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Does Fiscal Oversight Matter?

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Abstract

A gradually introduced reform of local government accounting made it temporarily possible for municipalities in the German state of North Rhine-Westphalia to avoid the effective control of their budget by the authorities in charge of overseeing local government budgets and enforcing the existing fiscal rules. Using this withdrawal of effective fiscal oversight, we identify the effects of fiscal restraints and their enforcement on fiscal outcomes. We find that the withdrawal of oversight has a significant and sizable effect on per capita debt of local governments that were previously constrained by fiscal oversight. Fiscal restraints are important, and oversight and enforcement are key requirements for their success.

JEL classification: H72, H74, R50

Keywords: Fiscal oversight, fiscal rules, local government debt

1 Introduction

Fiscal rules to constrain government debt of local and state governments exist in many countries, including Germany, Italy, and the United States. While the costs and benefits of such rules are debated in general, at the sub-national level they are usually seen in a much more positive light, see Wyplosz (2012) and Alesina and Passalacqua (2016) for a general discussion of fiscal rules, as well as for the specific advantages of such rules for sub-national governments. The European debt crisis and the corresponding discussion on the appropriate fiscal institutions of the evolving Eurozone have also renewed interest in the role and the performance of fiscal rules, in particular within federally organized countries. However, little is known about the actual effectiveness of sub-national fiscal rules. The empirical analysis has been constrained by the scarcity of appropriate data, and by the challenge to properly identify the effects of fiscal restraints, since their establishment, their stringency, and their enforcement are endogenous. Accordingly, many studies have provided rather mixed and inconclusive evidence on their effects, see Canova and Pappa (2006), von Hagen (1991), Poterba (1995), among others.

More recently, researchers have focused on institutional and time variation across sub-national jurisdictions to gain better insights into the effects of fiscal rules and oversight of sub-national governments, see Grembi et al. (2016), and Forni and Bonfatti (2017), who consider Italian municipalities, or Ben-Bassat et al. (2016), who focus on local governments in Israel. In a similar spirit we empirically analyze fiscal oversight and a balanced budget rule that are applied to municipalities in Germany's most populous state North Rhine-Westphalia (NRW). Within this state, a system of fiscal oversight is in place to oversee whether local government budgets are compatible with the existing balanced budget rule. Given this institutional setting, which we explain in detail in Section 3, we exploit an accounting reform that effectively allowed local governments to temporarily escape fiscal oversight. The reform replaced traditional cameralistic public sector accounting (cash accounting) by a system of accrual accounting between 2004 and 2009, but had no fiscal consequences in terms of revenues or expenditures. To achieve a smooth transition to the new accounting system, in particular for those municipalities which already were experiencing financial difficulties, the reform provided them with a purely fictitious buffer allowance to notionally balance their budget. The oversight authorities had to accept the fictitiously balanced budgets and could not execute the usual interventions to re-balance the concerned local budgets. Thus, upon switching to

the new accounting regime, the buffer allowed local governments to avoid effective fiscal oversight, even though the corresponding deficit was financed by additional debt. This built-in escape clause may be seen as an intentional loophole or even an "encouragement design" to allow for more debt to achieve the policy objective of a successful transition to the new accounting regime. Empirically, it enables us to properly identify the effect of fiscal oversight, or, more precisely, its absence.

Another key aspect of fiscal restraints is their actual enforcement. Policymakers have some scope to circumvent existing restraints to escape sanctions ex post, or even to completely ignore them if there is no legal enforcement mechanism.[1] Despite these possibilities, the assessment of Poterba (1996) that the role of enforcement of fiscal restraints has remained even less understood and investigated than the functioning of fiscal rules themselves is still valid. Our analysis also highlights the role of enforcement. As we explain in Section 3, the fiscal oversight provisions are only an indirect way to enforce the balanced budget rule, since, in practice, local governments have access to credit to ensure liquidity. Thus, escaping oversight due to the fictitious buffer allowance can alternatively be regarded as a temporary lack of enforcement of the existing balanced budget rule.

We divide our empirical analysis in three parts. We first focus on the evolution of municipal debt exploiting the fact that municipalities in NRW implemented the accrual accounting system gradually. This variation permits us to compare municipalities that were still subject to active oversight to those that enjoyed the relaxation of oversight. Secondly, we compare NRW municipalities to municipalities in the neighboring state of Hesse. Hesse uses a similar fiscal oversight system and also introduced accrual accounting gradually over the same time period. However, in Hesse there was no escape clause to avoid fiscal oversight. Combining the data from local governments in NRW and Hesse allows us to additionally employ a triple-difference identification strategy. To complete the comparison between municipalities in NRW and Hesse we also study the total effect of the withdrawal of fiscal oversight in NRW versus the continuing oversight in Hesse by considering debt levels before and after the entire switching period. This approach exploits the fact that, while local governments could choose the switching year, municipalities in NRW would inevitably enjoy relaxed oversight rules at some point over the switching period, whereas municipalities in Hesse would not. Finally, in the third part, we consider the different expenditure and revenue categories to understand the composition behind the

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[1]See Milesi-Ferretti (2004) for an analysis of the relationship between creative accounting and fiscal rules.

debt change. Moreover, since fiscal rules are typically justified as a second best correction mechanism to an implicit deficit bias in the policy process, we also study potential political factors behind the debt changes.

Our results show that previously constrained municipalities increase their debt substantially after switching to the new accounting system and enjoying relaxed oversight. The effects are quantitatively important. Our baseline estimates imply that previously restricted municipalities increase their debt per capita by approximately €205 upon switching. These findings are confirmed by the triple-difference analysis using Hessian and NRW data. Restricted NRW municipalities increase their debt per capita by approximately €179 relative to their restricted Hessian counterparts. Finally, also the relative before after comparison between restricted Hessian and NRW municipalities indicates the relative debt increase among the latter, in this case estimated to be about €327 per capita over the entire switching period.

Our analysis further indicates that the debt increase is not driven by reductions in taxes, but rather due to expenditure growth. This can be traced for operating expenditures from the available data but can only be inferred indirectly for social and administrative expenditures. As regards the political economy determinants of the debt increase, we find evidence that debt expansion is stronger in politically more closely contested municipalities, and in municipalities that have a larger population share of old people.

The study is structured as follows. Section 2 provides a brief literature review. Section 3 describes the institutional setting and our data. Section 4 explains our different identification strategies and the econometric framework. Section 5 presents the results for the NRW data. In Section 6 we analyze the Hessian and the NRW data jointly. We then analyze the mechanisms driving the effects in Section 7. Finally, Section 8 discusses the findings and concludes.

2 Related Literature

Our analysis contributes to several strands of literature. First, it adds to the analysis of the effectiveness of fiscal rules. A number of studies, such as Poterba (1996), Alesina and Bayoumi (1996), von Hagen (1991), Poterba and Rueben (2001), and Fatás and Mihov (2006), among others, have considered the effects of fiscal rules at the state level in the US with somewhat conflicting results, even though the majority seems to find a restricting effect on debt. Grembi et al. (2016) investigate fiscal rules for local governments in Italy

using a difference in discontinuities research design. They find convincing evidence that the relaxation of fiscal rules has an effect on fiscal outcomes in the form of higher deficits and lower tax revenues. Other recent empirical papers on fiscal rules include Burret and Feld (2014), who find no evidence that budget constraints at a higher government tier affect local finances, and Hopland (2014), who shows that rules providing voters with information on fiscal performance can have a disciplinary effect.

Second, our findings can inform the theoretical debate on fiscal restraints, see Besley and Smart (2007), Brennan and Buchanan (1980), Drazen (2004), Dulleck and Wigger (2015), Halac and Yared (2014), among others. A main argument in this literature, see, in particular, Alesina and Perotti (1996), Persson and Svensson (1989), and Tabellini and Alesina (1990), is the analysis of an inherent deficit bias originating in the political decision-making process, and fiscal restraints that frame the political process can potentially help to correct such bias. Our empirical analysis of the political determinants of debt increases in response to a temporary absence of oversight sheds light on the explanatory power of different political economy channels.

Finally, within a federal system, governments may have strong incentives, or de jure obligations, to provide funding to other, often lower-level governments, if these are facing financial problems. Since these ex post incentives or explicit legal liabilities can be foreseen, they can generate ex ante incentives for excessive spending. Following Kornai (1986), the term *soft budget constraint* has been coined for this problem. It has been extensively studied by Epple and Spatt (1986), von Hagen (1991), Qian and Roland (1998), Maskin (1999), Buettner and Wildasin (2006), Bordignon and Turati (2009), Pettersson-Lidbom (2010), and Baskaran (2012), among others, and is an important rationale for fiscal restraints, in particular for sub-national governments. As we discuss in detail in Section 8, our findings provide some support for this argument, given that the effects of a withdrawal of fiscal oversight are concentrated on municipalities that were effectively restricted by the oversight system.

3   Institutional setting and data

3.1   Institutional setting

With 17.5 million inhabitants in 2011, NRW is the most populous state in Germany. There are 396 municipalities, which are relatively large and embrace approximately 45,000 in-
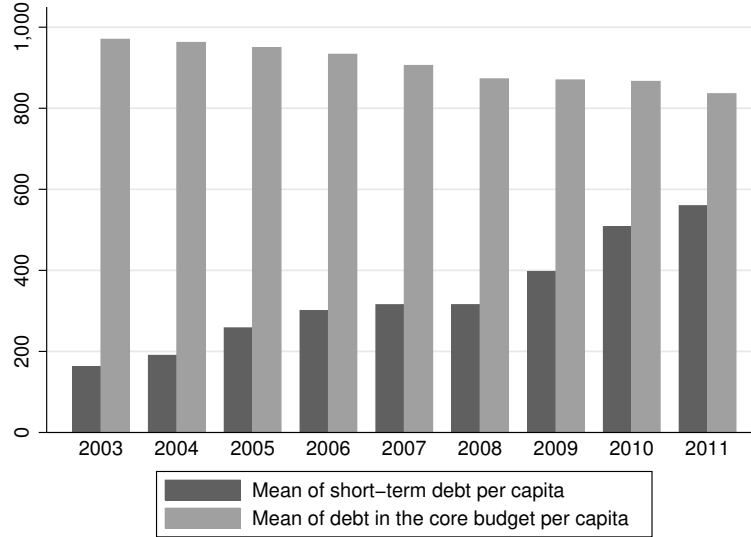
Figure 1: Level of short-term debt and debt in the core budget (2003–2011, municipalities NRW, EUR per capita, in prices of 2010)

habitants on average. These municipalities are classified into 23 urban districts and 373 municipalities belonging to counties *(kreisangehörige Städte und Gemeinden)*. Municipalities have a constitutionally guaranteed right of self-government. However, their authority is limited by federal 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), and municipalities execute certain responsibilities determined by federal or state law (e.g., some social expenditures). In areas such as general administration, cultural institutions, recreation and sport facilities, hospitals, local infrastructure, and public transport, municipalities have considerable discretion in their budgeting; see Egger and Koethenbuerger (2010) and Baskaran (2014).

Local governments are financed mainly through vertical transfers (e.g., state-allocated grants) and tax revenues. Municipalities participate in a revenue-sharing scheme that provides them with fixed shares of the local revenue from income taxation and VAT. However, local authorities have no discretion over the rates of these taxes. Municipalities are, within limits, free to set tax rates for three local taxes: a tax on business profits, the property tax, and the agricultural property tax.[2] In 2011 about half of the municipal revenues that were not earmarked funds were revenues from these local taxes.

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[2]The actual local tax rates are determined by multiplying a locally chosen rate, the "multiplier" (*Hebesatz*), with a federally predetermined, uniform "tax number" (*Steuermesszahl*). The tax bases of these taxes are also defined at the federal level.
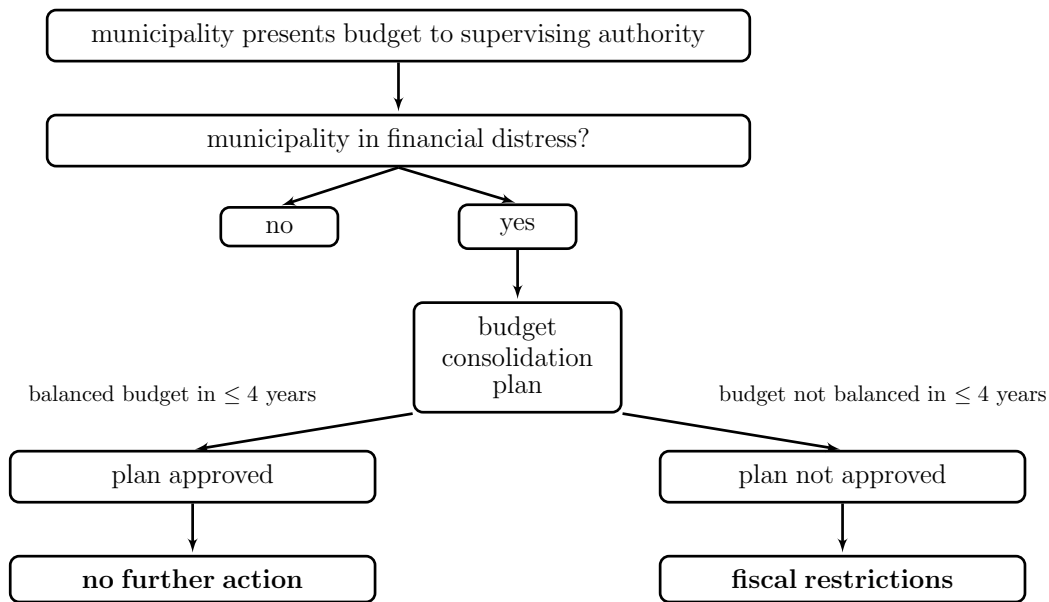
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Figure 2: Fiscal oversight in NRW

In general, local governments are not allowed to borrow. However, there are two exceptions to this rule. First, local governments are free to borrow to finance investment. We refer to this as debt in the core budget (*Schulden im Kernhaushalt*).[3] Second, the municipalities are allowed to assume short-term debt (*Kassenkredite*) to ensure liquidity. In NRW especially, the latter debt category has emerged dramatically over the time period under consideration, from €163 per capita in 2003 to €560 per capita in 2011 (in prices of 2010), as shown in Figure 1. Heinemann et al. (2009) point out that the extent and persistence of short-term debt indicate that this type of debt is more and more used abusively to finance deficits. We focus on short-term debt as our main variable of interest, since it indicates to what extent local governments evade the fiscal rule that forbids local government to engage in debt financing beyond capital investment.[4]

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-

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[3]Since the 1990s there has been increased outsourcing of municipal responsibilities, in particular in energy and water supply. Total local long-term debt is therefore divided into the debt in the core budget and the debt of local public firms. The latter kind of debt is less important for our analysis, as it cannot be controlled by municipalities directly and on short notice; see also Borck et al. (2015).

[4]Note that the rules for these cash credits were not modified by the switch to accrual accounting, which we use for our analysis below. The municipal council still determines the ceiling on short-term debt, and the mayor takes the actual borrowing decision.

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

called principle of communality *(Bündisches Prinzip)* has been decisively upheld by the German courts with respect to fiscal obligations of the federal and state governments vis-à-vis each other, and this principle is generally seen as applying also to the relationship between state and local governments. 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, creditors have been generous in accommodating them with credit. Ade (2013) finds that they mostly ignored the financial situation when charging interest rates to local governments in Germany. Thus, capital markets do not appear to induce effective fiscal discipline on local governments. This lack of credit constraints may be 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 municipalities or jointly by several municipalities. This finding is in contrast to federations with credible local government budget constraints and borrowing risk; see Capeci (1994), for instance, who studies the borrowing costs of municipalities in New Jersey.

Since 1991 a system of fiscal oversight of local government has been in place in NRW that requires each municipality to present its budget to a supervisory authority, as illustrated in Figure 2. 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

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[5]In NRW the nonexistence of insolvency procedures for municipalities is guaranteed by the municipal code (§ 128 GemO NRW).
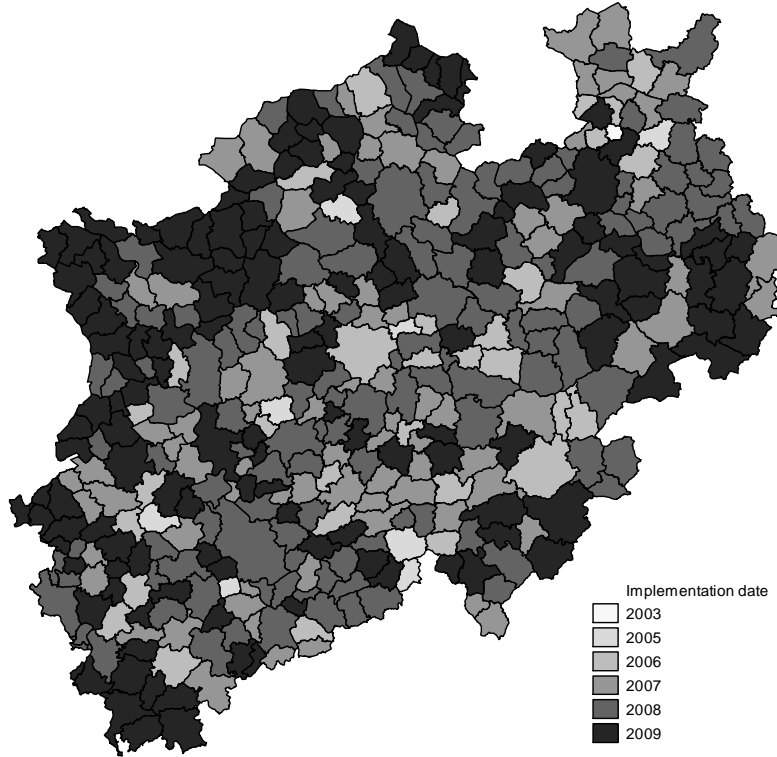
Figure 3: Implementation date, map NRW

must indicate how the municipality can again balance the budget within a period of four years.[6] If the supervisory authority decides that the consolidation plan is not sufficiently effective or credible, it disapproves 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 approval of the supervisory authority for all expenditures that are not mandated by state or federal legislation, and the authority can require further austerity measures. Even a complete takeover of the municipality's fiscal affairs is possible.[7]

Our empirical analysis exploits an institutional change that temporarily freed many

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[6]In the cameralistic accounting system the budget consolidation plan would have been approved if it had been shown that revenues could cover expenditures (without deficits from previous years) within four years. With accrual accounting a balanced budget had to be achieved within three years following the financial year, but, as discussed below in detail, a virtual buffer was granted to balance the budget until its depletion. Since 2011 this time period has been extended to ten years.

[7]Similar systems are in place in all German states, except for the "city-states". Most states with a smaller number of large cities, as well as those that do not have an intermediate tier of district governments, tend to have centralized supervision of bigger cities at the respective state ministry of the interior, but also supervise smaller municipalities at the district or county level as in NRW, see Glöckner and Mühlenkamp (2009).
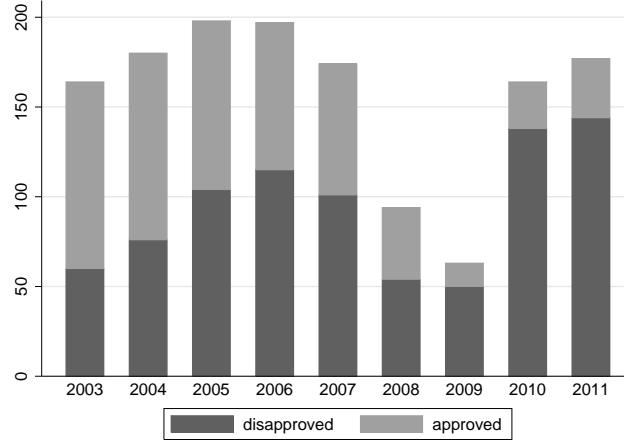
Figure 4: Approved and disapproved municipal budget consolidation plans (2003–2011)

municipalities from effective budget control. In 1999, the Interior Ministers of the German states agreed to reform local government budget law in all states to replace traditional cash accounting by accrual accounting. The aim of this reform was to create more transparency in the financial situation of local government, and, in particular, to take account of resource consumption and the long-term financial consequences of policy decisions; see Ridder et al. (2005). NRW was the first state to enact these reforms by law in 2004 and to implement accrual accounting in municipal finance. All local governments had to introduce the new budgetary, control, and reporting framework by 2009. As shown in Table 1, selected municipalities introduced the accrual accounting system in 2003 and 2005. These were mainly "model" municipalities for an evaluation procedure. The bulk of municipalities switched to the new system in the years 2006-2009, with two thirds switching in the years 2008 and 2009. Figure 3 illustrates the regional switching pattern.

The accounting reform changed the conditions for the approval of local governments' budgets by the supervisory authorities. It granted switching municipalities a one-time possibility to create an equalization reserve (*Ausgleichsrücklage*) in the opening balance, which was not backed by any assets. This escape provision was designed to avoid that the accounting reform would lead to severe problems, in particular among those municipalities that were already struggling to balance their budgets. It was feared that, accounting for capital depreciation for the first time, some municipalities would have to be declared formally insolvent immediately after switching to the new accounting regime, with undesirable consequences such as service breakdowns and immediate questions of a direct bail-out. Thus, the provisions constituted an intentional loophole to allow for more debt

in exchange for a smooth transition to the new accounting system.[8]

The regulations specified that up to one-third of the equity capital, but no more than one-third of the average revenues and general grants in the three years before adopting the reform, could be designated to the equalization reserve. For nearly all municipalities the second criterion was the binding one. Except for a single case, all municipalities opted for the maximum reserve amount.[9] Under the new accounting rules the requirement of a balanced budget could now be fulfilled in two ways without provoking action by the supervisory authorities: either by actually balancing the budget, or, virtually, by covering the actual deficit by resorting to the equalization reserve. Note that the equalization reserve was purely notional and did not imply any additional transfer to the municipality. It was a pure accounting allowance that could be used by the municipalities when presenting their budget plans to the supervisory authority to virtually balance their budget, even though the budget had to be balanced in practice by resorting to short-term debt. Thus, upon switching, the reserve could be used as a buffer by the switching municipalities. On average it amounted to €395 per capita. This provided most of the municipalities that were previously restricted by the supervising authorities an opportunity to act freely, at least until the equalization reserve was depleted. In some cases, the reserve was immediately depleted in the first year, so that these municipalities did not avoid effective oversight. However, more than two-thirds of the municipalities that 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 4, which shows the overall number of approved and disapproved 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 by

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[8]This also evident from the explanatory statement accompanying the law that implemented the reform, which justifies the equalization reserve: "Taking resource consumption, including the depreciation of assets (capital depreciation), fully into account has substantial consequences for local budgeting. Due to the nature of the new system, these costs will become evident for the first time during the switching period. This requires an extended margin for municipalities to allow them to self-responsibly achieve a compatible adjustment of their budgets to the new balanced budget rule based on the concept of resource consumption. ... The equalization allowance assumes a buffer function across fiscal years." (NRW (2004) p.16 , our translation). Note that our study and its results are therefore relevant for situations in which, for whatever reason, a certain degree of leniency is intentionally built into fiscal rules to achieve other policy objectives.

[9]This municipality (Meschede) switched in 2007 and is excluded from our estimations.
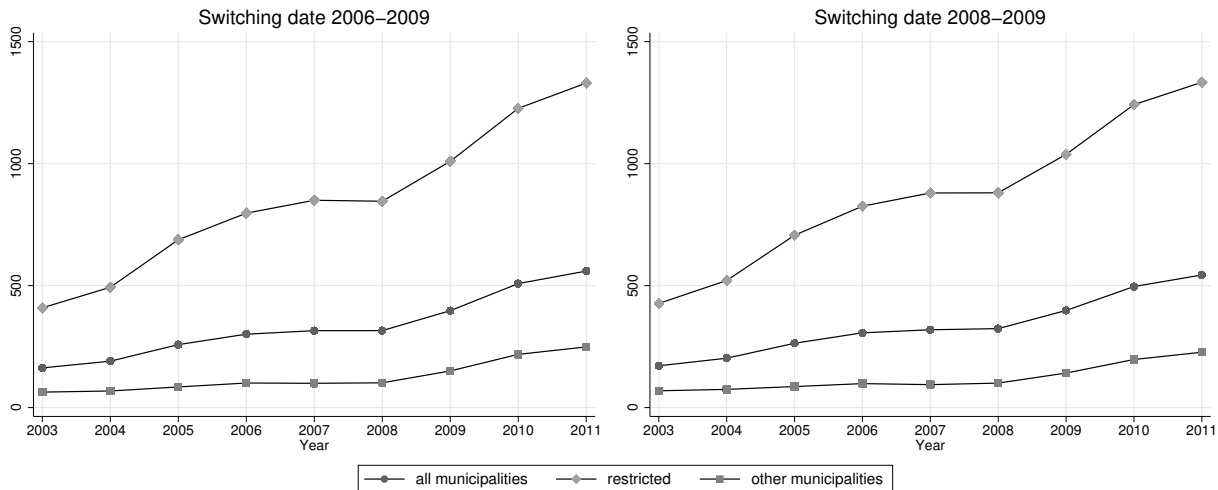
Figure 5: Evolution of short-term debt (2003–2011, municipalities NRW, EUR per capita, in prices of 2010)

comparing the behavior of those municipalities with temporarily gained freedom from supervision to those municipalities that remained in the old system and did not benefit from the accounting allowance. This comparison is particularly interesting for municipalities that were previously restricted by the supervisory authorities. Finally, a corresponding notional buffer allowance was not granted to municipalities in the neighboring state of Hesse, where local governments also switched to accrual accounting during the same time period, and a similar system of fiscal oversight of local governments is in place. We exploit this difference in Section 6, where we combine the NRW and the Hessian data.

3.2 Data and descriptive statistics

The basic balanced panel data set consists of all 396 municipalities in NRW over nine years (2003–2011). Due to territorial reorganization nine municipalities are not comparable across our period of study, and we exclude these from our sample. Moreover, we exclude the early switchers switching in 2003 and 2005. This leaves us with a total sample of 377 municipalities switching in the years 2006-2009. This is the principal sample of our analysis, even though we also provide additional evidence from the sub-sample of those 262 municipalities that implemented accrual accounting in the years 2008 and 2009. Table 2 provides descriptive statistics of our data set, the data sources are provided in the Appendix. The data of the Hessian municipalities are presented separately in Section 6.

As our main variable of interest we focus on short-term debt (cash credits), as this

Table 2: Summary statistics NRW (2003–2011)

Variable		Mean	Std. Dev.	Min.	Max.
Population	Metric	45,084.48	87,436.99	4,116	1,017,155
Population share below age of 25	Metric	0.28	0.02	0.21	0.39
Population share over age of 65	Metric	0.19	0.02	0.12	0.31
Urban district	Binary	0.06	0.23	0	1
Equalization reserve, opening balance	EUR per capita	395.42	96.30	0	982.29
Consolidation plan presented	Binary	0.37	0.48	0	1
Consolidation plan disapproved	Binary	0.23	0.42	0	1
Short-term debt[a]	EUR per capita	334.26	645.39	0	6,722.41
Debt in the core budget[a]	EUR per capita	907.41	633.59	0	4,681.02
Agric. tax rate[b]	Metric	223.99	38.49	145	402
Property tax rate[b]	Metric	394.89	40.28	230	590
Business tax rate[b]	Metric	416.25	23.68	310	515
Fiscal capacity	EUR per capita	821.98	278.76	339.68	3,022.48
Total tax revenues	EUR per capita	860.43	298.21	380.71	2,730.56
Revenues PIT	EUR per capita	309.07	56.24	167.25	569.73
Gross revenues[c]	EUR per capita	1,759.27	410.16	1,018.52	5,140.11
Revenues from fees[c]	EUR per capita	230.02	129.22	4.02	637.91
Personnel expenditure	EUR per capita	377.39	117.36	8.37	995.79
Operating expenditure	EUR per capita	380.87	139.46	75.45	1546.59
Share council right-wing[d]	Metric	0.54	0.10	0.29	0.81
Share council left-wing[d]	Metric	0.36	0.10	0.05	0.66
Mayor right-wing[d]	Binary	0.58	0.49	0	1
Mayor left-wing[d]	Binary	0.25	0.43	0	1
Divided government[d]	Binary	0.34	0.47	0	1
Close election[d]	Binary	0.12	0.32	0	1
New mayor[d]	Binary	0.42	0.49	0	1
Fragmented[d]	Binary	0.53	0.50	0	1

Notes: [a] Data source: RDC of the Federal Statistical Office and Statistical Offices of the Länder, debt statistics, 2003-2009, own calculations. [b] Locally chosen tax rate multipliers. [c] Data for years 2003–2008. [d] Data from election period 2004–2009. *right-wing* comprises the center-right party CDU and the liberal party FDP; *left-wing* comprises the center-left party SPD and the Green Party (Bündnis 90/Die Grünen). Remaining mayors are independent candidates or from voter lists. Remaining seats in local councils are mainly held by local parties. The binary variable *divided government* takes the value 1 if the mayor's party has no majority in the local council; the variable *close election* takes the value 1 if the mayor was elected with a margin of victory of less than five points in 2004; the variable *new mayor* takes the value 1 if another mayor was in office in 2003; the variable *fragmented* takes the value 1 if more than five parties were present in the local council.

part of debt is not backed by capital investment, shows substantial dynamics in the period of study, and represents a de facto breach of the fiscal rule in place, in that local governments are legally not allowed to assume debt to balance their budgets. In Figure 5 we plot the evolution of average short-term debt per capita in our sample. Additionally, we divide the sample into a group of "restricted" municipalities and the remaining ones. We define a municipality as restricted if it had at least one disapproved consolidation plan in one of the last two years before the switch to the new accounting system. Figure 5 shows that average debt is increasing over time, and that these debt dynamics are nearly fully driven by the restricted municipalities. In most of our analysis we focus on this

subgroup. In particular, we define the "treatment" as a restricted municipality switching to the new accounting system. For further notice, we also define a set of "unrestricted" municipalities as those which, in the two years preceding the switch, did not have file a single consolidation plan.[10]

4 Econometric framework

4.1 Identification strategy

We use three different identification strategies to investigate the role of reduced fiscal oversight. Our first identification strategy is based on the difference-in-differences (DD) approach and exploits the fact that municipalities in NRW implemented the new system gradually. We contrast short-term debt of the restricted switching municipalities which, due to the notional equalization reserve, could escape effective fiscal oversight, to those restricted municipalities which remained in the old system and continued to experience fiscal oversight. The identifying assumption is that, in the absence of treatment, i.e. without switching to the new accounting rules and relaxed oversight, the debt levels for the restricted municipalities would have evolved in the same way.

Combining debt data from NRW and the neighboring state of Hesse we additionally carry out a triple-difference analysis (DDD) in Section 7. In both states, municipalities switched the accounting system from cash to accrual. However, in Hesse there was no equalization allowance or any other fictitious buffer, so that fiscal oversight remained unchanged there. This allows us to additionally consider a DDD framework for identification, i.e., contrasting restricted switching municipalities vs. restricted non-switching municipalities in NRW vs. Hesse. The identifying assumption in this case is that there may be differential effects between restricted switching and restricted non-switching municipalities which occur concurrently with the switch, but that these differences would have evolved in the same way in Hesse and NRW.

We base our third and final identification strategy on the difference between the treatment of Hessian and NRW municipalities over the entire switching period. While municipalities in both states could decide on the switching date themselves, over the entire switching period municipalities in NRW would enjoy some period of relaxed oversight (after switching), whereas municipalities in Hesse would not enjoy such an oversight holiday.

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[10]We consider various alternative definitions of "restricted" in our robustness checks.

The identifying assumption in this case is that local government debt would have evolved in parallel in the restricted municipalities in Hesse and NRW absent the introduction of the equalization reserve in NRW. This approach amounts to another DD specification.

4.2 Challenges to our identification

As the municipalities could choose the year of the switch, this may challenge our first identification strategy. However, the timing may be considered random for the behavior after the implementation, for several reasons. First, the timing was largely determined by operational considerations within the local administration. NRW was one of the forerunners among the German states in the introduction of the new accounting system, so that the complex procedural requirements made the exact length of the necessary preparations difficult to predict. Moreover, once the preparations were completed, postponing the switch implied substantial costs. Second, there were no monetary incentives to strategically time the switch. The switching date only entered the determination of the equalization reserve; it did not affect the actual revenues of the municipalities in any way. The buffer was determined by tax revenues and general grants in the three preceding years, so 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. However, some politicians may have been aware of the potential to evade fiscal oversight after switching, and may have tried to use this to influence their re-election possibilities, given that local elections were held in all municipalities in August 2009. Alternatively, earlier switchers may be characterized by systematically more capable politicians and administrations.

To evaluate potential differences across switching cohorts we check for balance across the four groups of municipalities that implemented accrual accounting between 2006 and 2009. Table 3 presents a comparison of pretreatment characteristics in the years 2003 to 2005. Column (1) reports averages for those municipalities that implemented accrual accounting in 2009. Columns (2)-(4) compare the other municipalities cohorts to this group. The differences are mostly small. The group that switched in 2008 is only significantly different with respect to the level of debt in the core budget (long-term debt backed by investment), and with respect to revenues from the personal income tax. Averages of political variables hardly differ. Neither the municipality's level of short-term debt nor being under fiscal supervision is significantly different across groups. As evident from Column (3), however, the 2007 switchers exhibit substantially higher tax revenues.

Table 3: Pretreatment characteristics of the switching groups

	All municipalities				Restricted municipalities			
	Means	Differences between groups			Means	Differences between groups		
	Switch 2009	Switch 2008 minus Switch 2009	Switch 2007 minus Switch 2009	Switch 2006 minus Switch 2009	Switch 2009	Switch 2008 minus Switch 2009	Switch 2007 minus Switch 2009	Switch 2006 minus Switch 2009
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	A. Population							
Population	36,824.36	20,207.72	3,263.14	15,330.30	36,904.35	38,230.19*	20,215.92	73,985.50
	[6,924.10]	(12,908.19)	(10,165.05)	(20,284.76)	[10,543.94]	(20,982.98)	(26,362.42)	(53,304.81)
Urban district	0.037	0.066*	-0.012	0.024	0.057	0.143	0.026	0.125
	[0.018]	(0.036)	(0.024)	(0.046)	[0.043]	(0.085)	(0.071)	(0.126)
Population over 65	0.184	0.004	0.005*	0.006	0.192	-0.001	-0.000	-0.000
	[0.003]	(0.004)	(0.003)	(0.004)	[0.003]	(0.005)	(0.004)	(0.005)
	B. Baseline fiscal variables							
Plan disapproved	0.216	0.002	0.060	0.058	0.692	0.007	0.169**	0.107
	[0.068]	(0.046)	(0.045)	(0.075)	[0.113]	(0.099)	(0.074)	(0.143)
Short-term debt	242.398	68.940	57.368	-14.035	693.5	32.861	48.824	-182.661
	[73.417]	(47.504)	(41.254)	(66.359)	[131.154]	(104.245)	(79.532)	(193.952)
Debt in core budget	925.307	155.718**	223.666***	224.879*	1,105.64	-84.897	281.365	332.597*
	[118.668]	(70.824)	(82.780)	(117.364)	[192.612]	(163.871)	(208.741)	(195.727)
Agric. tax rate	221.399	-8.397	2.173	-1.004	244.27	−19.999***	1.974	-13.068
	[5.940]	(6.528)	(6.193)	(7.578)	[8.713]	(7.597)	(11.859)	(14.665)
Property tax rate	388.452	4.310	4.423	-0.778	408.12	5.005	1.838	3.262
	[5.197]	(3.869)	(3.160)	(6.222)	[5.981]	(5.684)	(3.532)	(6.425)
Business tax rate	416.73	2.527	3.119	5.036	431.03	-2.025	0.177	6.597*
	[3.965]	(2.448)	(2.413)	(3.925)	[5.107]	(3.174)	(2.588)	(3.944)
Total tax revenues	819.42	37.550	64.149**	20.147	716.35	16.355	92.627**	27.915
	[35.550]	(26.491)	(31.822)	(44.227)	[45.678]	(38.844)	(39.660)	(37.575)
Fiscal capacity	776.97	34.749	53.482*	18.534	674.87	16.075	79.839**	21.066
	[33.995]	(25.559)	(28.156)	(42.070)	[40.848]	(33.371)	(33.909)	(32.532)
Gross revenues	1,811.53	-23.484	-3.855	28.482	1,773.24	-73.284	14.936	218.076**
	[33.013]	(40.827)	(46.159)	(53.773)	[60.591]	(63.222)	(88.499)	(111.143)
Revenues from fees	284.33	-30.276*	-25.319	-28.578	272.91	-35.281	-38.377	15.900
	[16.800]	(18.386)	(15.955)	(20.887)	[32.773]	(40.820)	(39.646)	(37.208)
Revenues from PIT	271.13	11.887*	16.005**	10.588	276.58	7.202	13.960	7.073
	[9.791]	(6.326)	(7.398)	(7.945)	[7.131]	(10.531)	(10.755)	(10.015)
Personnel expenditure	420.50	7.254	0.890	-6.516	416.58	10.154	3.640	19.819
	[13.915]	(12.274)	(11.011)	(16.935)	[28.769]	(20.946)	(16.123)	(22.677)
Operating expenditure	396.55	-11.978	-6.772	-9.328	418.74	-13.723	-46.536**	-16.739
	[14.679]	(15.508)	(14.672)	(18.429)	[23.405]	(34.065)	(20.009)	(30.052)
	C. Political characteristics							
Mayor right-wing	0.58	-0.016	0.050	-0.064	0.46	0.046	0.006	0.159
	[0.056]	(0.071)	(0.069)	(0.094)	[0.082]	(0.110)	(0.093)	(0.102)
Mayor left-wing	0.27	0.051	0.014	0.095	0.31	0.045	0.055	0.009
	[0.053]	(0.067)	(0.079)	(0.090)	[0.081]	(0.075)	(0.122)	(0.113)
Divided government	0.32	-0.004	-0.029	-0.092	0.43	-0.060	0.045	−0.373***
	[0.048]	(0.060)	(0.060)	(0.087)	[0.099]	(0.113)	(0.116)	(0.114)
Close election	0.15	0.001	0.052	-0.004	0.093	0.078	0.102	-0.062
	[0.039]	(0.033)	(0.042)	(0.052)	[0.057]	(0.072)	(0.075)	(0.043)
New mayor	0.46	0.001	0.014	-0.042	0.49	0.114	0.094	0.082
	[0.056]	(0.050)	(0.077)	(0.114)	[0.084]	(0.111)	(0.098)	(0.221)
No majority	0.36	0.112*	0.157*	0.040	0.50	0.131	0.230	0.021
	[0.057]	(0.066)	(0.078)	(0.094)	[0.096]	(0.111)	(0.136)	(0.164)
Fragmented	0.74	-0.098*	-0.067	-0.063	0.81	-0.101	-0.112	-0.068
	[0.033]	(0.054)	(0.057)	(0.093)	[0.089]	(0.123)	(0.098)	(0.104)
N	136	126	82	35	35	40	24	11

Notes: This table describes characteristics of the different switching groups in the years 2003 to 2005, i.e. before they introduced accrual accounting. Political variables refer to the local elections in 2004. Municipalities that presented a disapproved consolidation plan in one of the two years preceding the switch are referred to as *restricted*. Column (1) shows the average for all municipalities that implemented accrual accounting in 2009. Columns (2)-(4) compare means in the other switching groups with the average in column (1). Column (5) shows the average for restricted municipalities that implemented accrual accounting in 2009. Columns (6)-(8) compare means in the other restricted switching groups with the average in column (5). Standard errors are reported in parentheses and clustered at the county level; standard deviations are reported in brackets. All financial data are in prices of 2010. Two binary variables are included as control variables; whether a municipality is a urban district and whether it has less than 25,000 inhabitants. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4: Pretreatment trends of the switching groups

	All municipalities				Restricted municipalities			
	Linear trend	Differences between groups			Linear trend	Differences between groups		
		Switch 2008 minus	Switch 2007 minus	Switch 2006 minus		Switch 2008 minus	Switch 2007 minus	Switch 2006 minus
	Switch 2009	Switch 2009	Switch 2009	Switch 2009	Switch 2009	Switch 2009	Switch 2009	Switch 2009
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Population	-12.526	-8.339	-33.789	-77.505	-91.986	-185.077*	-33.118	-171.514
	[25.301]	(80.436)	(40.115)	(78.759)	[41.890]	(96.811)	(101.659)	(213.960)
Short-term debt	50.000	-2.615	6.307	7.905	167.725	-30.358	-9.863	-21.780
	[18.400]	(12.996)	(14.262)	(25.368)	[36.761]	(30.841)	(34.591)	(75.681)
Debt in core budget	-17.498	14.494	0.920	14.223	-22.451	11.052	-37.997*	-12.092
	[9.942]	(11.524)	(8.969)	(11.260)	[15.500]	(16.489)	(19.111)	(13.970)
Agric. tax rate	0.582	1.296**	1.189*	1.922***	0.674	3.251**	3.421***	5.135***
	[0.288]	(0.508)	(0.599)	(0.660)	(0.771)	[1.198]	(1.242)	(1.703)
Property tax rate	2.847	0.883	-0.001	2.058	3.205	2.821	1.922	3.309
	[0.931]	(1.017)	(0.932)	(1.517)	(1.564)	[1.729]	(1.324)	(2.186)
Business tax rate	0.851	0.281	0.699	0.506	0.605	1.189*	2.262**	1.622
	[0.476]	(0.437)	(0.531)	(0.524)	[0.461]	(0.616)	(0.986)	(1.359)
Total tax revenues	2.281	11.993	23.258**	22.184*	2.824	11.847	13.981	-8.702
	[7.901]	(7.656)	(10.603)	(11.862)	[8.142]	(11.672)	(16.334)	(9.896)
Fiscal capacity	11.908	10.032	20.825**	19.002	7.565	9.481	13.513	-8.422
	[6.676]	(6.615)	(9.672)	(11.839)	[6.875]	(10.162)	(13.917)	(7.915)
Gross revenues	-13.610	18.716	6.077	22.415	-15.503	14.903	-35.206	-25.087
	[14.459]	(15.945)	(13.181)	(24.349)	[34.671]	(30.638)	(26.407)	(39.274)
Revenues from fees	-12.047	2.095	-0.692	5.660**	-11.030	4.784	-4.839	2.615
	[2.626]	(2.227)	(3.243)	(2.263)	[4.573]	(3.016)	(8.390)	(5.802)
Revenues from PIT	-18.334	-0.286	-0.535	-0.094	-17.948	-0.341	-1.061	-0.213
	[0.709]	(0.489)	(0.545)	(0.618)	[0.858]	(0.603)	(0.936)	(0.730)
Personnel expenditure	-2.576	0.291	-1.250	-1.055	-2.438	0.449	-2.829	-3.095
	[2.169]	(1.599)	(1.806)	(2.532)	[1.961]	(4.192)	(4.031)	(4.918)
Operating expenditure	-0.717	1.125	4.027	16.916*	5.686	7.999	9.059	16.958
	[4.538]	(3.843)	(4.901)	(8.647)	[11.217]	(9.518)	(12.611)	(21.460)
N	136	126	82	35	35	40	24	11

Notes: This table describes differences in trends of the different switching groups in the years 2003 to 2005, i.e. before they introduced accrual accounting. Municipalities that presented a disapproved consolidation plan in one of the two years preceding the switch are referred to as *restricted*. Column (1) shows the linear trend for all municipalities that implemented accrual accounting in 2009. Columns (2)-(4) compare linear trends of the other switching groups with the trend in column (1). Column (5) shows the linear trend for restricted municipalities that implemented accrual accounting in 2009. Columns (6)-(8) compare linear trends of the other restricted switching groups with the trend in column (5). Standard errors are reported in parentheses and are clustered at the county level; standard deviations are reported in brackets. All financial data are in prices of 2010. Two binary variables are included as control variables; whether a municipality is a urban district and whether it has less than 25,000 inhabitants. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Since we focus on the effects of withdrawing oversight from the restricted municipalities, the potential differences between these are important. Column (5) in Table 3 shows the means for restricted municipalities that switched accounting systems in 2009. Columns (6)-(8) compare the other restricted municipalities to this group. For the restricted municipalities, we again find no significant differences for short-term debt. For the group that implemented accrual accounting in 2008, we find only a small effect for the agricultural property tax, which is mostly irrelevant for local budgets, given that the tax revenue from this source is negligible. However, a few revenue variables differ significantly between early and late switchers. In particular, the 2007 switchers exhibit higher total tax revenues and a higher fiscal capacity relative to the 2009 switching cohort. Finally,

there is also a significant difference in operating expenditures between these groups.

In Table 4 we additionally provide a balance table on pretreatment trends. The results are very similar to the level comparison. The few differences that can be observed between different switching cohorts correspond roughly to the same variables as in levels. Moreover, there are differences between the 2007 and the 2009 switchers, but less so between the 2008 and 2009 switchers, with again less pronounced differences among the restricted switchers. In summary, in levels and in trends, there appear to be some differences between the earlier switchers (2006 and 2007), and between the earlier (in particular 2007) switchers and the late (2008 and 2009) switchers. The latter group, however, appears to be quite homogenous across the two years. As can be seen from the additional Figure A1 in the Appendix, trends in key fiscal variables are also very similar for the 2008 and 2009 switchers. In what follows, we present our econometric results for the full sample of 2006 to 2009 switchers, as well as the results for the group of 2008 and 2009 switchers.

4.3   Event study

Given that our basic DD identification strategy relies on the assumption of common debt trends of the treated and non-treated, we first analyze our data using an event study design. The event is defined as switching to the new accounting system. We estimate the following event study equation separately for the restricted and unrestricted municipalities

$$debt_{it} = \alpha_i + \gamma_{jt} + \sum_{\substack{s=-3 \\ s \neq -1}}^{2} \beta_{\tau+s} \Delta_{\tau+s} + \varepsilon_{it}, \tag{1}$$

where the subscript i indicates the municipality, j a particular group the municipality belongs to, such as being an urban district or not, and t the year. The variable $debt_{it}$ denotes short-term debt per capita, α_i and γ_{jt} are municipality and year-group fixed effects, respectively, $\Delta_{\tau+s}$ are dummy variables, τ is the switching period, and the $\beta_{\tau+s}$ are our parameters of interest.[11]   The estimation results can be found in Table A1 in the Appendix. We normalize to the pre-switching period and provide the resulting event study graphs in Figure 6. The two lower panels show that not much is happening for the unrestricted municipalities, even though there is a significant increase at $\tau + 2$. However,

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[11]For the year-group fixed effects we use different size classes (quintiles), and whether a municipality is an urban district or not. Their inclusion is important to control for the different degree of exposure to expenditure shocks, in particular social and operating expenditures, over time. Without their inclusion, the group of 2008 and 2009 switchers does not show significant pre-trends, but the full sample does.
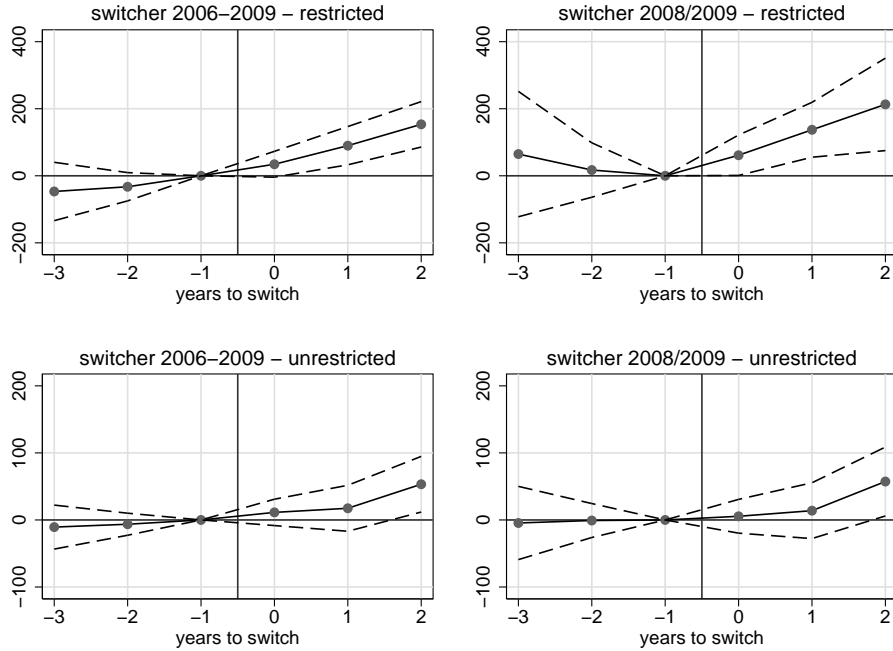
Figure 6: Short-term debt before and after the implementation of accrual accounting (EUR per capita, in prices of 2010). The left panels show municipalities that switched between 2006 and 2009, the right panels municipalities that switched in 2008 or 2009. The upper panels show only the subgroup of restricted municipalities, the lower panels only the subgroup of unrestricted municipalities. The vertical line indicates the switching date. The solid line plots estimates using a quasi-event specification with a balanced panel of municipalities covering the five years surrounding the switch with municipality and time fixed effects. Dummies for population size (quintiles) and for being an urban district are interacted with year fixed effects. Dashed lines indicate 95% confidence intervals. Standard errors are clustered at the municipal level.

for the restricted municipalities the two upper panels indicate a more dynamic picture. The full sample, as well as the sub-sample of the 2008 and 2009 switchers, shows a significant increase in debt after the switch, and the pre-trend is not significant.

4.4 Fixed effects panel model

To implement our DD identification strategy we employ a fixed-effects approach with municipality-specific intercepts, year-group fixed effects, as well as predetermined covariates interacted with time fixed effects. Accordingly, we estimate models of the following form for the per capita debt in municipality i in year t:

$$debt_{it} = \alpha_i + \gamma_{jt} + \beta treat_{it} + \beta_k x_{kit\tau-3} + \varepsilon_{it}, \tag{2}$$

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where α_i are municipality fixed effects, γ_{jt} are either year fixed effects or year-group fixed effects, $treat_{it}$ is a dummy variable indicating whether a restricted municipality has implemented the reform in year t; β is our parameter of interest; $x_{kit\tau-3}$ is a vector of predetermined variables (indexed by k) interacted with time fixed effects, and β_k the corresponding parameter vector to be estimated. As the predetermined variables we use total tax revenues per capita, operating expenditures, the debt in the core budget, and the categorical variable of whether a municipality presented a consolidation plan three years before the switch. This list corresponds to the key variables where Table 3 and Table 4 indicated differences in pretreatment levels or trends. We employ the third lag of these variables, since our definition of restricted depends on the two years preceding the switch.

5 Results for NRW

We estimate Equation (2) for the entire sample of NRW municipalities that switched between 2006 and 2009 as well as for the subgroup of 2008 and 2009 switchers. We provide the corresponding estimates in Table 5. Columns (1) - (4) correspond to the results of all 378 municipalities that implemented accrual accounting in any of the years 2006-2009. Column (1) in Table 5 shows the results for a simple specification with municipality and year fixed effects. Column (2) adds the switching cohort variable interacted with year fixed effects. Column (3) additionally employs class size dummies (based on population quintiles) and an urban district dummy, all interacted with year fixed effects. Finally, the estimation shown in Column (4) also includes the predetermined variables interacted with year fixed effects. All specifications show a highly significant treatment variable. The average treatment effect ranges between roughly €205 and €378 per capita, with the estimated effect of €205 per capita from Column (4) being our preferred estimate.

The results of the estimations using only the 2008 and 2009 switchers are given in Columns (5)-(8) of Table 5. They confirm the findings of the full sample specification. The estimated average treatment effects now range between €242 and €382 per capita, with the estimated effect of €242 from Column (8) being our preferred estimate. Since the mean of short-term debt per capita was €334 in 2005, the debt increase was quantitatively important. This also holds for the restricted municipalities, which had an average per capita debt of €710 in 2005.

We subject these results to a number of robustness checks. First we consider several

Table 5: Effects on short-term debt per capita: NRW municipalities

	Specification							
	Switching date 2006, 2007, 2008 or 2009				Switching date 2008 or 2009			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
treatment$_t$	351.9***	377.9***	316.1***	205.4***	375.2***	382.3***	324.5***	242.5***
	(7.93)	(8.10)	(8.24)	(4.69)	(6.13)	(6.19)	(6.40)	(4.27)
municipality f.e.	yes	yes	yes	yes	yes	yes	yes	yes
year f.e.	yes	no	no	no	yes	no	no	no
year f.e. × switching date	no	yes	yes	yes	no	yes	yes	yes
year f.e. × size class	no	no	yes	yes	no	no	yes	yes
year f.e. × urban district	no	no	yes	yes	no	no	yes	yes
year f.e. × predetermined controls	no	no	no	yes	no	no	no	yes
N	3384	3384	3384	3384	2358	2358	2358	2358
adj. R^2	0.890	0.894	0.912	0.919	0.898	0.901	0.912	0.919

Notes: The dependent variable is short-term debt per capita. *t*-statistics are in parentheses. Standard errors are clustered at the municipal level. Period: 2003-2011. All financial data are in prices of 2010. In models (3), (4), (7), and (8) dummies for population size (quintiles) and for being an urban district are interacted with year fixed effects. Predetermined control variables included in models (4) and (8) are consolidation plan presented, debt in core budget, total tax revenues, and operating expenditure three years before the switch. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

alternative definitions of "restrictedness", and we also analyze the exclusion of certain sub groups of municipalities, such as those that directly exhausted the equalization reserve in the switching year. We find that the results of the effect of withdrawing oversight from the restricted municipalities are robust to these variations in variable definitions or in the estimation sample. These results, and further details about these robustness checks can be found in the Appendix in Table A2. We also consider an alternative estimation based on the approach suggested by Abadie (2005), which modifies the difference-in-differences approach by reweighing, based on the probability of being in the treatment group as determined by a propensity score from the observable characteristics. The corresponding results are presented in the Appendix in Table A3, and they also confirm the findings regarding the increase in short-term debt.

6 Hessian municipalities as a counterfactual

In this section we analyze the effects of the withdrawal of fiscal oversight on local government debt by comparing the development of debt in municipalities in NRW with the development of local government debt in the neighboring state of Hesse. In 2009, Hesse embraced approximately 7 million inhabitants and was divided into 426 municipalities. As a result, the Hessian municipalities are somewhat smaller than those in NRW. Our Hessian data cover the period 2003–2009, and the financial data have been deflated using the consumer price index for Hesse. Table 6 provides descriptive statistics of the Hessian

Variable		Mean	Std. Dev.	Min.	Max.
Population	Metric	14,325.039	37,185.92	655	664,838
Switch 2002	Binary	0.01	0.12	0	1
Switch 2005	Binary	0.01	0.12	0	1
Switch 2006	Binary	0.04	0.18	0	1
Switch 2007	Binary	0.08	0.27	0	1
Switch 2008	Binary	0.26	0.44	0	1
Switch 2009	Binary	0.60	0.49	0	1
Short-term debt[a]	EUR per capita	151.05	333.54	0	3,824.64
Debt in the core budget	EUR per capita	830.83	641.17	0	5,508.57
Total tax revenues	EUR per capita	725.530	384.96	248.53	7397.28
Restricted[b]	Binary	0.18	0.38	0	1

Notes: [a] Data source: RDC of the Federal Statistical Office and Statistical Offices of the Länder, debt statistics, own calculations. [b] There are no data available on whether a Hessian municipality was under direct fiscal oversight. To create an appropriate control group for our restricted municipalities in NRW we can use data on deficits as an indicator for financial distress. Analogous to our specification above, we define municipalities in Hesse to be restricted if they had a high deficit (above the 50th percentile) in one of the two years preceding the switch.

data.

Local governments in Hesse are a very suitable control group for local governments in NRW, for several reasons. First, as a neighboring state, Hesse enjoys a similar macroeconomic environment and is subject to the same federal policy. Second, its economic structure and the degree of urbanization are rather similar, though NRW is somewhat more densely populated. Third, while its municipalities are somewhat smaller on average, they are still large compared to other German states, where the average population size is substantially smaller. Accordingly, the range of tasks carried out by Hessian municipalities can be considered similar to those of NRW municipalities. This is important, since the available local tax instruments and the corresponding tax bases are uniformly determined at the federal level. Related to this, in both states, there is no additional government tier between the local governments and the county governments, as there is in some German states, where local governments are much smaller on average. Fourth, Hesse has a very similar system of fiscal oversight over local government in place. Nevertheless, also in the state of Hesse, the problem of short-term debt of local government is quantitatively an important one. Besides NRW, Hesse is one of only four German states with a relatively high level of short-term local government debt. Fifth, also in Hesse, local government accounting was completely changed to accrual accounting, and the transition period was roughly similar to the timing in NRW.[12] Again, this was not the case for all

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[12]Hessian municipalities first had the option to switch to accrual accounting or to implement an extended version of cash accounting by 2009. However, only two municipalities opted for the latter system. So the Hessian state made accrual accounting mandatory in 2011.

other German states, as some states only partially adopted the reform of local government accounting. Finally, and most importantly, the implementation of accrual accounting was not accompanied by the introduction of a fictitious buffer in Hesse that would have allowed municipalities to escape the Hessian fiscal oversight system.[13] Thus, the switch did not affect fiscal oversight in Hesse, but did so in NRW.

Using the combined Hessian and NRW data we can now additionally employ a triple-difference (DDD) framework. Given that data on the fiscal oversight status of the Hessian municipalities are not available, we consistently define restricted municipalities as those municipalities in NRW and Hesse that had a high deficit in the operating budget in one of the two years preceding the switch, in the sense that their budget deficit was above the 50th percentile. Estimating the corresponding regression models for this enlarged panel with municipalities from both states that implemented accrual accounting between 2006 and 2009, we again find significant effects on short-term debt. As is evident from Table 7, there is a hike in debt for restricted municipalities in NRW and in Hesse upon switching. The increase in NRW, however, is substantially higher. We estimate the additional effect to be between €179 and €222 per capita, with the former figure being our preferred estimate. While these results hint at an effect of the accounting reform itself, the findings provide strong evidence that it was indeed the temporary breakdown of fiscal oversight that caused the larger part of the rise in short-term debt by restricted local governments in NRW.

While our analysis above has provided substantial evidence that there are no clear signs of strategic behavior that could have driven a potential selection into the treatment group of switchers, we cannot fully exclude the possibility of selection on unobservables. The DDD analysis differences out such potential selection effects to the extent that these are the same for municipalities in either state. However, it may be that the strategic incentives are directly linked to the possible motive to escape fiscal oversight. In this case, the strategic effects would differ across the two states, and the DDD analysis would not difference out these effects. Accordingly, to address remaining concerns about endogenous selection, our final exercise exploits the fact that municipalities either belong to NRW or Hesse. While all municipalities in both states switched at some point in time, the

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[13]In 2010 the Hessian Ministry of the Interior issued an ordinance that reserves from the year preceding the switch to accrual accounting could be used to cover deficits. However, in contrast to the law in NRW, which created a pure notional accounting allowance for all municipalities, this ordinance affected only municipalities that actually had real surpluses in the past, and allowed them to indicate these real surpluses in their accounting.

Table 7: Effects on short-term debt per capita, municipalities that switched in 2006, 2007, 2008, or 2009, Hesse and NRW (DDD)

	Specification							
	Switching date 2006, 2007, 2008 or 2009				Switching date 2008 or 2009			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$treatment_t$	243.3***	90.36*	109.2**	116.9**	227.5***	75.61*	81.32*	92.16**
	(7.14)	(1.90)	(2.26)	(2.46)	(4.83)	(1.80)	(1.90)	(2.17)
$treatment_t \times$ nrw		221.9***	220.2***	179.0***		241.2***	237.4***	195.6***
		(3.43)	(3.34)	(2.72)		(3.17)	(3.11)	(2.59)
municipality f.e.	yes	yes	yes	yes	yes	yes	yes	yes
year f.e.	yes	yes	no	no	yes	yes	no	no
year f.e. × size class	yes	yes	yes	yes	yes	yes	yes	yes
year f.e. × urban district	yes	yes	yes	yes	yes	yes	yes	yes
year f.e. × switching date	no	no	yes	yes	no	no	yes	yes
year f.e. × predetermined controls	no	no	no	yes	no	no	no	yes
N	6312	6312	6312	6312	4927	4927	4927	4927
adj. R^2	0.872	0.874	0.875	0.881	0.878	0.880	0.880	0.886

Notes: The dependent variable is short-term debt per capita. t-statistics are in parentheses. Standard errors are clustered at the municipal level. Period: 2003-2011. All financial data are in prices of 2010. Dummies for population size (quintiles) and for being an urban district are interacted with year fixed effects. Predetermined control variables included in models (4) and (8) are debt in core budget, total tax revenues, and a binary variable denoting whether a deficit was presented three years before the switch. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ $p < 0.01$

municipalities in NRW enjoyed the possibility of withdrawal of fiscal oversight at some point during the transition period. This was not the case for the Hessian municipalities.

To exploit this difference between municipalities in NRW and Hesse we estimate another difference-in-differences model that considers the relative change of short-term debt over the entire switching period. For the before period, we consider two different options. In specification A, as reported in Table 8, we use 2003 as the before period, and this estimation includes all municipalities in NRW and Hesse that switched between 2004 and 2009. Specification B uses the year 2005 as the before period, and the corresponding estimations use data from all municipalities in Hesse and NRW that switched between 2006 and 2009. As the after period we use the year 2009 in both specifications. Specification C additionally includes the pretreatment years 2003–2005. Moreover, all models additionally include time and municipality fixed effects.

As a caveat we would like to point out that the identification relies on the assumption that there are no other effects over the entire switching period which affected debt in NRW and Hesse differently. This is why our preferred model is specification B, since it covers a shorter transition period, such that other influences, which may have differed between the two states, are less likely to influence the results. The number of excluded municipalities relative to specification A is only 13, and also the model fit appears to be better.

Columns (2) and (4) in Table 8 indicate that debt increased substantially more in the restricted NRW municipalities relative to their Hessian counterparts. This is in line

Table 8: Effects on short-term debt per capita, overall effect, Hesse and NRW

	Specification					
	A		B		C	
Years included	2003 and 2009		2005 and 2009		2003–05 and 2009	
	(1)	(2)	(3)	(4)	(5)	(6)
year 2009 × nrw	114.3***	2.815	112.1***	32.10**	117.9***	1.915
	(3.63)	(0.15)	(4.91)	(2.18)	(3.69)	(0.10)
year 2009 × nrw × restr		314.5***		261.7***		326.7***
		(2.73)		(3.06)		(2.80)
year 2009 × restr		392.9***		185.0***		390.6***
		(5.01)		(3.35)		(4.89)
year 2005 × nrw					5.823	-30.18***
					(0.41)	(-2.84)
year 2004 × nrw					-26.96***	-32.12***
					(-3.01)	(-4.98)
year 2005 × nrw × restr						65.04
						(1.27)
year 2004 × nrw × restr						-43.81
						(-1.19)
year 2005 × restr						205.7***
						(5.08)
year 2004 × restr						151.5***
						(5.06)
Year f.e.	yes	yes	yes	yes	yes	yes
Municipality f.e.	yes	yes	yes	yes	yes	yes
N	1618	1618	1592	1592	3180	3180
adj. R^2	0.603	0.709	0.823	0.857	0.768	0.822

Notes: The dependent variable is short-term debt per capita. t-statistics are in parentheses. All financial data are in prices of 2010. Standard errors are clustered at the municipal level. A = periods 2003 and 2009, all municipalities switching after 2003 included; B = periods 2005 and 2009, municipalities switching in 2006, 2007, 2008, and 2009 included; C = periods 2003, 2004, 2005, and 2009, municipalities switching in 2006, 2007, 2008, and 2009 included. Municipalities in NRW and Hesse with a high deficit in the operating budget (above the 50th percentile) in 2003 and 2004 are referred to as *restricted* (restr). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

with the withdrawal of oversight in that state only. Additionally, Column (6) of specification C includes pseudo treatments for the years before the first municipalities in the second sample introduced accrual accounting. For these years the interaction effects are statistically insignificant, indicating that time trends in the two states as well as in the restricted subgroups were similar before the treatment. Overall, the findings confirm the DDD results as well as those of Section 5, using only the NRW municipalities.[14]

7 Mechanism

The results show a strong effect of the withdrawal of fiscal oversight on public debt. In this section we investigate the mechanisms behind this increase in more detail. This concerns the particular revenue and expenditure categories as well as the potential political economy channels that are responsible for the debt increase.

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[14]The approach can be further refined by only considering municipalities close to the border between NRW and Hesse, since asymmetric shocks may be less prevalent among them. Using only the municipalities from the border districts yields significant estimates similar to those presented in Table 8.

The analysis of the expenditure and revenue components behind the debt changes is constrained by the comparability of data across the different accounting regimes. Therefore, we only provide evidence on those categories for which the data are sufficiently comparable before and after switching, according to the statistical office of NRW. We display the evidence in event study plots corresponding to variants of Equation (1), where the dependent variable has been replaced by the respective expenditure or revenue category under consideration. The results are shown in Figure 7. First, for none of the variables we see strong evidence of pre-trends. We find significant and quantitatively important increases in operating expenditures, which amount to a substantial share of the increase in short-term debt. Personnel expenditures go up slightly in the two years after the switch, but this increase is not significant. Revenues from fees do not show a clear pattern, but tax revenues increase significantly. At the same time there is a significant decrease in long-term debt financing investment. These results for the restricted switching municipalities in NRW can be compared to the development in unrestricted switching municipalities. The corresponding graphs are in the Appendix, compare Figure A2. For those unrestricted switchers, there is no significant increase in operating expenditures, an increase in tax revenues which has a similar pattern, but is not significant, and also a decrease in long-term debt. The differences and similarities between the restricted and unrestricted switchers point to the importance of operating expenditures to explain a large part of the rise in short-term debt. Finally, it is important to point out that we cannot analyze administrative and social expenditures due to data consistency problems. We conjecture that the remaining gap to explain the debt increase corresponds to these categories.

In our next step, we investigate a number of political economy motives that potentially can explain the extent of the debt increases. The theoretical literature has considered a number of political economy factors that potentially lead to deficit bias, see Alesina and Passalacqua (2016) for a survey. Our finding, that the withdrawal of fiscal oversight has an effect only on previously restricted local governments, may be considered evidence that, at least for the German municipalities under study, the political argument may be less important. One may argue that imperfections in the political process should affect all municipalities in a similar way, whereas the incentives of soft budget constraints are likely to be stronger for previously restricted municipalities with substantially higher average debt levels. However, political economy motives may be more salient in restricted municipalities, i.e. because additional expenditures have a higher marginal benefit for
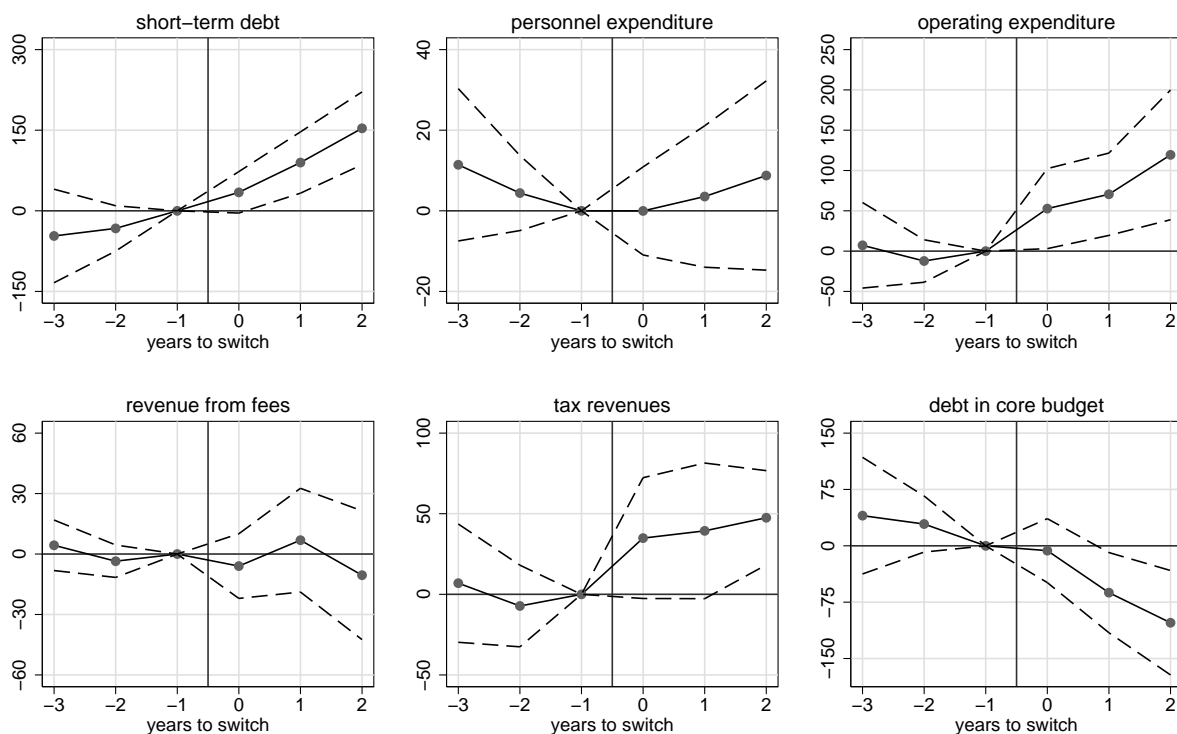
Figure 7: Key fiscal variables before and after the implementation of accrual accounting (EUR per capita, in prices of 2010). The panels show restricted NRW municipalities that switched between 2006 and 2009. The vertical line indicates the switching date. The solid line plots estimates using a quasi-event specification with a balanced panel of municipalities covering the five years surrounding the switch with municipality and time fixed effects. Dummies for population size (quintiles) and for being an urban district are interacted with year fixed effects. Dashed lines indicate 95% confidence intervals. Standard errors are clustered at the municipal level.

voters, or are more visible in such an environment. Alternatively, political economy arguments may interact with the soft budget explanation.

Exploiting the available political data, we interact our treatment effect from Equation (2) with a number of political characteristics of the municipalities. The results are presented in Table 9. The first result indicates that debt increases are stronger in more closely contested municipalities. This finding is in line with a political budget cycle, see again Alesina and Passalacqua (2016) for an overview, or strategic debt motives, see Pettersson-Lidbom (2001). A second finding corresponds to municipalities with a larger share of citizens over 65 which increment their debt more strongly. This parallels results of Grembi et al. (2016), who show a similar effect for Italian local governments with

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Table 9: Effects on short-term debt and characteristics of municipalities: NRW municipalities that switched in 2006, 2007, 2008, or 2009

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$treatment_t$	289.2***	310.3***	287.2***	325.5***	307.5***	304.9***	211.8***	186.6**
	(7.36)	(7.72)	(7.21)	(6.55)	(6.21)	(5.02)	(3.64)	(2.31)
$treatment_t$ × close election	254.7**							283.1**
	(1.97)							(2.35)
$treatment_t$ × new mayor		11.44						-63.06
		(0.17)						(-0.88)
$treatment_t$ × mayor left			111.9					121.7
			(1.24)					(1.37)
$treatment_t$ × divided				-22.57				-42.61
				(-0.29)				(-0.57)
$treatment_t$ × no majority					19.41			11.69
					(0.26)			(0.15)
$treatment_t$ × fragmented						18.18		-8.338
						(0.23)		(-0.11)
$treatment_t$ × old population							140.1**	158.5**
							(2.07)	(2.30)
municipality f.e.	yes	yes	yes	yes	yes	yes	yes	yes
year f.e. × switching date	yes	yes	yes	yes	yes	yes	yes	yes
year f.e. × size class	yes	yes	yes	yes	yes	yes	yes	yes
year f.e. × urban district	yes	yes	yes	yes	yes	yes	yes	yes
N	3384	3384	3384	3384	3384	3384	3384	3384
adj. R^2	0.913	0.912	0.912	0.912	0.912	0.912	0.913	0.914

Notes: The dependent variable is short-term debt per capita. t-statistics are in parentheses. Standard errors are clustered at the municipal level. Period: 2003-2011. All financial data are in prices of 2010. Political characteristics refer to the election period 2004–2009. *left-wing* comprises the center-left party SPD and the Green Party (Bündnis 90/Die Grünen). Dummies for population size (quintiles) and for being an urban district are interacted with year fixed effects. The binary variable *divided government* takes the value 1 if the mayor's party has no majority in the local council; the variable *close election* takes the value 1 if the mayor was elected with a margin of victory of less than five points in 2004; the variable *new mayor* takes the value 1 if another mayor was in office in 2003; the variable *no majority* takes the value 1 if neither the left-wing nor the right-wing have more than half of the seats in the local council; the variable *fragmented* takes the value 1 if more than five parties are present in the council; the variable *old population* takes the value 1 if the share of population ages 65 and above is above the median. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

an older population. However, we do not find support for the fragmentation hypothesis, according to which the budget perception as being a common pool is stronger with fragmented local politics.[15] We also do not find evidence of partisan effects, or that mayors who were elected for the first time contribute to higher debt in restricted municipalities after switching.

8   Discussion and conclusion

Our analysis provides strong evidence for causal effects of fiscal rules on fiscal policy outcomes. The withdrawal of fiscal oversight results in a substantial increase of local government debt for municipalities that were previously constrained by the supervisory

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[15]Our variables "divided", "no majority", and "fragmented" can be seen as picking up different facets of the fragmentation idea. See the caption of Table 9 for details about the construction of these variables.

authorities. This proves the importance of fiscal restraints on local government debt. The results especially highlight the importance of enforcement of fiscal rules. In a system characterized by fiscal rules and decentralized policy-making but without enforcement, fiscal restraints are not automatically binding and their effectiveness as a constraint on debt is substantially reduced. Strong oversight and enforcement are therefore necessary to achieve a binding constraint on debt.

Our findings directly pertain to the ongoing discussion about the role and the proper institutional design of fiscal rules within the Eurozone. In the EU, the establishment of the single currency was accompanied by the introduction of the debt and deficit provisions of the Stability and Growth Pact. These provisions have not worked well in the past, see Wyplosz (2012). More recently, in the aftermath of the European debt crisis, an additional set of fiscal rules to operate at the level of the individual member states has been implemented, such as the requirement to introduce a numerical budget rule, the so-called *debt brake*, into national law. A key question concerns the effectiveness of this new set of decentralized rules. Our results indicate that such regulations are unlikely to be effective, given that the corresponding enforcement mechanisms remain unclear.

In a similar vein, the policy innovation that we exploit was characterized by a loophole, which was intentionally built into the existing fiscal rule and the oversight framework to achieve another policy objective, i.e. the smooth transition to the new accounting regime. Our results suggest that introducing escape clauses to achieve other policy objectives undermines the functioning of fiscal rules. Restricted governments are likely to exploit such escape clauses.

In our analysis we cannot fully discriminate whether the effects of fiscal restraints on fiscal policy outcomes are driven by political imperfections, by soft budget considerations, or an interaction of the two, as we cannot observe bailout expectations. The latter would be necessary to properly identify the debt increase originating from soft budget constraint incentives; see Pettersson-Lidbom (2010). Our finding that the effects are fully driven by the restricted municipalities may be an indicator that explicit or implicit bail-out expectations have played a role for local governments' behavior. However, it remains difficult to assess this soft budget constraint explanation. While the state government of NRW is de facto liable for local government debt, grants to municipal governments have traditionally been rule-based and not discretionary, and explicit bailouts had not been observed before our period of study. Nevertheless, since 2011 – that is, at least two years after the end of the accounting reform we focus on – the state government has

engaged in several measures to increase grants available to local governments and has also established a discretionary program for individual municipalities to address the debt problem of the most indebted among them.[16] In principle, to the extent that the debt problem stems from the existence of soft budget constraints, hardening these constraints by credible no-bailout provisions and sound bankruptcy procedures for local government may also address the deficit challenge. If this is not an option, or if policy-making suffers from a deficit bias, strengthening fiscal oversight and enforcement is important for the functioning of fiscal rules.

Finally, Grembi et al. (2016) show that fiscal restraints are actually effective in an environment where institutional quality is weak, and they argue accordingly that even countries suffering from weak governance might be able to reduce local government debt by introducing fiscal restraints. Given the relatively high institutional quality in Germany, as measured by typical governance quality 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.

References

Ade, F. (2013). Do Creditors Discipline Local Governments? In *Local Public Choice: Five Essays on Fiscal Policy, Interest Rates, and Elections*. Baden-Baden: Nomos.

Alesina, A. and T. Bayoumi (1996). The costs and benefits of fiscal rules: evidence from us states. Technical report, National bureau of economic research.

Alesina, A. and A. Passalacqua (2016). The political economy of government debt. *Handbook of macroeconomics 2*, 2599–2651.

Alesina, A. and R. Perotti (1996). Fiscal Discipline and the Budget Process. *American Economic Review, Papers and Proceedings 86* (2), 401–407.

Baskaran, T. (2012). Soft Budget Constraints and Strategic Interactions in Subnational Borrowing: Evidence from the German States, 1975–2005. *Journal of Urban Economics 71* (1), 114–127.

Baskaran, T. (2014). Identifying Local Tax Mimicking with Administrative Borders and a Policy Reform. *Journal of Public Economics 118*, 41–51.

Ben-Bassat, A., M. Dahan, and E. F. Klor (2016). Is centralization a solution to the soft budget constraint problem? *European Journal of Political Economy 45*, 57–75.

Besley, T. and M. Smart (2007). Fiscal Restraints and Voter Welfare. *Journal of Public Economics 91* (3-4), 755–773.

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[16]The program was decided in December 2011 and was foreseen to last until 2021.

Borck, R., F. M. Fossen, R. Freier, and T. Martin (2015). Race to the debt trap? Spatial econometric evidence on debt in German municipalities. *Regional Science and Urban Economics 53*, 20–37.

Bordignon, M. and G. Turati (2009). Bailing Out Expectations and Public Health Expenditure. *Journal of Health Economics 28*(2), 305–321.

Brennan, G. and J. M. Buchanan (1980). *The Power to Tax: Analytical Foundations of a Fiscal Constitution.* Cambridge: Cambridge University Press.

Buettner, T. and D. E. Wildasin (2006). The Dynamics of Municipal Fiscal Adjustment. *Journal of Public Economics 90*(6–7), 1115–1132.

Burret, H. T. and L. P. Feld (2014). Vertical Effects of Fiscal Rules - The Swiss Experience. *CESifo Working Paper No. 5043.*

Canova, F. and E. Pappa (2006). The elusive costs and the immaterial gains of fiscal constraints. *Journal of Public Economics 90*(8), 1391–1414.

Capeci, J. (1994). Local Fiscal Policies, Default Risk, and Municipal Borrowing Costs. *Journal of Public Economics 53*(1), 73–89.

Drazen, A. (2004). Fiscal Rules from a Political Economy Perspective. In G. F. Kopits (Ed.), *Rules-Based Fiscal Policy in Emerging Markets: Background, Analysis and Prospects.* New York: Palgrave Macmillan.

Dulleck, U. and B. U. Wigger (2015). Politicians as experts, electoral control, and fiscal restraints. *Journal of Public Economics 121*, 106 – 116.

Egger, P. and M. Koethenbuerger (2010). Government Spending and Legislative Organization: Quasi-Experimental Evidence from Germany. *American Economic Journal: Applied Economics 2*(4), 200–212.

Epple, D. and C. Spatt (1986). State Restrictions on Local Debt: Their Role in Preventing Default. *Journal of Public Economics 29*(2), 199–221.

Fatás, A. and I. Mihov (2006). The macroeconomic effects of fiscal rules in the us states. *Journal of public economics 90*(1), 101–117.

Forni, L. and A. Bonfatti (2017). *Fiscal Rules to Tame the Political Budget Cycle: Evidence from Italian Municipalities.* International Monetary Fund.

Glöckner, A. and H. Mühlenkamp (2009). Die kommunale finanzkontrolle. *Zeitschrift für Planung & Unternehmenssteuerung 19*(4), 397–420.

Grembi, V., T. Nannicini, and U. Troiano (2016). Do fiscal rules matter? *American Economic Journal: Applied Economics, forthcoming.*

Halac, M. and P. Yared (2014). Fiscal Rules and Discretion under Persistent Shocks. *Econometrica 82*(5), 1557–1614.

Heinemann, F., L. P. Feld, B. Geys, C. Gröpl, S. Hauptmeier, and A. Kalb (2009). *Der kommunale Kassenkredit zwischen Liquiditätssicherung und Missbrauchsgefahr.* ZEW-Wirtschaftsanalysen. Baden-Baden: Nomos.

Hopland, A. O. (2014). Voter information and electoral outcomes: the Norwegian list of shame. *Public Choice 161*(1-2), 233–255.

Kaufmann, D., A. Kraay, and M. Mastruzzi (2010). The Worldwide Governance Indicators: Methodology and Analytical Issues. *World Bank Policy Research Working Paper No. 5430.*

Kornai, J. (1986). The Soft Budget Constraint. *Kyklos 39*(1), 3–30.

Maskin, E. S. (1999). Recent Theoretical Work on the Soft Budget Constraint. *The American Economic Review 89*(2), 421–425.

Milesi-Ferretti, G. M. (2004). Good, bad or ugly? on the effects of fiscal rules with creative accounting. *Journal of Public Economics 88*(1), 377–394.

NRW (2004). Begründung zum gesetz über ein neues kommunales finanzmanagement für gemeinden im land nordrhein-westfalen (kommunales finanzmanagementgesetz - nkfg nrw).

Persson, T. and L. E. O. Svensson (1989). Why a Stubborn Conservative Would Run a Deficit: Policy with Time-Inconsistent Preferences. *The Quarterly Journal of Economics 104*(2), 325–345.

Pettersson-Lidbom, P. (2001). An empirical investigation of the strategic use of debt. *Journal of Political Economy 109*(3), 570–583.

Pettersson-Lidbom, P. (2010). Dynamic Commitment and the Soft Budget Constraint: An Empirical Test. *American Economic Journal: Economic Policy 2*(3), 154–179.

Poterba, J. M. (1995). Balanced budget rules and fiscal policy: Evidence from the states. *National Tax Journal 48*(3), 329–336.

Poterba, J. M. (1996). Budget Institutions and Fiscal Policy in the U.S. States. *The American Economic Review 86*(2), 395–400.

Poterba, J. M. and K. S. Rueben (2001). Fiscal news, state budget rules, and tax-exempt bond yields. *Journal of urban Economics 50*(3), 537–562.

Qian, Y. and G. Roland (1998). Federalism and the Soft Budget Constraint. *The American Economic Review 88*(5), 1143–1162.

Ridder, H.-G., H.-J. Bruns, and F. Spier (2005). Analysis of Public Management Change Processes: The Case of Local Government Accounting Reforms in Germany. *Public Administration 83*(2), 443–471.

Tabellini, G. and A. Alesina (1990). Voting on the Budget Deficit. *The American Economic Review 80*(1), 37–49.

von Hagen, J. (1991). A Note on the Empirical Effectiveness of Formal Fiscal Restraints. *Journal of Public Economics 44*(2), 199–210.

Wyplosz, C. (2012). Fiscal Rules: Theoretical Issues and Historical Experiences. In *Fiscal Policy after the Financial Crisis*, NBER Chapters.

A Appendix: Data sources

The data have been combined from different sources. Municipality-level population and financial data are obtained from the state's statistical office *(Landesbetrieb Information und Technik Nordrhein-Westfalen)*, data on debt for years 2003-2009 from the RDC of the Federal Statistical Office and Statistical Offices of the Länder. Financial data have been deflated using the consumer price index for NRW.

Additionally, we collected data on the accounting system switchover 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 obliged to present a budget consolidation plan and, if so, whether it was approved was extracted from publications of the Ministry of the Interior and completed by information from municipalities. Data on local election outcomes are obtained from the state's election supervisor (*Landeswahlleiterin des Landes NRW*).

The population and financial data for Hesse are from the Hessian statistical office *(Hessisches Statistisches Landesamt)*. Further data on deficits and the implementation date of accrual accounting were obtained from the state's Ministry of the Interior.
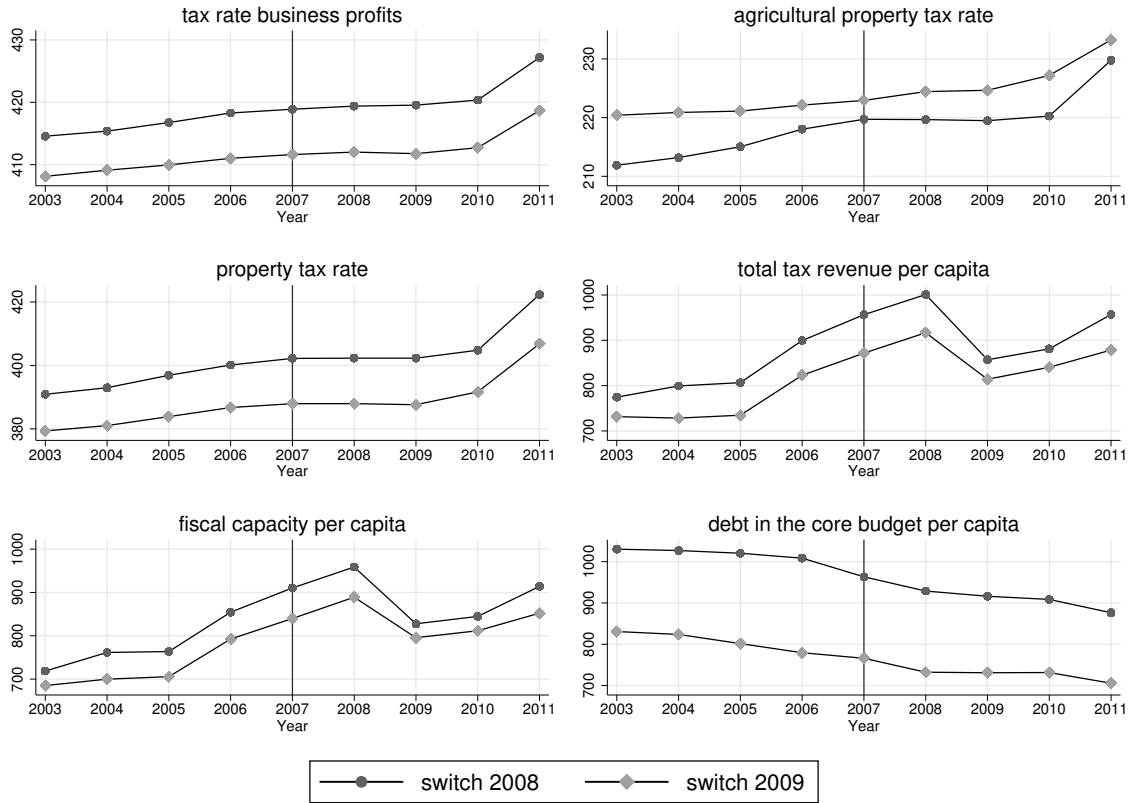
B Appendix: Additional Figures

Figure A1: Tax rates, total tax revenues, fiscal capacity, and debt in the core budget per capita (2003–2011), NRW municipalities
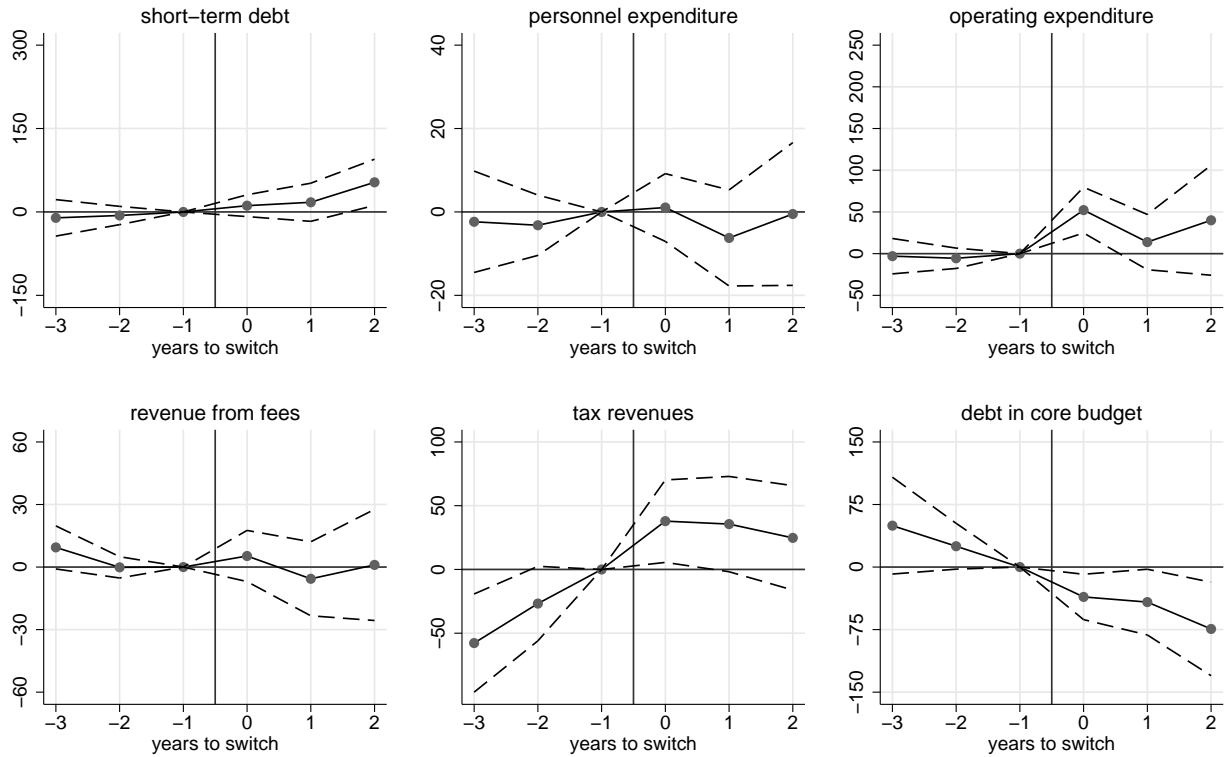
Figure A2: Key fiscal variables before and after the implementation of accrual accounting (EUR per capita, in prices of 2010). The panels show unrestricted NRW municipalities that switched between 2006 and 2009. The vertical line indicates the switching date. The solid line plots estimates using a quasi-event specification with a balanced panel of municipalities covering the five years surrounding the switch with municipality and time fixed effects. Dummies for population size (quintiles) and for being an urban district are interacted with year fixed effects. Dashed lines indicate 95% confidence intervals. Standard errors are clustered at the municipal level.

C Appendix: Additional Tables

Table A1: Quasi-event study: Effects on short-term debt per capita: NRW municipalities

	Specification							
	Switching date 2006, 2007, 2008 or 2009				Switching date 2008 or 2009			
	Restricted		Unrestricted		Restricted		Unrestricted	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
switch$_{(t-3)}$	-46.77	-0.170	-10.62	1.445*	64.81	-0.131	-4.520	0.876
	(-1.06)	(-1.17)	(-0.64)	(1.95)	(0.69)	(-0.65)	(-0.16)	(1.50)
switch$_{(t-2)}$	-32.71	-0.101	-6.367	0.386	17.19	-0.100	-0.830	0.128
	(-1.54)	(-1.35)	(-0.76)	(0.81)	(0.42)	(-1.09)	(-0.06)	(0.99)
switch$_t$	34.39*	0.119*	11.28	0.144	61.36**	0.187**	5.490	0.0420
	(1.77)	(1.87)	(1.13)	(0.42)	(2.03)	(2.47)	(0.43)	(0.07)
switch$_{(t+1)}$	89.86***	0.317***	17.42	-0.591	137.3***	0.423***	13.84	-0.305
	(3.12)	(3.07)	(1.00)	(-1.13)	(3.34)	(3.29)	(0.66)	(-0.72)
switch$_{(t+2)}$	153.5***	0.538***	53.29**	-0.575	213.0***	0.602***	57.35**	0.307
	(4.49)	(3.84)	(2.53)	(-0.77)	(3.08)	(3.11)	(2.21)	(0.92)
municipality f.e.	yes	yes	yes	yes	yes	yes	yes	yes
year f.e.	yes	yes	yes	yes	yes	yes	yes	yes
year f.e. × size class	yes	yes	yes	yes	yes	yes	yes	yes
year f.e. × urban district	yes	yes	yes	yes	yes	yes	yes	yes
N	660	577	1152	184	450	394	792	121

Notes: The dependent variable is short-term debt per capita in models (1), (3), (5), and (7), and log(short-term debt) in models (2), (4), (6), and (8). Estimations of a quasi-event specification with a balanced panel of municipalities covering the six years surrounding the switch. Dummies for population size (quintiles) and for being an urban district are interacted with year f.e.. t-statistics are in parentheses. Standard errors are clustered at the municipal level. All financial data are in prices of 2010. Only municipalities with at least one disapproved consolidation plan in the two years preceding the switch are included in models (1), (2), (5), and (6). In models (3), (4), (7), and (8) only municipalities with no consolidation plan in the two years preceding the switch are included. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A2: Robustness check: Different measures for "restricted" and exclusion of subgroups

	Specification							
	Switching date 2006, 2007, 2008 or 2009				Switching date 2008 or 2009			
	Treatment measure		Exclusion of subgroups		Treatment measure		Exclusion of subgroups	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
treatment$_t$	375.4***	354.0***	164.1***	270.6***	382.9***	382.5***	146.9***	255.9***
	(7.40)	(8.45)	(4.33)	(7.44)	(5.88)	(6.64)	(3.42)	(5.39)
municipality f.e.	yes	yes	yes	yes	yes	yes	yes	yes
year f.e. × switching date	yes	yes	yes	yes	yes	yes	yes	yes
year f.e. × size class	yes	yes	yes	yes	yes	yes	yes	yes
year f.e. × urban district	yes	yes	yes	yes	yes	yes	yes	yes
N	3384	3384	2961	3186	2358	2358	2115	2196
adj. R^2	0.912	0.913	0.833	0.855	0.919	0.920	0.833	0.857

Notes: The dependent variable is short-term debt per capita. t-statistics are in parentheses. Standard errors are clustered at the municipal level. All financial data are in prices of 2010. Dummies for population size (quintiles) and for being an urban district are interacted with year fixed effects. In models (1) and (5) municipalities that presented a budget consolidation plan in 2005 that had been disapproved are included in the treatment group. In models (2) and (6) municipalities with disapproved consolidation plans in the three years before the switch. In models (3) and (7) all municipalities that remained under oversight also in the year after the switch are excluded. In models (4) and (8) all urban districts are excluded. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A3: Robustness check: Effects of relaxed supervision on short-term debt for different time spans

	Specification					
	Change from 2007 to 2008		Change from 2007 to 2009		Change from 2005 to 2007	
	(1)	(2)	(3)	(4)	(5)	(6)
switch2008	-5.382	147.8**	7.337	195.8**	-12.50	3.869
	(-0.30)	(2.23)	(0.31)	(2.52)	(-0.67)	(0.02)
switch2008 × restricted	104.7**		190.6**		48.28	
	(2.05)		(2.38)		(0.49)	
Number of municipalities	262	75	262	75	262	75

Notes: The table reports estimates of the effects of relaxed supervision on short-term debt using Abadie's semiparametric difference-in-difference estimator. Municipalities that implemented accrual accounting in 2008 or 2009 are included. The dependent variables are the per capita changes of short-term debt for different time spans: between 2007 and 2008 in models (1)-(2), between 2007 and 2009 in models (3)-(4), and, as a robustness check, between 2005 and 2007 in models (5)-(6). Control variables included to estimate the propensity score refer to the baseline year of the time period (2007 or 2005): population, population squared, tax rate on agricultural land, tax rate on property, tax rate on business profits, municipal tax revenues from PIT, debt in the core budget, total expenditures, consolidation plan disapproved in preceding year. The estimations use a logit specification of degree 1 to estimate the propensity score. Municipalities that presented a disapproved budget consolidation plan in one of the two years preceding the switch are referred to as *restricted*. Models (2), (4), and (6) include only *restricted* municipalities. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.