacity	EUR per capita	792.57	277.64	339.68	2,765.57
Tax revenues	EUR per capita	829.40	295.68	346.15	2,632.26
Gross revenues (2003-2008)	EUR per capita	1679.11	422.21	907.21	5,138.41

3 Econometric framework

3.1 Identification strategy

Our identification strategy is based on the difference-in-difference method and exploits the fact that municipalities in North Rhine-Westphalia implemented the new system gradually. Switching made it temporarily more likely to avoid fiscal supervision, and we are interested in how this affected the borrowing decisions of municipalities. As the municipalities could choose the year of the switch, this may challenge our identification. However, the timing may be considered exogenous for the behavior after the implementation for several reasons. First, the timing was largely determined by operational accounting considerations within the local administration. NRW was the fore-runner among the German states in the introduction of the new local government accounting, such that the complex procedural requirements made the exact length of the necessary local preparation of the switch difficult to predict. Moreover, once the preparations enabling the switch were completed, postponing the switch implied substantial costs for the municipality. Second, there were no monetary incentives to strategically time the switch. The exact date of the switch only entered the determination of the virtual buffer, the equalization reserve, but did not affect the actual revenues of the municipalities in any way. The buffer allowance was largely determined by tax revenues in the three years preceeding the switch, such that, even if a municipality had been aiming to maximize the equalization reserve, it would have been very challenging to predict the optimal switching date. Third, the decision to switch was taken by the municipal council (subject to the described operational implementation constraint), whereas the decisions regarding short-term debt we focus on are taken by the mayor. Fourth, we mostly constrain our analysis to the subgroup of municipalities that either switched in 2008 or 2009. The two groups which implemented the new system in these years are very similar with respect to their trends in key fiscal variables in the years before 2008. Therefore, we first exclude all other municipalities from our analysis, and conduct the analysis with 262 municipalities which implemented the reform either in 2008 or 2009.⁸ In the

⁸We exclude eight municipalities which belong to the county of Aachen and the urban district of Aachen. As redivisions took place in 2009 this may have caused distortions in the years before. However, effects also hold when including these nine municipalities.

year 2007 both groups still used the old accounting system whereas in 2008 one group was exposed to the treatment and the other was not.

One potential motive for switching could be the size of the equalization reserve as the relaxation of supervision was contingent on the size of this reserve. It could amount up to one third of the equity capital but not more than one third of the mean revenues and general grants in the three years before adopting the reform. For more than 95 per cent in our sample the second criterion was the binding one. Therefore, we can observe whether the choice in 2007 to introduce accrual accounting in the following year or to wait one more year was affected by the size of the equalization reserve. We include revenues of the three preceding years in our binary logistic regression and do not find systematic correlations indicating that the variation is sufficiently exogenous, and the date of introduction cannot be explained by the revenue situation before the treatment. Furthermore, we show that neither a municipality's debt level nor being under fiscal supervision played a role for the switching date. We also control for other characteristics and find only a small effect for the property tax multipliers and for a minor regional pattern. The results are presented in Table 3.

Relaxing fiscal oversight should have different effects for municipalities which were subject to binding fiscal oversight before the reform and those municipalities which were previously unrestricted. We therefore establish two important subgroups in our sample, the "restricted" and the "unrestricted" group. The restricted subgroup had to provide a budget consolidation plan in 2007 which had not been approved, whereas the unrestricted group did not have to present a plan in 2007.

In Figure 4 we plot the development of the three tax multipliers, total tax revenue per capita and fiscal capacity per capita. The municipalities are, within limits, free to set multipliers which are then applied to universal tax bases. Whilst the tax on business profits (mean revenues 2007: EUR 431.45 per capita) and the tax on private and business land (mean revenues 2007: EUR 118.78 per capita) represent the main sources of self-controlled revenues, the tax on agricultural land (tax multiplier A) is less important (mean revenues 2007: EUR 4.73 per capita). Municipalities receive grants through the fiscal equalization scheme based on their fiscal capacity.⁹ All these variables which characterize the main revenue sources

⁹The fiscal capacity of a municipality is determined by the tax bases of the local taxes.

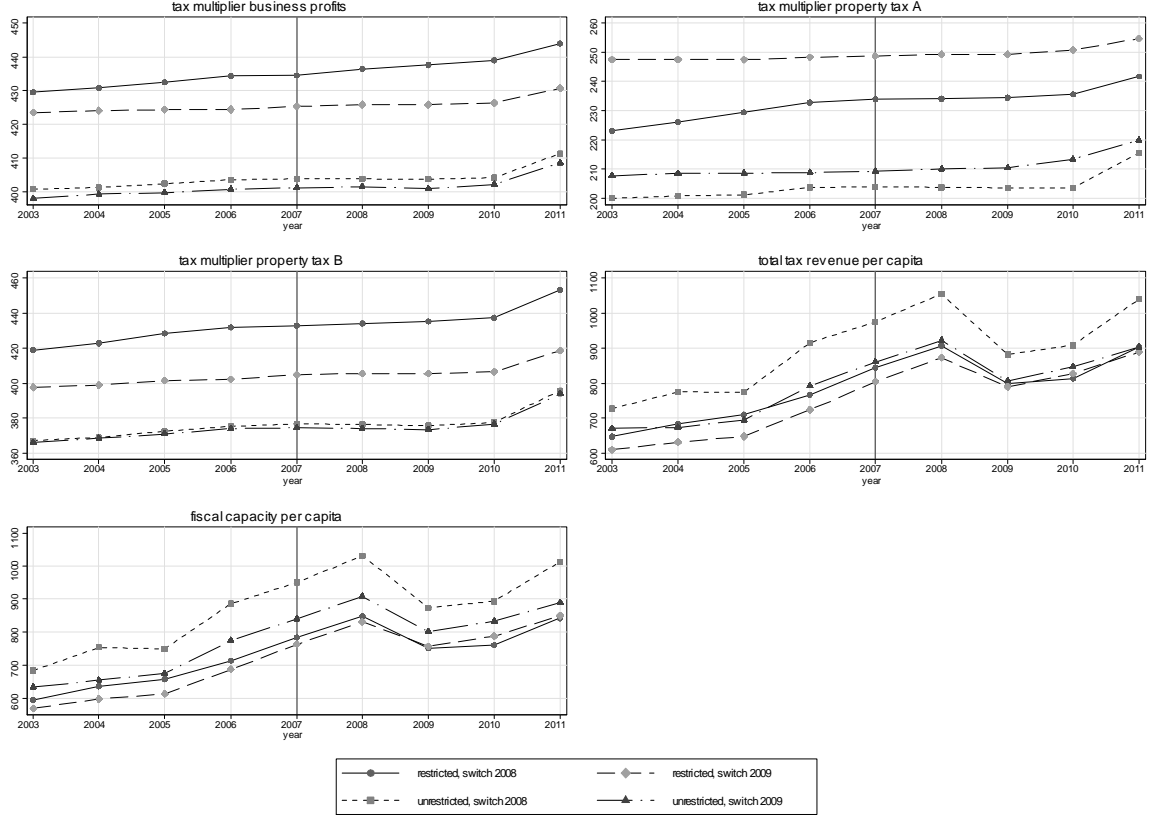
of the municipalities show clear pre-treatment trends for the different subgroups. During the treatment period we cannot observe a change of the differences in trends. This shows that potential changes on the revenue side coinciding with increases in debt cannot explain our findings. In Figure 5 we additionally plot the two debt categories.

Table 3: Probit Models: implementation date

	Specification								
	All municipalities pooled					Restricted subgroup only			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
debtshort07	0.130 (0.82)	0.162 (0.84)	0.162 (0.83)	0.0733 (0.37)	0.0452 (0.23)	0.111 (0.45)	0.141 (0.56)	-0.154 (-0.57)	-0.0825 (-0.28)
debtcore07	0.227 (1.78)	0.193 (1.47)	0.227 (1.56)	0.220 (1.60)	0.216 (1.34)	-0.115 (-0.46)	-0.202 (-0.72)	0.0810 (0.28)	0.0682 (0.20)
urban district	0.449 (1.20)	0.377 (0.98)	0.548 (1.15)	0.138 (0.31)	0.256 (0.48)	0.722 (1.12)	0.467 (0.62)	-0.506 (-0.53)	-1.139 (-1.03)
plan-present07		0.387 (1.83)	0.374 (1.76)	0.409 (1.76)	0.339 (1.42)				
plan-notappr07		-0.397 (-1.62)	-0.418 (-1.69)	-0.316 (-1.27)	-0.282 (-1.09)				
revenues07			0.186 (0.46)		0.0878 (0.21)		0.780 (0.75)		1.069 (0.83)
revenues06			-0.314 (-0.62)		-0.349 (-0.67)		-1.379 (-1.16)		-1.857 (-1.31)
revenues05			-0.0579 (-0.12)		0.0217 (0.04)		0.940 (0.96)		0.632 (0.59)
tax-business07				-0.00163 (-0.24)	-0.00232 (-0.34)			-0.00627 (-0.49)	0.00415 (0.31)
tax-prop-a07				-0.00448 (-1.75)	-0.00630* (-2.21)			-0.0102 (-1.75)	-0.00930 (-1.40)
tax-prop-b07				0.00452 (1.04)	0.00723 (1.60)			0.0206* (2.12)	0.0258* (2.46)
koeln					0.312 (1.16)				0.353 (0.71)
muenster					0.0181 (0.07)				-0.404 (-0.62)
detmold					0.600* (2.05)				-
arnsberg					0.640* (2.29)				0.499 (0.97)
_cons	-0.293* (-2.27)	-0.346* (-2.53)	-0.0994 (-0.22)	-0.471 (-0.25)	-0.729 (-0.37)	-0.0196 (-0.06)	-0.593 (-0.57)	-3.272 (-0.71)	-10.25 (-1.88)
<i>N</i>	271	271	271	271	271	78	78	78	74
pseudo R^2	0.027	0.037	0.039	0.049	0.079	0.041	0.060	0.128	0.186

Notes: The dependent variable is implementation of accrual accounting in 2008. T statistics are in parentheses. Omitted variable in (5) and (10): administrative district Düsseldorf. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Figure 4: Tax rate multipliers, total tax revenues per capita, fiscal capacity per capita (2003-2011)



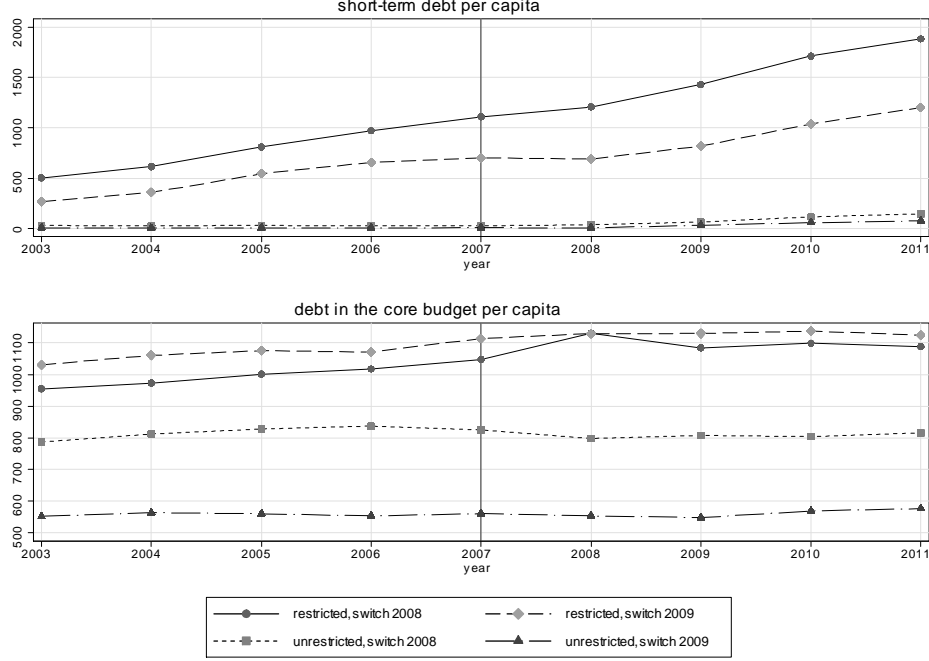
3.2 Empirical model

The dependent variable is the per capita level of short-term debt ($debt_{it}$). Moreover, given the panel structure of our data we employ a fixed-effects approach with municipality-specific intercepts and we can include a set of time effects to control for time trends and unobserved heterogeneity between municipalities. We estimate models of the following form for municipality i in year t

$$debt_{it} = \alpha_i + \beta_1 treat_{it} + \beta_2 treat_{it} * restr_{it-1} + \sum_k \beta_k X_{kit} + \gamma_t + e_{it} \quad (1)$$

where α_i are municipality dummies, $treat_{it}$ is a dummy variable indicating whether a municipality has implemented the reform in year t , $restr_{it-1}$ is a dummy variable indicating whether a municipality is directly constrained by the supervision authority, i.e. that its budget consolidation plan was not approved, β_1 and β_2 are our parameters of interest, γ_t are year dummies, and X_{kit} are potential ad-

Figure 5: Short-term debt and debt in the core budget 2003-2011 (EUR per capita, in prices of 2005)



ditional explanatory variables with according parameters β_k . We estimate (1) for the sample of municipalities that switch in 2008 and 2009 as well as for a more general panel that includes all municipalities that switched between 2006 and 2009.

Additionally, we look at certain subgroups because relaxing supervision should have different effects for formerly more or less restricted municipalities.

$$debt_{it} = \alpha_i + \beta_1 treat_{it} + \sum_k \beta_k X_{kit} + \gamma_t + e_{it}. \quad (2)$$

We estimate (2) separately for the subgroup of those municipalities that were constrained before the switch by fiscal supervision, and for the subgroup of those municipalities that were unconstrained in the year before the switch.

4 Results

4.1 Main results

We first present the results from estimating the effect of the switch on short-term debt for the panel of those 262 municipalities which adopted the reform in 2008 or 2009. The municipalities which implemented accrual accounting in 2008 are referred to as "switching municipalities". Columns (1) and (2) in Table 3 show the results for a simple specification with municipality fixed effects and time fixed effects (1), and, additionally, with further controls (2). We include two dummy variables indicating whether a municipality had to present a budget consolidation plan (*plan-present*) and whether a municipality had been put under direct fiscal supervision (*plan-notappr*). The estimated effect on cash credit per capita for the switching municipalities is an increase of cash credits by EUR 86.20 per capita compared to the municipalities which have not yet implemented the reform. The estimated effect is statistically significantly different from zero at the 0.001 level. The mean of short-term debt of the switching municipalities accounted for EUR 418.35 in 2007 implying that this increase involves also an economically significant effect.

In a next step we consider two important subgroups because relaxing supervision should have a large effect for restricted municipalities and no effects for municipalities which were not subject to fiscal supervision before the reform. We consider 72 municipalities which had to present a budget consolidation concept in the year before the reform was implemented which had not been approved by the supervising authorities ("restricted"). As expected, effects for this group are very large. Even when considering the higher mean cash credits of this group (EUR 1,107.99 for switching and restricted municipalities in 2007) the estimated effect of EUR 219.90 which is statistically significantly different from zero at the 0.01 level is substantial. When including the two dummy variables on the consolidation plans the estimated effect is higher (EUR 303.70) and statistically significantly different from zero at the 0.001 level.

Additionally, we restrict our sample to those 135 municipalities which have not been restricted by budgetary supervision and did not present a budget consolidation plan in 2007 ("unrestricted"). For these municipalities effects do not hold.

Table 4: Effects on short-term debt per capita, all municipalities pooled, restricted group and unrestricted group separately

	Specification									
	All municipalities pooled					Restricted only		Unrestricted only		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
treat2008	86.20*** (3.38)	106.0*** (3.89)	-21.40 (-0.79)	-3.994 (-0.14)	192.2*** (6.48)	295.9*** (8.59)	219.9** (3.15)	303.7*** (3.90)	9.244 (0.86)	11.13 (1.05)
treat2008*restr			366.4*** (9.39)	408.5*** (10.33)						
treat2008*unrestr					-242.9*** (-6.67)	-344.0*** (-8.63)				
plan-present		38.93 (1.58)		54.47* (2.30)		133.6*** (5.07)		210.9** (2.86)		25.40 (1.15)
plan-notappr		43.62* (2.00)		83.91*** (3.94)		50.61* (2.39)		-88.77* (-2.01)		148.9*** (3.89)
time f.e.	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
municipality f.e.	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
_cons	293.1*** (25.23)	261.4*** (15.57)	293.1*** (26.06)	242.0*** (14.89)	293.1*** (25.64)	213.4*** (12.37)	818.1*** (25.70)	691.1*** (9.11)	12.70** (2.65)	11.22* (2.37)
N	1572	1572	1572	1572	1572	1572	432	432	810	810
adj. R ²	0.886	0.886	0.893	0.895	0.890	0.893	0.896	0.898	0.453	0.471

Notes: The dependent variable is short-term debt per capita. T statistics are in parentheses. All financial data is in prices of 2005. Municipalities which presented a budget consolidation plan in 2007 which had not been approved are referred to as "restricted". Municipalities which did not present a budget consolidation plan in 2007 are referred to as "unrestricted".

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The estimates corroborate our considerations that relaxing supervision temporarily lure municipalities into increasing their level of debt. We illustrate these results in Figure 5 for the different subgroups.

We also estimate the model for the whole panel to check whether the effect remains when including municipalities which introduced accrual accounting in 2006 or 2007. The nature of our results remains unchanged also for this enlarged panel. In the year before the switch ($switch * (t - 1)$) there is no significant effect on debt. After the switch there is an increase of short-term debt per capita which remains pronounced also in the second year after the switch.

Table 5: Effects on short-term debt per capita, all municipalities pooled, implementation 2006, 2007, 2008 or 2009

	(1)	(2)	(3)
switch*t	52.90*	-11.27	183.0***
	(2.09)	(-0.44)	(6.27)
switch*(t-1)	23.06	23.59	26.19
	(1.24)	(1.30)	(1.43)
switch*(t+1)	107.7***	103.7**	121.0***
	(3.34)	(3.28)	(3.81)
switch*restr _{t-1}		263.0***	
		(9.44)	
switch*unrestr _{t-1}			-213.6***
			(-8.53)
plan-present	16.92	26.63	67.67***
	(0.92)	(1.48)	(3.56)
plan-notappr	48.08*	76.93***	52.11**
	(2.51)	(4.04)	(2.76)
time f.e.	yes	yes	yes
municipality f.e.	yes	yes	yes
_cons	127.1***	117.9***	105.0***
	(9.72)	(9.17)	(8.00)
<i>N</i>	2617	2617	2617
adj. <i>R</i> ²	0.863	0.869	0.868

Notes: The dependent variable is short-term debt per capita in prices of 2005. Municipalities which presented a not-approved budget consolidation plan in the year before introducing accrual accounting are referred to as "restricted". Municipalities which did not present a budget consolidation plan in the year preceding the reform are referred to as "unrestricted".

t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

4.2 Robustness checks

To analyze whether the treatment and the control group already differed before introducing the accrual accounting system we construct pseudo-treatments. As depicted in Table 6 we cannot observe an effect in earlier years supporting the common trends assumption. The interaction effects are statistically insignificant for earlier years indicating that time trends of both groups were similar before the treatment. However, in the years after the switch of the accounting system there remains a pronounced effect which may also be due to the fact that municipalities which introduced accrual accounting in 2008 on average experienced a longer term of relaxed supervision because of the onset of the financial crisis. Because of the crisis most municipalities which had been restricted before 2007 were put under fiscal supervision again in 2010. The lasting differences between the two groups may be due to the persistence of costs connected with expenditures made in periods without supervision.

Our sample consists of municipalities belonging to counties and of urban districts. In general, the 23 urban districts in NRW incur higher debt levels than other municipalities. To test whether this group drives our results we exclude them and estimate the same models as above only for municipalities belonging to counties. The effect without the urban districts is somewhat smaller but also positive and significant.¹⁰

In a further test we check whether the definition which municipality can be defined as "restricted" drives our results. Table 7 shows that the effect becomes even larger when only including municipalities which were restricted for a longer time period. This corroborates the notion that relaxing supervision is especially significant for municipalities which have been restricted for a long time.

¹⁰Results are available from the authors upon request.

Table 6: Pseudo-treatments

	(1)	(2)	(3)
	All pooled	Restricted only	Unrestricted only
treat2008	136.4** (2.72)	391.8** (2.90)	9.448 (0.39)
treat2008*2011	244.7*** (4.97)	406.6** (3.08)	49.70* (2.04)
treat2008*2010	218.5*** (4.43)	395.4** (2.98)	37.52 (1.54)
treat2008*2009	171.3*** (3.46)	316.4* (2.37)	9.248 (0.38)
treat2008*2007	74.14 (1.51)	132.0 (1.00)	-3.018 (-0.12)
treat2008*2006	45.29 (0.92)	29.24 (0.22)	-3.951 (-0.16)
treat2008*2005	22.77 (0.46)	-6.559 (-0.05)	0.401 (0.02)
treat2008*2004	6.615 (0.13)	53.93 (0.41)	-0.426 (-0.02)
plan-present	35.35 (1.39)	351.8*** (4.45)	31.18 (1.10)
plan-notappr	67.91** (2.61)	-178.5** (-3.02)	33.05 (0.91)
time f.e.	yes	yes	yes
municipality f.e.	yes	yes	yes
_cons	122.4*** (6.19)	167.9* (2.26)	13.04 (1.54)
N	2353	645	1215
adj. R^2	0.850	0.871	0.438

Notes: The dependent variable is short-term debt per capita in prices of 2005. Municipalities which presented a budget consolidation plan in 2007 which had not been approved are referred to as "restricted". Municipalities which did not present a budget consolidation plan in 2007 are referred to as "unrestricted". Omitted variable: treat2008*2003. t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 7: Effects on short-term debt per capita, different measures for "restricted"

	Specification					
	A		B		C	
	(1)	(2)	(3)	(4)	(5)	(6)
treat2008	-43.55 (-1.38)	187.6*** (3.34)	17.55 (0.63)	231.4** (2.86)	-6.399 (-0.22)	459.0*** (6.82)
treat2008*restr (A)	346.1*** (8.72)					
treat2008*restr (B)			415.3*** (9.53)			
treat2008*restr (C)					326.2*** (8.43)	
plan-present	134.0*** (5.10)	132.8** (3.09)	39.15 (1.64)	147.2 (1.77)	116.6*** (4.54)	534.7*** (7.91)
plan-notappr	51.71* (2.44)	-4.121 (-0.14)	86.30*** (4.01)	-94.30 (-1.68)	48.92* (2.31)	-16.29 (-0.52)
time f.e.	yes	yes	yes	yes	yes	yes
municipality f.e.	yes	yes	yes	yes	yes	yes
_cons	212.9*** (12.35)	486.5*** (9.86)	248.7*** (15.27)	846.2*** (10.59)	222.1*** (13.06)	162.5* (2.25)
<i>N</i>	1572	726	1572	330	1572	606
adj. <i>R</i> ²	0.893	0.887	0.894	0.915	0.892	0.897

Notes: The dependent variable is short-term debt per capita. T statistics are in parentheses. All financial data is in prices of 2005. Specifications: A = consolidation plan presented 2005-2007, B = consolidation plan not approved 2005-2007, C = consolidation plan presented 2003-2007. (1), (3), (5): all municipalities pooled, (2), (4), (6): restricted subgroup separately.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

5 Discussion and conclusion

Our analysis provides strong evidence for the importance of fiscal oversight in federal systems. The withdrawal of fiscal oversight results in a substantial increase of local government debt for municipalities which were previously constrained by the supervision authorities. This proves the importance of fiscal restraints on local government debt. Moreover, in a system characterized by fiscal rules for decentralized decision-making but without centralized oversight and enforcement, the fiscal restraints are not strictly binding and not effective as regards the desired constraint on local government debt. Strong independent oversight is therefore necessary to achieve a binding constraint on debt. To the extent that the problem stems from a problem of soft budget constraints, the solution may be to either harden the soft budget constraint by credible no bail-out provisions and sound bankruptcy procedures for local government which can enforce market discipline on local governments. If this is not an option, strengthening fiscal oversight should be regarded as an important policy objective.

Finally, Grembi et al. (2014) show that fiscal restraints are actually effective in an environment where institutional quality is relatively weak and thus even countries suffering from weak governance can potentially reduce local government debt by introducing fiscal restraints. Given the German reputation for abiding rules and the relatively high institutional quality according typical governance indicators, see Kaufmann et al. (2010), our results can be seen as providing an important complementary finding. Fiscal restraints also matter in countries with relatively well-functioning institutions, but even in such a context, oversight and enforcement remain important for their effectiveness.

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