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The indirect effects of direct democracy: local government size and non-budgetary voter initiatives in Germany

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Abstract Recently, a wide and empirically backed consensus has emerged arguing that direct democratic control over government's spending decisions through initiatives and referendums constrains government size. This paper extends the discussion to German direct democracy reforms of the mid-1990s, which granted voters rights to launch initiatives on local issues, but neither the right nor the responsibility of voting on the implied costs of these initiatives. An analysis of around 2300 voter initiatives in the population of around 13,000 German municipalities from 2002 to 2009 demonstrates that in this sample—and in contrast to most of the Swiss and US evidence—direct democracy causes an expansion of local government size on average by around 8 % in annual per capita expenditure and revenue per initiative (on economic projects). This quite substantial increase in government size is financed by an increase in local taxes.

1 Introduction

Whether and how direct democracy affects government size is a non-trivial question. The practice of delegating a part of the decision-making power from elected representatives directly to voters through initiatives and referendums on single-issued topics implies changes to the political process that determines the equilibrium economic

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and fiscal policies. In an ideal median voter, world competition between politicians (the agent) should drive the bundle of government policies to the point preferred by the median voter (the principal). Public choice scholars, however, argue that the government has a systematic overspending bias because of the influence of bureaucrats' detrimental incentives, lobbying by special interest groups, logrolling in the legislature and many other principal–agent problems (Brennan and Buchanan 1980).

Direct citizen approval of spending decisions via referendums has been for long viewed as one mechanism of the fiscal constitution that constrains the government's inherent overspending bias (Romer and Rosenthal 1979), for example, by bringing actual policies closer in line with the fiscally more conservative preferences of the median voter (Peltzman 1992). Likewise the case of voter initiative, which, by granting citizens wide opportunities to set the political agenda, may further shift the power to voters themselves, thus alleviating the principal–agent problems (Matsusaka 2004). This logic is then extended to a broader umbrella term—*direct democracy*[1]—with a consensus that direct democracy negatively affects government size (Kirchgässner 2000).

This paper argues that this relatively broad consensus does not capture the complete story. First, complex principal–agent interactions may result in different outcomes in different political environments. For example, Matsusaka and McCarty (2001) demonstrate that the effect of the initiative is conditional on representative agency problems and voter preferences, which may, of course, vary across contexts. The empirical literature, however, is mostly concentrated on the experience of a few countries—the USA, Switzerland and more recently also on Sweden[2]—and thus critically depends on their distinct systems of fiscal governance. This lack-of-generality argument is especially worrisome, because often direct democratic institutions are more applied at state- and local levels where the cross-country heterogeneity in fiscal institutions becomes more apparent than at the national level.

Second, the institutions of direct democracy can be decisively different. For example, Freitag and Vatter (2006) make a distinction between fiscal referendums and initiatives in the Swiss context, and find that only the former matter for taxation-related outcomes. Of course, comparisons of within-country differences in direct democratic institutions are limited because of the limited nature of such differences, while cross-country differences may not be directly comparable. Nevertheless, Blume et al. (2009) and Blume and Voigt (2012) recently attempt to exploit cross-country variation in direct democratic institutions and, among others, find that the right of referendums at the national level is negatively correlated with government spending, while initiatives have an opposite relation. A further, potentially relevant, feature of direct democratic instruments may be whether these are allowed to address fiscal issues directly. Many constitutions, including the German institutions of local direct democracy, exclude

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[1] See Matsusaka (2005) for an introduction.

[2] Among others (Zax (1989), Farnham (1990), Matsusaka (1995), Camobreco (1998), Matsusaka (2000), Bails and Tieslau (2000), Besley and Case (2003), Blomberg et al. (2004), Matsusaka (2004), Marschall and Ruhil (2005), Primo (2010), Salvino et al. (2012) for the USA; Pommerehne (1978), Feld and Kirchgässner (2001), Feld and Matsusaka (2003), Bodmer (2004), Funk and Gathmann (2011) for Switzerland; and Hinnerich and Pettersson-Lidbom (2014) for Sweden.

this possibility. For example, Blume et al. (2011) interpret their evidence of budget-enhancing effects of German initiatives due to a lack of fiscal referendums in Germany.

Against this background, this paper pioneers to extend the analysis to Germany[3]—a compelling case of comparison—where in the mid-1990s its states, the Länder, have independently gone through a series of reforms introducing nonidentical institutions of direct democracy at the local level. As a result, now all German municipalities allow for the right of the voter initiative. One of the critical differences of German direct democratic institutions to that of Swiss or US ones is that the constitutions of all German states share the common property of the so-called *fiscal-taboo*, i.e., initiatives directly related to municipal budgets are prohibited by all state constitutions. This is critical to the developed mechanism on how direct democracy affects fiscal outcomes, because, as discussed above, it is precisely the citizens' right to veto the government's spending decisions that serve as the mechanism to constrain its overspending bias. Now, what happens if voters are granted the right to set the agenda and directly vote on projects of their own choice—including ones relevant for the economy and, thus, indirectly to the fiscal system—but neither having the right nor the responsibility of voting on the implied costs of these initiatives?

Surprisingly, this property of fiscal-taboo has discouraged economists from doing research on understanding the budgetary effects of German direct democratic institutions, possibly assuming that the fiscal-taboo by definition implies irrelevance of the initiatives for the budgets. On the contrary, this paper exploits a novel dataset containing detailed information on close to 2300 voter initiatives that took place in the universe of around 13,000 German municipalities from 2002 to 2009 to study their effect on local public finances. To address the endogeneity between direct democratic activity and local public policies (e.g., Marschall and Ruhil 2005; Funk and Gathmann 2011; Asatryan et al., forthcoming), I use state- and municipality-varying legislative thresholds on the minimum number of signatures required to launch initiatives as plausibly exogenous predictors of observed initiatives to build an instrumental variable identification.

Unlike the seeming irrelevance of these initiatives for fiscal performance, the results indicate that in my sample—and in contrast to the Swiss and US evidence—direct democracy causes an expansion of local government size amounting to an average increase of up to 8 % in annual per capita expenditure and revenue per initiative on economic issues. I also show that this expansion of government size is (at least partly) financed by increased local tax rates (on property and local businesses) and not through budget deficits.

The remainder of this paper is structured as follows: In Sect. 2, I discuss the German direct democracy reforms, and since these are being analyzed for the first time, I go

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[3] There are two recent exceptions. Firstly, Blume et al. (2011) compare local government expenditures in the state of Baden-Württemberg to that of the neighboring state of Bayern exploiting the fact that direct democracy was introduced at different time points in the two states. The study, however, relies on small samples, as the local-level fiscal data are aggregated to state level. Secondly, Asatryan et al. (forthcoming) and Asatryan et al. (2014) address some of the empirical concerns by presenting quasi-experimental evidence on, respectively, spending- and taxation-related effects of initiatives. However, the papers concentrate only on one German state, Bayern. All three studies find that in their given samples, direct democracy expands local government size.

in some detail to present descriptive evidence on the cross-state differences in these institutions. In subsequent Sect. 3, I describe the data and develop the identification strategy. Section 4 presents the results, followed by conclusions in Sect. 5.

2 German institutions of direct democracy

At least for the post-World War II period, Germany has not been too famous for its direct democratic institutions. And rightfully so: Although the first German democratic constitution of the Weimar Republic (1918–1919) included various elements of direct democracy (Schiller 2011), the multiple uses of plebiscites in 1934, 1936 and 1938 by the Nazi dictatorship to legitimize their power discredited the concept of direct democracy for the decades to come (Schiller 2011). As a result, the new post-war constitution of the Federal Republic of Germany, the "Grundgesetz," was almost purely representative,[4] and to date there has not been any practice of direct democracy on the national level (Eder et al. 2009). On the sub-national levels, the constitutions in seven states (all Western) allowed for some—although very restrictive—elements of direct democracy (Setala and Schiller 2012), while at the municipal level, laws of state-imposed direct democracy were virtually nonexistent.[5,6]

The years 1989–1990 and the peaceful collapse of Communism in Eastern Germany mark a turning point. Since German reunification most Länder adopted or liberalized their direct democracy laws on the state level, and all Länder have independently gone through a series of reforms introducing nonidentical institutions of direct democracy at the local level. In today's practice, it seems direct democracy is becoming part of Germany's political scene—a fact, I argue, largely neglected in the economics profession.

The former East German states, motivated to rebuild their institutions of participatory democracy, were the first to grant their citizens the right of local-level initiatives.[7] The Western states followed,[8] however, with quite a different motivation. Here, the innovation was largely determined by the need to reform the local public administration toward strengthening its efficiency in the new competitive environment, and was undertaken parallel to other administrative reforms (Wollmann 2000; Asatryan and De Witte 2015).

A remarkable case was the direct democratic reform in Bayern. Rather than a change imposed by politicians, here the reform came bottom-up through the right of the citizen initiative at the state level. Despite significant barriers, a popular mobilization in 1995 collected nearly 1.2 million signatures comfortably passing the requirements to launch

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[4] Except for a mandatory referendum for territorial changes.

[5] The only exception is the state of Baden-Württemberg, where the right of the initiative was introduced to municipal law in 1956.

[6] To avoid confusion, throughout the study I will use the German names of the Länder (the states) rather than their English translations.

[7] Including Brandenburg, Mecklenburg-Vorpommern, Sachsen, Sachsen-Anhalt and Thüringen in 1990–1993, and Berlin later in 2005.

[8] Including Bayern, Bremen, Hamburg, Hessen, Niedersachsen, Nordrhein-Westfalen, Rheinland-Pfalz and Saarland in 1993–1998, Schleswig-Holstein earlier in 1990, and Baden-Württemberg, as noted, in 1956.

a statewide initiative[9] demanding direct democracy at the local level. The initiative was voted on later that year collecting 57.8 % "Yes" votes (Verhulst and Nijeboer 2008). Due to its strong roots, the Bavarian direct democratic institutions turned out to be one of the most comprehensive ones among German states both in terms of their legislative openness and their exhaustive usage in practice. Citizens of the state of Hamburg in 1998 and those of Thüringen in 2009 went through a similar path by exploiting their right of the initiative at the state level to introduce and reform direct democracy at the local level. Non-coincidentally, the latter two states ended up with quite strong direct democratic institutions too.

These cross-state historical differences in their paths to direct democracy imply interesting variations in their direct democratic institutions. I summarize the most relevant ones in Table 6 of the "Appendix." The most usual instrument of direct democracy, present in all states, is the citizens' right of *petitions* ("Bürgerbegehren") that voters can launch on an issue within the competencies of the municipality. If the given amount of signatures (the thresholds are presented in columns 2–3 of Table 6) are collected within the maximum allowed time (column 6), the initiative is implemented as an *initiative* ("Bürgerentscheid") which is then additionally subject to certain quorum requirements (columns 4–5).

Most, but not all, states also allow for the *council-referendum* ("Ratsreferendum"), which is a referendum called by city councils (on average about a tenth of all initiatives). Regarding the topics, all states—as discussed earlier and one of the focal points of this paper—exclude the possibility of initiatives directly concerning the municipal budgets (i.e., *the fiscal-taboo*), and have different lists of other prohibited topics (the so-called *off-limits issues*). In addition, some states restrict the topics of initiatives by a catalog of allowed issues (*positive topics*: column 8), and all states with the exclusion of Bayern and the city-state of Bremen require to submit a cost recovery proposal with the initiative. These differences suggest a great deal of variation in the actual use of observed initiatives (columns 10–11).

Most notably in Bayern, the liberal direct democratic institutions[10] adopted in 1995 imply the highest number of observed initiatives (around 900 for the period between 2002 and 2009) and the highest rate of success of 47 % (Fig. 1). In contrast, its Western neighbor Baden-Württemberg[11] of around the same size, where direct democracy has been in place decades earlier (since 1956), but with much tighter regulations, hosted only 203 initiatives in the same period.

Regarding the topics of initiatives, it seems people are most concerned when it comes to securing general public services. Almost every second initiative in our sample is about infrastructural projects such as transportation, basic supply of water, energy and other utilities, and, importantly, also including social infrastructure such as health, education or other facilities under municipal discretion. The second most frequently observed category are the economic issues with over a quarter of all initia-

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[9] Around 900,000 signatures (10 % threshold) were to be collected in 2 weeks time.

[10] Low signature and quorum thresholds, unlimited time for signature collection, absence of a cost recovery proposal requirement, relatively broad areas where initiatives are allowed, etc.

[11] With higher quorum thresholds, a few weeks of time for signature collection, cost recovery proposal requirement, wide restrictions on topics of initiatives, etc.
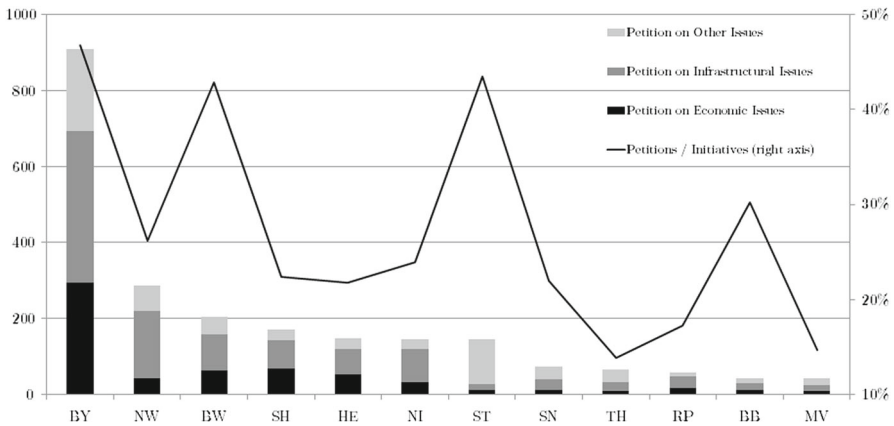
Fig. 1 Frequency and topics of local initiatives across German Länder, 2002–2009. *Notes*: Total number of local initiatives across German Länder per topic (*bars*; left-axis), and their success rate (*line*; right-axis)

tives. Given the fiscal-taboo, these are again initiatives to secure the desired amount of local public goods—often with no necessary consideration of their implied costs for the local budgets—and include topics such as contra-privatization proposals, blocking the construction of various economic projects such as energy plants, mobile-phone towers and shopping centers. The proposed direct costs of initiatives are often not too high—on average ranging from 14,000 Euros in Sachsen-Anhalt to over 155,000 Euros in Nordrhein-Westfalen (column 9 of Table 6)—and they are, on average, not much higher for economic initiatives. The indirect losses, however, such as through unrealized private sector investments, may imply certain costs to the local budgets. On the other hand, as discussed in the introduction, the right of the initiative gives the voters the tool to act as a watchdog against bureaucrats' possible failures in designing and implementing fiscal policies. This is the main dilemma I will face throughout the paper.

3 Data and identification

The sample consists of an unbalanced panel of the population of 12,000–13,000 German municipalities across 13 of its 16 states for the period between 2002 and 2009. The city-states of Berlin, Bremen and Hamburg are excluded from the analysis.[12] For the resulting sample, I collect town-level information on observed initiatives, and merge these to data on municipal fiscal and other characteristics. Table 7 of the "Appendix" presents the summary statistics.

The data on direct democratic activity (including information on the date petitions and initiatives were implemented, their type, the proposed cost that these initiatives would imply, their topic and the result) are available for the population of German towns. These are then merged with municipal fiscal variables of interest: total annual per capita expenditure and revenue in real terms; local budget deficits as share of budget

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[12] I exclude these from the sample because initiatives are implemented either on city (same as state) or city-district levels, both being incomparable to municipalities.

revenues; and two taxes—the business tax and the (non-agricultural) property tax[13]—
over which German municipalities set the tax rates. A standard set of control variables
are also employed including: total population, share of working age population and
share of unemployed as demographic statistics, and share of the sum of left- and
right-leaning delegates at local councils to control for ideological differences.

To estimate the causal effect of direct democracy on local fiscal outcomes, I specify
an equation of the following form:

$$FiscalVar_{i,t} = \alpha_1 + \delta \cdot DirectDemocracy_{i,t-1} + \beta_1 \cdot Controls_{i,t} + \mu_{1c} + \eta_{1t} + \epsilon_{1i,t}, \quad (1)$$

where the dependent variable *FiscalVar* is the fiscal variable of interest as spec-
ified above (i.e., expenditure, revenue, taxes, or deficit). On the right-hand side,
Controls is a set of standard demographic and political controls again listed above,
and *DirectDemocracy* is a binary variable indicating whether a *petition*—alternatively:
initiative[14]—has taken place in municipality i in year $t − 1$. μ and η are county and
year dummies,[15] and ϵ is an unobserved error term.

Now, the main challenge is to solve the possible endogeneity between direct demo-
cratic activity and local fiscal policies. Equation 1 may result in biased estimates, for
example, because of the omission of voters' preferences which may simultaneously
determine both the propensity of voters toward exploiting their rights given by direct
democracy laws and their preferences for local fiscal policies. I treat some of this bias
by controlling for observable town-characteristics, and by including fixed effects for
unobservable time-constant factors. However, other factors, such as the voters' pref-
erences as in the example, are unobserved and may vary in time and thus are included
in the error term violating the independence assumption. As discussed by Asatryan
et al. (forthcoming), causality might be problematic as well. With direct democracy
at hand, voters do not have to wait until the next elections anymore, but can directly
react to government policies (e. g. , changes in the level of spending or taxation) with
opting for more or less initiatives.

I solve this endogeneity problem by means of a two-stage instrumental vari-
able identification strategy.[16] The first-stage specification, where the latent *Direct-
Democracy** variable is regressed on an exogenous instrument and all of the previous

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[13] The property tax may additionally have a different rate on agricultural land.

[14] Initiative is a stronger measure, since, as defined above, it captures only those petitions that passed
the legislative process and were put to vote. I nevertheless run regression on both variables, since a failed
petition (one which did not reach the polls) may still be relevant through a signal (or a threat) to politicians
to implement the required policy (and thus eliminating the need for an initiative).

[15] Counties are a unit of organization one step higher than the towns and are equivalent to the European
NUTS3 classification. They are defined either on the level of individual cities ("Kreisfreie Stadt") or, in
rural areas, on the level of counties including several towns ("Landkreis").

[16] The literature deals with these issues in different ways. Most within-country studies directly compare
sub-national units with and without direct democratic institutions and control for time-invariant factors
by fixed effects. Cross-country studies have a similar empirical strategy. These can be questioned on the
grounds of institutions being endogenous. Recent studies have applied arguably more credible identification
techniques such as the use of natural experiments by Hinnerich and Pettersson-Lidbom (2014) and Asatryan
et al. (forthcoming), respectively, in Sweden and Germany. In contrast to these, all units in my setting have
some institutions of direct democracy, thus I look at the actual use of direct democratic instruments.

regressors (including the fixed effects), takes the following form:

$$DirectDemocracy^*_{i,t} = \alpha_2 + \gamma \cdot Institutions_{i,t} + \beta_2 \cdot Controls_{i,t} + \mu_{2c} + \eta_{2t} + \epsilon_{2i,t},$$

$$DirectDemocracy_{it} = \begin{cases} 1, & \text{if } DirectDemocracy^*_{it} > 0 \\ 0, & \text{otherwise} \end{cases} \tag{2}$$

where *Institutions* is the exogenous variable capturing state-imposed direct democratic institutions. I primarily concentrate on the minimum signatures required to launch an initiative. These requirements are set by states and were hand-collected by respective state constitutions (see Table 6).

For my identification to be valid, it is essential that signature requirements are exogenous to the frequency of observed initiatives. This assumption is plausible because, first, these laws were adopted well before the period of analysis and mainly in the mid-1990s, but in some cases as early as 1956 (Table 6); second and more importantly, the laws are adopted at the state level—and *not* by the local governments—either by the state parliaments or through initiatives at the state level such as in Bayern in 1995.

The signature requirements provide with a good deal of variation. They vary both by-state (since states decide) and overtime (because of state-level changes in institutions and town-level population growth or decline). These requirements also vary across towns within-states, because they are usually set to be a (decreasing) function of population thresholds. Since both the fiscal variables of interest and the instrument are size-dependent, as robustness tests I additionally control for several indicators of urbanization: squared total population, share of residential and agricultural areas, and number of registered firms.

For the two-stage least squares (2SLS) estimator to be consistent, as usual, I further assume that there is no perfect linear relationship between the instruments, and that the error term of Eq. 1 has a zero mean and is uncorrelated with any of the instruments. For asymptotic efficiency, I report standard errors that are robust to heteroskedasticity of unknown form. Note also that with this standard 2SLS approach, I estimate linear functions in both of the stages and thus ignore the binary nature of the endogenous variable. As suggested by Angrist and Pischke (2008), however, this linear estimation of the first stage is not incorrect and is certainly widely applied.[17]

4 Results

4.1 First-stage results: determinants of initiatives

Before estimating the causal effect of direct democracy on fiscal outcomes, I first study the determinants of initiatives in order to identify the instruments for the 2SLS estimation. Results from estimating Eq. 2 are collected in Table 1, where in columns (1)–(4) the dependent variables measuring direct democratic activity are dummies,

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[17] Some well-known applications are, for example, Angrist (1990) or Imbens and Klaauw (1995). Angrist and Krueger (2001) summarizes other similar applications, and Angrist (2001) extends the discussion to cases where the (second stage) dependent variable is also limited.

Table 1 Determinants of observed initiatives (first-stage results)

Variables	(1) Petition	(2) Petition economy	(3) Petition infrastructure	(4) Initiative
Signature requirement	−2.3348***	−0.5073***	−1.1668***	−0.8011***
	(0.3387)	(0.1435)	(0.2217)	(0.1779)
Log population	0.0097***	0.0022***	0.0050***	0.0035***
	(0.0009)	(0.0004)	(0.0006)	(0.0005)
Share working age	−0.0450**	−0.0163	−0.0163	−0.0098
	(0.0227)	(0.0113)	(0.0144)	(0.0145)
Unemployment	0.0491*	0.0172	0.0403**	0.0082
	(0.0289)	(0.0140)	(0.0197)	(0.0164)
Left share	0.0107	0.0352**	−0.0321	0.0446**
	(0.0352)	(0.0159)	(0.0226)	(0.0206)
Right share	−0.0158	0.0285*	−0.0435*	0.0338
	(0.0348)	(0.0150)	(0.0226)	(0.0207)
Log pc expenditure	0.0058***	0.0021*	0.0037***	0.0014
	(0.0022)	(0.0011)	(0.0014)	(0.0013)
Constant	0.0782	0.0061	0.0270	−0.0420
	(0.0702)	(0.0370)	(0.0445)	(0.0361)
Observations	62,656	62,656	62,656	62,656
R-squared	0.1041	0.046	0.0733	0.0488

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$

OLS estimates of the regression specified in Eq. 2. Dependent variable is a direct democracy dummy specified for each column. All regressions include time and county fixed effects (not reported). Standard errors are robust to heteroskedasticity and are clustered at municipal level

respectively, for *petitions* (a total amount of 2288 over the whole sample), *petitions on economy* and *petitions on infrastructure* (around 27 and 45 % of petitions respectively), and *initiatives* (a petition that has successfully gone through the legal procedure and was put to vote; around 35 % of petitions).

Table 1 demonstrates that, as expected, higher *signature requirements* are significantly correlated with fewer petitions and initiatives. These results are remarkably strong and robust, thus making the institution of signature requirements a good candidate as an instrument for the second-stage regressions.[18] The strong effect of institutions on the frequency of initiatives is not new to the literature. In the German context, Arnold and Freier (2015) demonstrate this with local-level data from Bayern using a RDD setup, and Eder et al. (2009) present evidence on the level of German states.

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[18] More instruments can be constructed by looking at additional details of state-level direct democratic institutions. These include the presence of a list of positive topics in state constitutions, the maximum allowed time to collect signatures, and a quorum threshold on the number of casted eligible votes for the initiatives to be approved. The working paper version of this article presents analysis also with these instruments (Asatryan 2014). It shows that signature requirements are the most important driver of initiatives.

Other than the institutional determinants of direct democratic activity, it is also interesting to observe that the size of the town, the share of unemployed and the share of kids and pensioners are all positively correlated with the number of initiatives. Local government expenditures are also among the positive and robust determinants of initiatives, suggesting that addressing the issues of endogeneity and reverse causality are of crucial importance. Towns with more left-leaning councils also host more initiatives.

4.2 Main results

The results of the 2SLS estimation as specified in Eqs. 1 and 2 are presented in Table 2. These demonstrate that direct democratic petitions have a significantly positive impact on both government expenditure and revenue. The size of the effect amounts to an average of around 1.5 % increase in per capita expenditure (columns 1–2) and revenue (columns 3–4) per observed petition. The results are robust to the inclusion of a wide set of control variables.

Next, I extend the discussion and ask how is this quite substantial increase in government size financed? German municipalities have quite wide expenditure duties;[19] however, these are only partly financed locally, the rest being covered through intensive federal and state equalization schemes (by both block and special purpose grants). The two important sources of local autonomous revenue are: First, the borrowing option subject to certain fiscal constrains, and second, the tax on property and the trade tax on local businesses.[20] The revenue from own taxes, according to Table 4, on average make up around 18 % of local budget revenue, a significant share being raised through the local business tax and to lesser extent through the property tax on real estate (type B property).[21]

Columns 5–7 of Table 2 collect the estimates of the effect of direct democracy on local tax rates on property and businesses and the local budget surpluses,[22] respectively. The evidence points to the direction that increased government size is financed through an increase in local tax rates and not through deficit-spending. The latter results on budget balances are consistent with the evidence both from Switzerland and the USA. Feld and Kirchgässner (2001) find that budget deficits and public debt are lower in municipalities which have the right of referendums, arguing that the people themselves appear to care more about fiscal discipline than their elected representatives. Similarly, Kiewiet and Szakaly (1996) show for a panel of the US states that the referendum requirement poses a strong restriction on the issuance of guaranteed debt.

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[19] Although some state- and size-dependent differences exist, typically German municipalities are responsible for the provision of important public goods to citizens such as kindergartens, elementary schools, utility and infrastructure facilities, local streets, athletic areas, basic health care

[20] The tax bases are uniformly defined nationwide, but municipalities have complete independence in deciding the tax rate by setting a tax multiplier.

[21] Property tax type-A is applied on agricultural land, which raises less than 1 % of total revenue property; thus, I neglect it in the analysis.

[22] And not data on debt since, although preferred, stock data on local government borrowing for this large sample are not available.

Table 2 The effect of direct democracy on local fiscal outcomes

Variables	(1) Log pc expenditure	(2) Log pc expenditure	(3) Log pc revenue	(4) Log pc revenue	(5) Log tax rate Property	(6) Business	(7) Budget surplus/revenue
Petition	0.0158***	0.0152***	0.0167***	0.0160***	0.0056***	0.008***	0.00054
	(0.0041)	(0.0043)	(0.0042)	(0.0045)	(0.0020)	(0.0020)	(0.0013)
Log population	0.0303***	0.0118	0.0256***	0.0065	0.00771***	0.00372	−0.00191
	(0.0083)	(0.0093)	(0.0077)	(0.0087)	(0.0029)	(0.0025)	(0.0029)
Share working age	−0.216	−0.2995*	−0.0954	−0.1591	−0.152***	−0.0219	0.104**
	(0.147)	(0.1532)	(0.134)	(0.1441)	(0.0328)	(0.0324)	(0.0444)
Unemployment	0.695***	0.9097***	0.654***	0.8577***	0.102**	0.0314	−0.0801
	(0.212)	(0.1888)	(0.210)	(0.1871)	(0.0469)	(0.0444)	(0.0725)
Left share	0.412**	0.4546*	0.700***	0.7667***	−0.00504	−0.0616	0.221***
	(0.207)	(0.2451)	(0.212)	(0.2408)	(0.0447)	(0.0474)	(0.0668)
Right share	0.559***	0.6912***	0.873***	1.0206***	0.0279	−0.0856*	0.250***
	(0.205)	(0.2446)	(0.211)	(0.2396)	(0.0424)	(0.0474)	(0.0724)
Population squared		0.0222***		0.0201***			
		(0.0084)		(0.0062)			
Residential area		1.3070**		1.3880***			
		(0.5259)		(0.5224)			
Agricultural area		−7.4647***		−6.2121***			
		(1.3044)		(1.1253)			
Firms/population		0.6199***		0.6284***			
		(0.0586)		(0.0691)			

Table 2 continued

Variables	(1) Log pc expenditure	(2)	(3) Log pc revenue	(4)	(5) Log tax rate Property	(6) Business	(7) Budget surplus/revenue
First-stage							
Signature req.	−1.825***	−1.769***	−1.826***	−1.769***	−1.533***	−1.533***	−1.823***
	(0.313)	(0.324)	(0.313)	(0.324)	(0.259)	(0.259)	(0.313)
Observations	53,715	44,923	53,714	44,922	70,886	70,869	53,319
R-squared	0.081	0.092	0.059	0.071	0.321	0.321	0.106
First-stage F	37.30	31.06	37.30	31.06	29.90	29.88	38.02

*** $p < 0.01$; ** $p < 0.05$, * $p < 0.1$

Table presents 2SLS estimates of the regression specified in Eqs. 1 and 2. The dependent variable is specified for each column. First lags of direct democracy dummies are instrumented on *signature requirement*. First-stage regressions additionally include all control variables of the second-stage (not reported). All regressions include time and county fixed effects (not reported). Standard errors are robust to heteroskedasticity and are clustered at municipality level

The results on tax rates are fairly important too, as the two considered property and business taxes yield significant revenues for the local budget while being one of the few policy tools that are completely under the local authorities' discretion. These results are also interesting in the sense that there is not much evidence on tax-related effects of direct democracy, even from countries where direct democracy is a much more evolved and functioning institution than in Germany (for a detailed discussion see Asatryan et al. 2014). One exception is Feld and Kirchgässner (1999). Although the paper finds that Swiss cities with budgetary referendums spend less (a rather general result for direct democracy), they at the same time have higher tax rates and also a higher share of revenue from taxes and user charges, as opposed to transfers and subsidies. In my context, this evidence may imply that voters are demanding more public goods by exploiting their right of the initiative, but, importantly, are not reluctant to internalize (at least part of) the costs of providing these additional units of local public goods.

4.3 Heterogeneity in treatment

Table 3 replicates the previous estimates by differentiating for the type and topic of direct democratic instruments. Columns 1 and 4 demonstrate that *initiatives*—which count only the petitions that were put to vote—have a larger impact on expenditure and revenue. This result is not surprising since the scale of the effect is net of the failed petitions.

The results become stronger in size when I differentiate the petitions for initiatives according to their topics. Petitions broadly defined to be economic projects (that make around 27 % of all petitions) have a sizable impact on local budgets amounting to an average increase of 7.5–8 % of per capita expenditure (column: 2) and revenue (column: 3) per petition on average. This effect is around five times the size of the impact of an average petition. Petitions categorized to be on infrastructure—including social and educational institutions, but also projects on transportation and on all other local infrastructure (that make around 45 % of all initiatives)—also have a large above-average impact on local budgets (columns 3 and 6).[23]

4.4 Structure of the budget

In this sub-section, I take a closer look on the structure of local expenditures and revenues. The breakdown of the budget for an average town is presented in Table 4; estimates of the baseline specification on each of these budget items separately are collected in Table 5. These additional regressions support my previous findings, as the positive and significant results are robust to most items of the local budget.

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[23] At first sight, the larger effect of economic petitions relative to infrastructure ones may seem somewhat surprising as the infrastructural projects are on average more costly (around 65,000 Euros per petition according to the cost recovery proposal) than the economic projects (less than 40,000 Euros). However, as I argue throughout the paper, it is possible that the direct costs of the initiatives (in any case quite low for both categories as an average town spends around 15 million Euros annually) are outweighed by indirect losses due to, for example, unrealized private sector investments—a discussion to which I come back in the conclusions.

Table 3 The heterogeneous effects of different types of initiatives on local government size

Variables	(1) Log pc expenditure	(2)	(3)	(4) Log pc revenue	(5)	(6)
Initiative	0.0425***			0.0449***		
	0.0145			0.0146		
Petition economy		0.0765**			0.0808**	
		0.0320			0.0333	
Petition infrastructure			0.0313***			0.0330***
			0.00937			0.00995
Log population	0.0325***	0.0308***	0.0290***	0.0279***	0.0261**	0.0242***
	0.00909	0.0104	0.00924	0.00851	0.0103	0.00873
Share working age	−0.267*	−0.158	−0.225	−0.149	−0.0341	−0.105
	0.155	0.166	0.149	0.140	0.159	0.135
Unemployment	0.811***	0.765***	0.630***	0.777***	0.728***	0.586***
	0.216	0.240	0.220	0.213	0.240	0.219
Left share	0.275	0.283	0.431**	0.555**	0.565**	0.720***
	0.213	0.239	0.214	0.220	0.252	0.222
Right share	0.418**	0.463**	0.573***	0.725***	0.772***	0.888***
	0.209	0.226	0.215	0.216	0.239	0.222
First-stage						
Signature req.	−0.614***	−0.363**	−1.063***	−0.614***	−0.363**	−1.063***
	0.163	0.144	0.263	0.163	0.144	0.263
Observations	53,715	53,715	53,715	53,714	53,714	53,714
R-squared	0.035	0.037	0.064	0.035	0.037	0.064
First-stage F	15.90	7.685	16.09	15.90	7.685	16.09

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$

Table presents 2SLS estimates of the regression specified in Eqs. 1 and 2. The dependent variable is specified for each column. First lags of direct democracy dummies are instrumented on *signature requirement*. First-stage regressions additionally include all control variables of the second-stage (not reported). All regressions include time and county fixed effects (not reported). Standard errors are robust to heteroskedasticity and are clustered at municipality level

Table 4 The structure of budget expenditure and revenue for an average town

Source: Own calculations based on data from "Statistik Lokal" database
Sample: All German municipalities, 2002–2009 (unweighted averages)

Expenditure or revenue category	Euro, thousand	Share
Total expenditure	15,600	1.00
Administrative, *of which*	12,200	0.78
Operating	2532	0.16
Personnel	3341	0.21
Capital	3400	0.22
Total revenue	14,700	1.00
Administrative, *of which*	12,200	0.83
Own taxes	3272	0.22
Capital	2536	0.17

Table 5 The effect of direct democracy on the structure of local budgets

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Log pc expenditure				Log pc revenue		
	Administrative	Operational	Personnel	Capital	Administrative	Capital	Own taxes
Petition	0.022***	0.028***	−0.020**	−0.015*	0.023***	−0.028***	0.0077
	0.0042	0.0069	0.010	0.0084	0.0044	0.010	0.0065
Log population	0.035***	0.049***	0.271***	0.113***	0.029***	0.148***	0.241***
	0.008	0.016	0.031	0.018	0.007	0.021	0.013
Share working age	−0.301**	−0.635***	−0.991***	−0.099	−0.043	−0.655	0.225
	0.123	0.218	0.312	0.331	0.122	0.416	0.204
Unemployment	0.962***	1.352***	1.236***	−0.488	0.675***	0.297	0.282
	0.193	0.275	0.465	0.366	0.178	0.527	0.229
Left share	0.591***	0.158	0.169	−0.00847	0.731***	−0.445	1.029***
	0.162	0.287	0.376	0.468	0.191	0.639	0.341
Right share	0.680***	0.395	0.271	0.322	0.866***	0.0267	1.396***
	0.164	0.291	0.375	0.461	0.189	0.622	0.312
First-stage							
Signature req.	−1.825***	−1.825***	−1.825***	−1.821***	−1.826***	−1.807***	−1.530***
	0.313	0.313	0.313	0.312	0.313	0.312	0.259
Observations	53,715	53,708	53,709	53,537	53,706	52,465	70,925
First-stage F	37.30	37.29	37.29	37.15	37.29	36.46	29.67

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$

Table presents 2SLS estimates of the regression specified in Eqs. 1 and 2. The dependent variable is specified for each column. First lags of direct democracy dummies are instrumented on *signature requirement*. First-stage regressions additionally include all control variables of the second-stage (not reported). All regressions include time and county fixed effects (not reported). Standard errors are robust to heteroskedasticity and are clustered at municipality level.

One interesting exception emerges. Expenditure on personnel, which take around 16 %—a fairly significant share—of municipal spending, is negatively affected by initiatives (column 3). Consistent with this evidence, Matsusaka (2009) shows that the right of the initiative is associated both with employment and wage cuts of public sector employees. Based on theory and data from US cities, Matsusaka (2009) then argues that the initiative process enables individuals and groups outside the government to check the behavior of elected officials, who often tend to pad the public payroll with patronage workers. Similarly, Frey et al. (2001) based on labor force survey data from Switzerland, find that public employees receive lower financial compensation under more direct democratic institutions.

The second exception is the negative coefficient of capital expenditures (column 4) and relatedly the decrease in revenue from capital (column 6). Although international evidence to cross-validate the results is nonexistent, there is an interesting parallel between the two exceptions. Both personnel expenditure and property investment (which makes around half of capital expenditure) are expenditures targeted at certain groups of voters, i.e., public employees and future property owners, respectively. If these results are true, they might be evidence of a phenomenon that is more general than the one described by Matsusaka (2009). Under direct democracy, voters have increased powers to limit the amount of government spending going to targeted minorities (often protected by interest groups, for example) to the benefit of the wider electorate.

This view is also consistent with the larger effect of petitions on business taxes relative to property taxes demonstrated in Table 2. Using the introduction of local direct democracy in Bayern in 1995 as a natural experiments, Asatryan et al. (2014) demonstrates that complementing representative form of government with direct democratic elements may shift the tax burden from broad- to narrow-based taxes.

5 Conclusions

In this paper, I extend the literature on the fiscal effects of direct democracy to all German municipalities. I exploit the fact that in mid-1990s, most German States have independently gone through a series of reforms introducing nonidentical institutions of direct democracy at the local level. These between-state variations in direct democratic institutions, combined with observed initiatives, are used to study the causal effects of direct democracy on fiscal outcomes.

A number of interesting results emerge. First, the analysis shows that direct democracy causes an expansion of local government size by up to 8 % (3 %) in annual per capita expenditure and revenue per observed initiative on economic (infrastructural) projects. This result is in contrast to most evidence from Switzerland or the USA. However, a cross-country comparison of results is not straightforward since the institutional context (both in direct democratic and fiscal institutions) is quite different from country to country. As discussed by Asatryan et al. (forthcoming)—that finds similar expansionary impact of direct democracy based on quasi-experimental evidence from the German State of Bayern—a plausible explanation is the German cooperative form of federalism that induces strong common-pool disincentives on part of local voters which are then realized through initiatives.

Another interpretation—albeit not a direct empirical test—that I develop throughout the paper, is the property of the so-called *fiscal-taboo* common to all state legislations on direct democracy in Germany. While these reforms granted German voters the right to set the agenda and directly vote on projects of their own choice, they neither gave the right to veto governments' fiscal decisions nor the responsibility to necessarily vote on the implied costs of these initiatives. Theory and evidence, however, suggest that the right to veto government's spending decisions is crucial and that this veto-power—and not any kind of direct democracy—serves as the mechanism to constrain its overspending bias. German law blocks this mechanism weakening the voters' powers to act as a watchdog, for example, in blocking inefficient government spending decisions.

Secondly, I find that this expansion of government size is (at least partly) financed by increased local taxes and not through budget deficits. In my context, this evidence may imply that voters are demanding more public goods by exploiting their right of the initiative, but, importantly, are not resistant in bearing the costs of providing these additional units of local public goods.

Third, I show that the average budget-enhancing effects of direct democracy hide a considerable degree of heterogeneity. On the expenditure side, the evidence shows that contrary to most items of the budget, expenditure on personnel and property investment are negatively affected by direct democracy. As also demonstrated by Matsusaka (2009), the initiative process enables individuals and groups outside the government to check the behavior of elected officials who often tend to pad the public payroll with patronage workers. More generally, it is plausible that under direct democracy, voters have increased powers to limit the amount of government spending going to targeted minorities (e.g., public employees and future property owners) in favor of the wider electorate. This view is also consistent with the results on the revenue side, where I find a larger effect of petitions on business taxes relative to property taxes, thus a relative shift of the tax burden from broad- to narrow-based taxes.

This paper should be viewed as a first step in understanding the fiscal effects of German direct democracy reforms and a complement to the Swiss and US evidence. It is important to keep in mind that these elements of direct democracy are a relatively recent institutional innovation for the German fiscal system, and for its voters and politicians alike. These institutions are also still evolving, and the legislations are being reformed (e.g., abolition of the fiscal-taboo in Bremen in 2009, liberalization of legislative and procedural barriers in Thüringen and in Schleswig-Holstein in 2009 and 2013, etc). Future work should, among others, assess the ongoing reforms, attempt to directly test for the interpretations of the results in the literature, and extend the discussion beyond purely fiscal phenomena to cover other relevant economic effects of direct democracy.

6 Appendix

See Tables 6 and 7.

Table 6 Institutions of local-level direct democracy across German Länder, 2002–2009

State	Year direct democracy adopted	Signature requirement (mean)	(min–max)	Quorum requirement (mean)	(min–max)	Time to collect signatures (weeks)	Is a cost recovery proposal required?	Is there a positive catalog of topics?	Cost of proposed projects (Euros)	Number of petitions	Number of initiatives	Expenditure per capita mean 2005 Euros	Number of towns in the sample
Baden-Württemberg[a]	1956	0.098	(0.033–0.1)	0.27	(0.25–0.30)	4–6	Yes	No	54,926	203	87	1614	1102
Bayern[b]	1995	0.098	(0.03–0.1)	0.199	(0.1–0.2)	∞	No	No	33,819	910	426	1612	2099
Berlin	2005	0.03	(0.03)	0.1	(0.1)								0
Brandenburg	1993	0.100	(0.1)	0.25	(0.25)	8	Yes	No	35,116	43	13	3716	419
Bremen[c]	1994	0.1	(0.1)	0.2	(0.2)	13	No	Yes					0
Hamburg	1998		(0.02–0.03)	No	No								0
Hessen	1993	0.098	(0.03–0.1)	0.25	(0.25)	6	Yes	No	73,537	147	32	1511	430
Mecklenburg-Vorpom.	1993	0.100	(0.02–0.1)	0.25	(0.25)	6	Yes	Yes	43,537	41	6	2666	817
Niedersachsen	1996	0.1	(0.07–0.1)	0.25	(0.25)	26	Yes	No	37,911	146	35	1490	1047
Nordrhein-Westfalen[d]	1994	0.079	(0.03–0.1)	0.186	(0.1–0.2)	6	Yes	No	155,804	286	75	1727	396
Rheinland-Pfalz	1994	0.149	(0.06–0.15)	0.2	(0.2)	9	Yes	Yes	33,793	58	10	1033	2306
Saarland	1997		(0.05–0.15)	0.3	(0.3)								0

Table 6 continued

State	Year direct democracy adopted	Signature requirement (mean)	(min–max)	Quorum requirement (mean)	(min–max)	Time to collect signatures (weeks)	Is a cost recovery proposal required?	Is there a positive catalog of topics?	Cost of proposed projects (Euros)	Number of petitions	Number of initiatives	Expenditure per capita mean 2005 Euros	Number of towns in the sample
Sachsen[e]	1990	0.15	(0.15)	0.25	(0.25)	9	Yes	No	57,055	73	16	1185	488
Sachsen-Anhalt	1990	0.148	(0.04–0.15)	0.25	(0.25)	6	Yes	Yes	14,000	145	63	2370	836
Schleswig-Holstein[f]	1990	0.10	(0.10)	0.20	(0.20)	6	Yes	Yes	28,265	170	38	1881	1170
Thüringen[g]	1993	0.099	(0.05–0.10)	0.198	(0.1–0.2)	18	Yes	No	18,154	65	9	1166	951

Notes: Data on direct democratic institutions (columns: 1–8) is collected from the 16 state constitutions. Data on observed initiatives and their costs (columns: 9–11) is available at http://www.mehr-demokratie.de/bb-datenbank.html. Fiscal data (column: 12) comes from the "Statistik Lokal" database. For data sources and summary statistics see also Table 7. As indicated in the last column, city-states of Berlin, Bremen and Hamburg, as well as the small state of Saarland are excluded from the sample, although some institutional details are reported for these as well

[a] *Baden-Württemberg*: Before 2005 quorum requirement was 30 %. Before 2015 the time to collect signatures was 4 weeks, and there existed a positive catalog of topics

[b] *Bayern*: In 1999 quorum requirement is introduced

[c] *Bremen*: In 2009 signature requirement is lowered to 5 %. This reform also allowed to launch initiatives on topics directly related to the future budgets

[d] *Nordrhein-Westfalen*: Before 2000 quorum requirement was 20 % for all municipalities

[e] *Sachsen*: In some cases municipalities have the right to lower the signature requirement to minimum 5 %

[f] *Schleswig-Holstein*: In 2013 signature and quorum requirements change to 4–10 and 8–20 %, respectively. Before 2003 quorum requirement was 25 %

[g] *Thüringen*: In 2009 signature requirements change to 7 %, but no more than 7000 for all municipalities

Table 7 Summary statistics

Variable	Description	Obs	Mean	SD	Min	Max
Petition	Dummy if there was (at least one) petition in that year-town	100,182	0.02	0.15	0	1
Initiative	Dummy if there was (at least one) initiative in that year-town	100,182	0.01	0.09	0	1
Signature Requirement	Threshold of signature requirement for launching an initiative (share of population)	99,875	0.11	0.03	0.02	0.15
Real pc expenditure	Annual per capita government expenditure net of transfers (2005 Euros)	72,154	1421	7756	0	1,131,890
Real pc revenue	Annual per capita government revenue net of transfers (2005 Euros)	72,154	1400	7419	−952	1,102,251
Budget deficit	Share of budget deficit in budget revenue	72,348	−0.02	0.18	−1	1
Property tax (B)	Multiplier of local tax on non-agricultural property	99,418	318.1	51.1	0	900
Business tax	Multiplier of local business tax	99,383	328.5	44.9	0	900
Total population	Total annual population in thousands	99,375	6.16	27.14	0	1326
Share working age	Share of working age population in total	98,111	0.63	0.04	0.20	1
Unemployment	Share of unemployed in working age population	85,547	0.08	0.05	0	0.82
Right share	Share of the sum of CDU, CSU and FDP party delegates at local council	89,622	0.50	0.13	0.04	1
Left share	Share of the sum of SPD, "Grüne" and "Die Linke" party delegates at local council	89,622	0.46	0.13	0	0.92
Residential area	Share of residential in total area	100,180	0.007	0.011	0	0.17
Agricultural area	Share of agricultural in total area	68,549	0.005	0.013	0	1
Firms to population	Number of registered firms per 100 people	95,253	0.052	0.101	0	8.51

Summary statistics—number of observations, mean, standard deviation, minimum and maximum—are presented for the population of all German municipalities from 2002 to 2009. The data on observed initiatives (rows: 1–2) is available at http://www.mehr-demokratie.de/bb-datenbank.html. The data on direct democratic institutions (row: 3) is collected from the state constitutions. The fiscal variables (rows: 4–8), as well as the demographic (rows: 9–11), political (rows: 12–13) and other municipal characteristics (rows: 14–16) come from the "Statistik Lokal" database.

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