Does Direct Democracy Reduce the Size of Government? New Evidence from Historical Data, 1890-2000

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Abstract

Using a new dataset of Swiss cantons from 1890 to 2000, we estimate the causal effect of direct democracy on government spending. Our analysis is novel in two ways: first, we use fixed effects to control for unobserved heterogeneity; second, we combine a new instrument with fixed effects to address the potential endogeneity of institutional reform. We find that direct democracy has a constraining, but modest effect on spending. Our estimates suggest that a mandatory budget referendum reduces canton expenditures by 9 percent. A decline in the signature requirement for the voter initiative by one percent reduces spending by 2.2 percent. We find no evidence that direct democracy at the canton level results in higher local spending or a more decentralized government.

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1 Introduction

Direct democracy has experienced a remarkable renaissance in recent decades. The recent referendums on the new European constitution in France, the Netherlands and Ireland are just one prominent example. Direct voter participation is also increasingly popular in Germany's local politics; and its introduction is debated in countries like the Netherlands, South Africa and even the European Union itself.

The popularity of direct democracy is fueled in part by the belief that direct voter control could slow down or even reverse the rapid growth in government spending over the past decades.[1] To evaluate the merit of the arguments and policy proposals favoring direct participation requires first a clear understanding of how direct democracy influences public policies. Our goal in this article is to identify the causal effect of direct democracy on public spending. Specifically, we analyze two questions: does direct democracy reduce government spending? And how does direct democracy affect the vertical structure of government?

In a representative democracy, incentives of elected politicians might not always be aligned with the preferences of voters. Reasons are politicians' career concerns to gain more political influence, lobbying by special interests for projects or log-rolling in the legislature. As a consequence, politicians often pursue larger governments than desired by the median voter (Peltzman, 1992).

Economic theory suggests two channels why referendums and initiatives bring actual policies closer in line with the preferences of the median voter. First, initiatives can be used as a threat point to limit spending by elected representatives (Gerber, 1996; Moser 2000). Referendums are a somewhat weaker tool because governments decide what citizens

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[1] Other arguments advanced in favor of direct voter participation are that citizens may be more satisfied if they can influence political affairs. Or, political decision-making and the quality of government may improve because representatives are better informed and controlled by voters.

vote on (Romer and Rosenthal 1979). Second, initiatives and, to some degree, referendums allow citizens to select their preferred policy. Parliamentary or presidential elections require citizens to elect a candidate, each of them representing a whole bundle of policy proposals. Hence, the choice of the legislature on any single issue might be very different from the actual preferences of the median voter (e.g. Buchanan and Tullock, 1962; Besley and Coate, 2002).

Both channels imply that access to direct democratic institutions reduces public spending if voters are more fiscally conservative than politicians (e.g. Peltzman, 1992). How direct democracy affects the vertical structure of government is not obvious. It might increase spending at lower levels of government if voter constraints shift public services to lower levels of government. It might decrease spending if budgetary constraints also reduce resources for local governments.

We are not the first to study the role of direct democracy; an extended literature has analyzed its link to public spending. Previous studies typically report a large negative correlation between direct democracy and spending at the same level of government; and a large positive correlation with spending at lower levels of government.[2] Such results are, however, difficult to interpret since they are predominantly based on cross-sectional variation. Direct democratic institutions, like most institutions laid down in a country's constitution, rarely change over time. Even if based on panel data, models using cross-sectional variation suffer from two unavoidable biases: an inability to control for different preferences for government and the omission of other institutional factors that constrain politicians. Both of these biases are likely to exaggerate the effect of direct democracy on spending at the same level of government and possibly for lower levels of government.[3] These confounding factors pose

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[2]Bails and Tieslau (2000), Besley and Case (2003), Farnham (1989), Matsusaka (1995; 2000; 2004) and Zax (1989) for the United States; Feld and Matsusaka (2003), Feld, Schaltegger and Schnellenbach (2008), Feld and Kirchgässner (2001), and Pommerehne (1978), among others, for Switzerland.

[3]Funk and Gathmann (2008), for instance, show that voters in direct democratic cantons are fiscally more

a major challenge to interpret the correlations as causal (see e.g. Besley and Case, 2000; Konrad, 2001).

We propose an alternative approach to identify the causal effect of direct democracy on public spending.[4] We collected a new historical data set for all Swiss cantons from 1890 to today. Over this long horizon, we observe substantial variation in direct democratic institutions which we coded by carefully examining each canton's past and present constitutions. Hence, we can for the first time control for all permanent differences across cantons by including Canton fixed effects. The findings demonstrate that unobserved heterogeneity is important. We also control directly for differential changes in the demand for government across cantons. Our measure of preferences is derived from actual voting behavior in all federal propositions held since 1890. Finally, we address the potential endogeneity of direct democratic institutions with instrumental variables. Changes in direct democratic institutions require a revision of the constitution. Hence, a candidate instrument is the provision for the constitutional initiative which allows for citizens to amend the constitution. We contribute to a small, but growing literature that uses instrumental variables to address institutional endogeneity at the state level (Knight, 2000; Rueben, 1997).[5] Our study is unique because we can combine instrumental variables with fixed effects to rigorously address the potential endogeneity of institutions.

We show three main results: first, direct democracy has a constraining, yet moderate

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conservative. Since the usually employed socio-economic characteristics do not fully capture heterogeneity in voters' fiscal preferences, previous estimates of direct democratic institutions are too large.

    [4]Likewise, Petterson-Lidbom and Tyrefors (2007) use a regression-discontinuity design to compare spending in communities with town meetings to those with purely representative forms of government. Olken (2008) uses an experimental design to study popular decision-making over public goods and satisfaction in Indonesia.

    [5]There is a large literature using instrumental variables for other types of institutions in a cross-country setting. See for example, Acemoglu, Johnson and Robinson (2001); Acemoglu and Johnson (2005); Hall and Jones (1999); Persson and Tabellini (2003; 2004).

effect on canton spending. Our fixed effect estimates suggest that the mandatory budget referendum reduces canton spending by 3.4 percent. An increase in the signature requirement for the voter initiative by one percent (of the eligible population) raises expenditures by 0.5 percent. Our estimates are several times smaller than the cross-sectional correlations reported in previous studies.

Second, periods of high spending increase the likelihood of stricter voter control over the budget. To solve the endogeneity issue, we use the constitutional initiative as an instrument. Historical examples illustrate that direct democracy has frequently been shaped by the constitutional initiative. We present both anecdotal and formal evidence that the constitutional initiative is plausibly exogenous from the spending regression. The instrumental variable estimates show that the budget referendum decreases canton governments by 9 percent. In addition, a one percent lower signature requirement for the initiative decreases canton spending by 2.2 percent.

Third, we find no evidence that direct democracy at the canton level shifts spending to the local level or generates a more decentralized government. If anything, stronger direct democracy reduces spending both at the canton and local level. Hence, we find the exact opposite of the large positive correlations reported in the cross-sectional literature. We conclude from this that the role of direct democracy for the vertical structure of government is limited.

The paper is organized as follows. In the next section, we provide background information on direct democracy in Swiss cantons. We describe our new historical data set in section 3. The fixed effect estimates and various robustness tests are reported in section 4. In section 5, we use instrumental variables to identify the causal effect of the referendum and initiative on the size of government. Section 6 concludes.

2   Direct Democracy and Fiscal Policy in Switzerland

Switzerland, with its long tradition of direct democratic participation, provides a unique setting for our analysis. Switzerland has a strong federalism structure in which cantons play a prominent role. All political rights and responsibilities rest with the cantons, unless they concede a right or responsibility to the federal government through a nationwide referendum. As a consequence, cantons have a lot of autonomy to provide public goods or services and to redistribute wealth. Cantons made 34 percent of all government expenditures in 1998, compared to 39 percent by the federal government and 27 percent by local governments. Revenues are equally decentralized.

Direct democracy has always played a dominant role in Swiss politics (Curti, 1900; Trechsel and Serdült, 1999; Vatter 2002). The referendum and voter initiative (*Begehren*) for a revision of the federal constitution have been in place since the Swiss Confederation was founded in 1848 (Kölz, 1992). Direct participation of citizens in town meetings goes back in some cantons like *Appenzell, Glarus* or *Uri* to the thirteenth and fourteenth century. The right to propose new laws through initiatives was in place in *Glarus, Vaud* and *Nidwalden* already by 1850.

The direct democratic institutions most relevant for fiscal policy are the budget referendum and the voter initiative. In a budget referendum, citizens approve or reject government projects if the one-time or recurring expenditures exceed a certain monetary threshold. In principle, budget referendums may cover public expenditures, public sector bonds, taxes, enterprise holdings or real estate.[6] We restrict attention to budget referendums on public

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[6]The budget referendum we analyze here is most closely related to budget or project-based referendums of local school districts in the United States. An institution related to the referendum on tax increases are legal tax and expenditure limitations, commonly found in the United States (see Bohn and Inman, 1996; Poterba, 1994; Rueben, 1997; Von Hagen, 1991) and more recently in Switzerland (Feld and Kirchgässner, 2001).

expenditures because they are by far the most common. Between 1980 and 1999 alone, citizens voted on 461 expenditure referendums; they approved 86 percent of the proposed projects (Trechsel and Serdült, 1999).

At present, fifteen cantons have a mandatory budget referendum in place. It requires citizens to vote on all projects that exceed a certain monetary threshold.[7] Ten cantons only allow an optional budget referendum. Here, citizens need to collect between 100 and 10,000 signatures to vote on a large spending project. Control over the budget is stronger in cantons with mandatory budget referendum because voter approval is mandated by law. If voters are fiscally more conservative than politicians, we expect a mandatory budget referendum to decrease government spending.[8]

The voter initiative, in contrast, allows citizens to propose entirely new laws, for example, limits on spending growth. Most cantons adopted the voter initiative several decades prior to the beginning of our study period in 1890. We have, however, substantial variation in the number of signatures required to get an initiative on the ballot: in 2000, *Glarus* requires only a single signature, while *Vaud* requires 12,000 signatures. The costs of collecting 12,000 signatures are higher for the electorate than collecting a single signature. Low costs to launch an initiative increases voters influence over political decisions; high signature requirements, in contrast, reduce the political influence of voters. If voters prefer less spending than politicians, higher signature requirements should increase government spending.

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[7]Thresholds for non-recurring expenditures range between 25 Million Swiss Francs (SFr) in *Lucerne* and 250,000 SFr in *Schwyz* (1999). This implies that a project of on average 6.8 million SFr or just less than 1 percent of average expenditures mandates a referendum. For recurring expenditures, thresholds range between 50,000 (*Appenzell-Innerrhode, Basle County, Nidwalden, Ticino* and *Uri*) and 400,000 SFr (Berne).

[8]Several cantons allow for a mandatory and optional budget referendum (*Zurich, Lucerne, Uri, Obwalden, Nidwalden, Fribourg, Solothurn, Schaffhouse, Appenzell-Innerrhode, St. Gallen, Grisons,* and *Thurgau*). A comparison of cantons with both referendum forms to cantons with only an optional or no budget referendum provides a lower bound of a comparison of cantons with a mandatory budget referendum relative to no referendum (see Feld and Matsusaka, 2003).

Budget referendum and voter initiative are alternative tools for citizens to shape budgetary decisions. The two instruments differ in both scope and costs for the voter: in a budget referendum, citizens are restricted to approve or dismiss individual spending projects. With a voter initiative, citizens have more leverage over the budget; they can, for example, propose spending limitations for future budgets. This influence, however, comes at a cost. An initiative is more costly for the voter than a referendum mandated by law since they need to prepare an initiative and collect the necessary signatures. Hence, it is an open question whether referendums or initiatives are more effective in constraining the size of government.

Table 1 provides an overview of the direct democratic institutions in 2000. The cantons with a mandatory budget referendum are shown in column (2); column (4) lists the number of signatures required to bring an initiative on the ballot.[9] Note that the direct democratic institutions are positively correlated: cantons with a mandatory budget referendum often have lower signature requirements as well (correlation coefficient: -0.18). Figure 1 illustrates the geographic variation in direct democratic institutions across Swiss cantons. In general, direct democracy is stronger in the German-speaking parts of Switzerland: these include the large urban centers of *Basle*, *Zurich* or *Berne* and the more rural interior. The French- and Italian-speaking cantons in the South and West, in contrast, have weaker direct democratic institutions.

Institutions like direct democracy exhibit a strong persistence over time. A unique feature of our long panel is that we observe substantial variation in both the budget referendum and signature requirement over our 110 years period. Columns (3) and (5) in table 1 show that twelve cantons adopt the mandatory budget referendum and nine cantons abolish it in favor

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[9] The canton *Jura* was founded in 1978 and is excluded from the analysis.

of an optional referendum. Six cantons adopt the voter initiative after 1890.[10] Also, nineteen cantons increase their signature requirement for the voter initiative and four cantons reduce it.

3   A New Historical Dataset

We collected a new dataset for all twenty-five cantons in Switzerland between 1890 and 2000. First, we extracted comprehensive measures of direct democratic institutions in each canton from all past and current constitutions as well as the relevant canton laws. In addition, we used published sources to validate and cross-check our coding of the institutional variables (Kölz, 2004; Monnier, 1996; Ritzmann-Blickernstorfer, 1996; Trechsel and Serdült, 1999; Vatter, 2002). If in doubt, we contacted the respective cantonal Public Record Offices (*Staatsarchive*) to clarify any inconsistencies.

We measure direct democratic institutions by two variables: a binary indicator equal to one if a canton has a mandatory budget referendum in place; the variable is zero if the canton allows only an optional or no budget referendum in a certain year. For the voter initiative, we use the number of signatures required to get an initiative on the ballot.[11] The variable is expressed in percentage of eligible voters; hence, we assume that the collection of 1,000 signatures is more costly in a canton with only 5,000 citizens than in a canton with 100,000 citizens.[12] Since the number of eligible voters changes over time, the signature requirement for the voter initiative varies in addition to changes in the absolute number of

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[10] *Geneva* in 1891, *Ticino* in 1892, *Berne* in 1893, *Lucerne* in 1906, *Valais* in 1907 and *Fribourg* in 1921.

[11] We assigned an arbitrary signature requirement for cantons that adopted the voter initiative after 1890. Fortunately, estimates remain unchanged whether we choose a signature requirement of 20, 30, 50 or 100 percent for non-adopters. The results reported in the paper use the 30 percent signature requirement.

[12] Alternatively, we could assume that the cost of collecting signatures is fixed. In that case, the absolute number of signatures is the relevant statistic. We report that result in the robustness section.

required signatures.

We add to this information detailed statistics on public finances and socio-demographic characteristics. For each canton, we digitized printed information contained in the *Statistical Yearbook of Switzerland*, the *Historical Statistics of Switzerland* and information from the decennial Census. The data appendix provides a detailed description of the data sources and the construction of variables. Our main outcome variables are annual expenditures and revenues per capita as well as total expenditures per capita by local governments. All expenditure and revenues variables are deflated to 2000 Swiss Francs. To analyze whether direct democracy decentralizes public spending, we also measure spending centralization; the measure is constructed as the percentage of local and canton expenditures that is spent at the canton level.

Table 2 shows the mean and standard deviation of all variables separately for cantons with and without a mandatory budget referendum. The last column reports the t-statistic for equality of means across the two groups. In the raw data, canton expenditures and revenues (in logs) are not statistically different between cantons with and without a mandatory budget referendum. However, cantons with a mandatory budget referendum have significantly higher local spending and less centralized expenditures.

Cantons with stronger direct democracy also differ in their political structure from other cantons. They have a lower signature requirement for the voter initiative and a smaller executive. In addition, they are more likely to have a mandatory law referendum in place and less likely to elect their parliaments using proportional representation. Cantons with a mandatory budget referendum are more likely to have adopted deficit or debt limitations but are equally likely to have a balanced budget rule anchored in their constitution.

One control variable that is not available in our data set is canton income. Income

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becomes available only in the 1960s. We use several variables to control for differences in wealth in our empirical analysis: the overall labor force participation rate, percentage of car ownership, number of doctors per capita and infant mortality rate. Together, these four variables account for 47 percent of the variation in canton income since 1965.[13] Once we include our other control variables like the share of employment in manufacturing and agriculture, the age structure of the population, the share of the urban population and canton and year fixed effects, we account for 93 percent of the variation in canton income. Hence, the absence of a precise measure of canton income is not a major limitation of our study. We now turn to our main results.

4 Direct Democracy and Fiscal Policy: Fixed Effects

4.1 Canton Expenditures and Revenues

The descriptive statistics made clear that cantons with strong direct democratic institutions have different observable characteristics than cantons with weaker direct democracy. Hence, it is likely that cantons also differ along other, unobservable dimensions. Surely, demographics and other determinants of the demand for government are likely to change over a 110 years period. Our detailed study of the canton constitutions, however, revealed other differences that are persistent over time. In some cantons, for instance, citizens can recall the executive or select the president of the executive in direct elections. The first increases the control of citizens over politicians, while the second strengthens the position of the president relative to the legislature and executive (Persson and Tabellini, 2003). Both institutions are

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[13]Car ownership would not be a good proxy for income if it was more heavily used in agriculture and hence, in the poorer, rural areas. In Switzerland, however, this is not the case: the correlation between car ownership and urbanization is strong and positive.

more prevalent in cantons with strong direct democracy. Omitting these factors, we would overestimate the true effect of direct democracy on public spending.[14]

A unique feature of our long panel is that we can control for all permanent differences across cantons using fixed effects. In particular, we estimate the following empirical model:

$$\log Y_{ct} = \alpha + \beta Referendum_{ct} + \gamma Initiative_{ct} + \lambda' X_{ct} + t_t + \theta_c + \varepsilon_{ct} \tag{1}$$

where the subscript c denotes the canton and t the year. $\text{Log} Y_{ct}$ is expenditures or revenues measured in logs, X_{ct} denotes other control variables, t_t and θ_c the year and canton fixed effects. ε_{ct} is assumed to be an *iid* error term reflecting measurement error in expenditures or revenues. The main parameters of interest are β and γ; they capture the effect of the budget referendum and signature requirement on expenditures or revenues. Based on our discussion above, we expect that $\beta < 0$ and $\gamma > 0$.

Table 3 shows the basic results with annual expenditures per capita (in logs) as the dependent variable.[15] Including only year dummies, the first specification shows a strong negative relationship between the mandatory budget referendum and government spending. A higher signature requirement for the voter initiative is negatively correlated with canton expenditures. The second column adds our set of variables to control for observable differences across cantons. The coefficient on the budget referendum drops to 9.3 percent. An increase in the signature requirement by one percent is now associated with 0.4 percent higher spending as expected.

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[14]Controlling for unobserved heterogeneity is also important because fiscal policy and political institutions vary substantially between German- and French- or Italian-speaking cantons; these differences persist even after controlling for a large number of observable canton characteristics.

[15]We choose the log specification for several reasons: first, cantonal expenditures are log normally distributed. Second, spending 1,000 Swiss Francs weighs more if the overall budget is smaller. Third, the log specification allows a simple interpretation of the coefficient on the institutional variable. Results using the level of spending were similar and available upon request.

Our preferred specification in column (3) accounts for all permanent unobservable differences across cantons. The coefficients are now identified from cantons that adopt or abolish a mandatory budget referendum or change their signature requirement for the voter initiative. The fixed effects are statistically highly significant (see the bottom of table 3) and change the main coefficients substantially. The budget referendum reduces total spending by only 3.4 percent. A higher signature requirement by one percent raises expenditures by 0.5 percent.

The large drop in the coefficient of the budget referendum with canton fixed effects might be the result of spending differences between cantons that change their provisions for the budget referendum and those that do not (see table 1). However, we find no evidence for any spending differences: mean log expenditures for cantons without changes in their budget referendum are 7.19 while log expenditures are 7.16 for cantons that adopt or abolish the budget referendum over our study period.

Is the picture similar on the revenue side? The fixed effects specification in column (6) shows no statistically significant differences in revenues between cantons with and without mandatory budget referendum. The result suggests that cantons without a mandatory budget referendum finance their higher public expenditures in part by running deficits. An increase in the signature requirement by one percent is associated with 0.6 percent more revenues.

The control variables have largely the expected sign in the expenditure and revenue regressions. For instance, cantons with lower infant mortality rate and a higher percentage of car ownership have higher spending as do cantons with more subsidies from the federal level. These results are consistent with the fact that the demand for public services increases with income. Several control variables flip sign once we include canton fixed effects: the coefficients on population and the size of the industrial sector, for example, are negative

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without fixed effects but positive with fixed effects.

The regressions highlight the importance of accounting for unobserved differences across cantons. The coefficient on the mandatory budget referendum, for instance, declines by more than 60 percent if we include fixed effects (compare columns (2) and (3) of table 3). For both institutions, our estimates are substantially smaller than those reported in cross-sectional studies. Based on the fixed effects findings, we conclude that budget referendum and voter initiative have a constraining effect on expenditures and revenues; but the results suggest that this effect is more moderate than suggested by the previous literature.

4.2 Substitution to Local Governments and Decentralization?

The influence of direct democratic institutions need not be restricted to cantonal finances. Citizen control at the canton level could also affect spending behavior at the local level for at least two reasons. Direct democracy might reduce local spending because citizens also prefer less local government or because local revenues are constrained by canton resources. In that case, canton and local spending are complements. Direct democracy could also increase local spending: canton politicians, constrained by voter control, might try to delegate spending to the local level. In that case, canton and local spending would be substitutes.

The previous literature finds strong evidence that direct democracy at the state level increases spending at the local level (Feld, Schaltegger and Schnellenbach, 2008; Matsusaka, 1995). Our descriptive statistics in table 2 also suggests that cantons with mandatory budget referendum rely more on local spending.

We test how institutional constraints at the canton level affect spending at the local level. Our dependent variable is now the (log of) per capita spending by local governments in each canton. Table 4 shows the results. If we only include year effects (column (1)) and

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observable canton characteristics (column (2)), the mandatory budget referendum appears to increase spending at the local level by 20.3 percent. And yet, the large shift to local government could be spurious if cantons differ in their preferences for government spending, their preferences for local as opposed to canton spending or other political institutions that govern the division between canton and local governments.

Once we include canton fixed effects, we find no effect of the budget referendum on local spending (column (3)). Hence, observed differences in local expenditures between cantons with and without mandatory budget referendum are driven by permanent differences across cantons; they are not caused by the institution of the budget referendum per se.

Higher costs for the voter initiative have a positive effect on local spending: a one percent higher signature requirement at the canton level results in 0.06 percent more local spending. The positive relationship suggests that higher barriers for the voter initiative results in more spending both at the canton and local level.

The results raise a related question: does direct democracy result in a more decentralized government? We measure centralization of government spending as $\frac{Canton\ Exp}{Canton+Local\ Exp}$. If stronger direct democracy decentralizes public spending, the coefficient on the budget referendum should be negative and on the voter initiative positive. As before, we find no statistically significant effect of the mandatory budget referendum on government centralization once we include fixed effects. For the voter initiative, higher signature requirements actually reduce government centralization, contrary to our expectation (see column (6) of table 4).

This section demonstrates again the importance of controlling for unobserved heterogeneity. The budget referendum constrains expenditures at the canton level where voters can directly control spending. It does however has no effect on spending at lower levels of govern-

ment or the degree of government centralization. Hence, the possibility of rejecting spending projects at the canton level has no consequences for local spending: budget referendums do neither appear to reduce resources for local governments; nor do they shift spending projects or responsibilities to the local level.

The effects of the voter initiative are somewhat different: low signature requirements and hence, low barriers to launch an initiative reduce spending both at the canton and local level. The voter initiative does, however, not decentralize spending to the local level. One possible interpretation of this result is as follows: suppose, a successful initiative imposes a limit on spending or public debt. Everything else equal, such a constraint on canton finances would also lower resources available for local governments.

In sum, we find that the correlation between direct democracy and decentralized government is driven by omitted variables, such as differential preferences for spending at the local level or other political institutions that govern the division of labor between canton and local level. We conclude from this section that the role of direct democracy for the structure of fiscal federalism is limited. We next examine the validity of our estimates.

4.3 Robustness Checks

Our fixed effects approach might not capture all unobservable differences across cantons. First, migration, electoral reform or social change more broadly might shift the demand for government over our study period. To address this concern, we construct several measures of voter preferences.

Our main measure uses the voter support for more government as a proxy for the demand for government. We calculate this variable from data on voting behavior in all federal

propositions over our period.[16] Between 1890 and 2000, citizens in all cantons voted on 452 federal ballots. We use the official documents prepared by the government to select only ballots that decided on public spending, taxes or other revenues. After careful study, we identified 108 propositions with an unambiguous increase in expenditures, subsidies or taxes. Table A1 provides a list of all votes and their outcome with predictable fiscal consequences. The table shows that our ballots span a broad range of political issues: from the introduction of fuel taxes, government finances and environmental protection to education and health policy. We use the approval rate for more government spending in each canton as our measure. To adjust for differences in approval rates across ballots, we subtract the mean approval rate of each ballot. Negative numbers thus imply that a canton was less supportive of higher spending than the average canton in that ballot.[17]

As an alternative preference measure, we use the strength of left-wing parties in canton parliaments. Left-wing parties are often associated with more redistribution and a larger government (for example, Tavares, 2004). Since representatives are elected by voters, we expect that party affiliation reflects voter preferences. The variable is calculated from the number of seats of left-wing parties divided by the total number of parliamentary seats in a canton. The measure has the advantage that is available for more years than our ballot measure. It has the disadvantage that voters might elect left-wing parties for many reasons unrelated to government spending.

Our ballot measure reveals that cantons with stronger direct democratic institutions

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[16]Direct democracy plays an important role at the federal level as well. Citizens can initiate a partial or total revision of the federal constitution, vote on changes to the federal constitution or international treaties; if 50,000 signatures are collected, they can also request a referendum on each federal law.

[17]We experimented with alternative measures for approval rates. First, we use the raw approval rate on a proposal instead its deviation from the mean. Second, we tried a more conservative strategy: we included votes only if we could identify an increase in expenditures (rather than including increases in taxes or subsidies). In both cases, the results were almost identical to the ones reported here.

are much less supportive of government spending. Citizens in cantons with a mandatory budget referendum are 1.6 percent less likely on average to approve federal propositions that increase spending or taxes. In sharp contrast, the approval rate in cantons without a mandatory budget referendum is 2.1 percent higher than the average canton. In contrast, we find no evidence that left-wing parties are necessarily weaker in cantons with stronger direct democracy. Both measures exhibit substantial variation over time within the same canton. Since voter preferences are correlated with direct democracy and fluctuate over time, they could be an important source of omitted variable bias.

The first two columns in table 5 report the fixed effects estimator when we add our controls for government demand. The top panel shows the results for canton expenditures and the bottom panel for local expenditures. All regressions include canton and year fixed effects as well as the same controls as before. Voter preferences have little effect on the coefficients of the direct democratic institutions. Canton expenditures continue to be lower in cantons with a mandatory budget referendum, while local expenditures are slightly lower or unaffected. The voter initiative has a statistically significant effect only if we include left-wing parties. One reason could be the smaller sample if we use the ballot measure.

Alternatively, direct democracy might play a more important role in more heterogeneous population. One reason is that politicians face more uncertainty about the preferences of the electorate. If population heterogeneity also reduces spending, our results would again overestimate the effect of direct democracy. Column (3) of table 5 adds measures of linguistic and religious heterogeneity calculated as one minus the Herfindahl index of concentration. Like our preference measures, population heterogeneity has little effect on the coefficients.

Second, our period saw important changes in voting rights. In particular, women were enfranchised and many cantons switched to proportional representation. Both electoral reforms

should shift the position of the median voter and therefore the demand for government. Column (4) shows that our estimates remain unchanged if we include controls for these electoral reforms.

Third, changes in other political institutions might be correlated with direct democracy and spending. In some cantons, citizens decide on each law passed by the government in a referendum. Column (5) includes a binary indicator equal to one if a canton has such a mandatory law referendum in place and zero otherwise. The coefficients on the budget referendum become slightly more negative for canton and local expenditures; the coefficients on the voter initiative remain unchanged.

Similarly, more political decision-makers in parliament or executive could increase expenditures, for example, because of log-rolling. Column (6) shows that the inclusion of size of the executive and parliamentary seats does not affect our results. Several cantons also have additional fiscal restraints: balanced budgets are stipulated by many canton constitutions; a number of cantons have also adopted deficit and debt limitations in the last two decades. Fiscal constraints are overall more prevalent in cantons with stronger democracy and might constrain spending. Column (7) therefore adds controls for balanced budget rules and whether the canton has a constitutional or statutory limitations on deficits or debt. Fiscal restraints do not have much effect on the coefficients of our direct democratic institutions.

Fourth, the standard errors of our fixed effects estimator might be downward biased if spending is serially correlated. To address serial correlation, we implement the before-after estimator suggested by Bertrand et al. (2004) for a small number of policy changes. We first regress expenditures on all our control variables and fixed effects. Then, we aggregate the residuals in the period before and after the policy change for the subsample of cantons with

changes in direct democratic institutions. The coefficients in column (7) report the difference of the residuals. The results at the canton level are even weaker and remain unchanged for the local level.

Fifth, we checked whether alternative definitions of the direct democratic variables change our results (see table A2). Column (1) shows that the absolute number of signatures for the voter initiative (rather than in percentage of the electorate) has a slightly weaker effect on spending. We again find a positive effect if we use the log of the number of signatures instead (not reported), which suggests that spending is more sensitive to changes at low levels of the signatures requirement.

Column (2) relaxes the linear relationship between signature requirement and spending. We added variables equal to one if a canton's signature requirement is less than 1 percent, between 1 and 3 percent and above 3 percent respectively, and zero otherwise. The omitted category is cantons without a voter initiative in a given year. There are two noteworthy results: first, a voter initiative reduces spending at the canton and local level relative to a canton without the initiative. Second, higher signature requirements (above 3 percent) reduce spending less than signature requirements under 1 percent. This result is noteworthy because signature requirements are on average much lower than, for example, in the United States.

Sixth, the budget referendum and voter initiative could be substitute means to control the government (see Feld and Matsusaka, 2003). Column (3) confirms that the interaction effect between the two is negative. Hence, a mandatory budget referendum is a more important device to control spending when the costs of a voter initiative are high.

The effect of direct democracy could also have changed over our 110 years period. Voters might not always prefer less spending than politicians. In fact, we do not find statistically

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significant differences in voter support for government spending using our ballot measure between cantons with and without mandatory budget referendum prior to 1945 (not reported). Column (4) shows that the constraining effect of low signature requirements was much more modest before 1945. This result confirms Matsusaka (1995) and Matsusaka (2000) who finds similar results for the United States. Similarly, the constraining effect of the mandatory budget referendum is a recent phenomenon as well. Before 1945, there is no effect; after 1945, there is a statistically significant negative effect of 4.8 percent. Even if we focus on the post-1945 period, the budget referendum has a constraining, but moderate effect on canton spending; this is in line with our baseline results.

In sum, we find that the paper's main findings are robust if address concerns of omitted preferences, other institutional changes, biased standard errors or alternative specifications for the voter initiative.

5 Instrumental Variable Approach

5.1 Policy Endogeneity

A remaining concern with our empirical strategy is that reforms of direct democratic institutions are endogenous and hence correlated with the residual in equation (1). To assess this concern, we test for spending trends prior to changes in direct democratic institutions. We add dummy variables denoting intervals four to six and one to three years prior to institutional reforms, and zero to four and more than five years after the reforms to the specification in equation (1). The results in table A3 reveal strong spending trends prior to changes in the mandatory budget referendum and voter initiative.

The result of prior trends is not surprising. After all, citizens would be more likely to

demand more direct control over the budget after periods of severe overspending in the eye of the voter. This reasoning suggests a reverse regression to test for feedback effects: can spending shifts predict changes in direct democratic institutions?

Table A4 demonstrates that adopting the mandatory budget referendum is indeed positively correlated with expenditures two years before the reform (top panel, column (2)). Similarly, a higher growth rate in spending increases the probability of adopting a mandatory budget referendum several years later (bottom panel). We find no evidence that past spending levels or growth rates affect the decision to abolish the budget referendum or change the signature requirement. Taken together, the evidence suggests that policy endogeneity is a concern.

5.2   Constitutional Initiative and Direct Democracy

To eliminate the endogeneity bias, we use an instrumental variable approach. In Switzerland, the rights of direct democratic participation through referendums and voter initiatives are laid down in each canton's constitution. A candidate instrument is how costly it is to revise or amend the canton constitution. Hence, we propose as our instrument the constitutional initiative which allows citizens to amend or demand a revision of the current constitution. The instrument is in the spirit of Poterba (1996) who advocates the use of constitutional rules to identify the causal effect of political institutions.

Swiss constitutional history provides many examples where the constitutional initiative was used to expand democratic participation rights for its citizens (see Curti, 1900; Kölz, 1992, 2004). It was a powerful tool to expand the influence of the political opposition and other underrepresented groups. One example is the "Democratic Movement" in the 1860s; it initiated the adoption of the voter initiative and law referendum in *Basle County* in 1863.

Several successful campaigns in other cantons followed.

In *Grisons*, the political opposition of young Democrats launched a constitutional initiative to lower the signature requirement for the voter initiative. The constitutional initiative to reduce the number from 5,000 to 3,000 signatures was approved by the electorate in 1891 (Metz, 1991). Similarly, a constitutional initiative in *Schaffhouse* in 1894 demanded the introduction of the mandatory budget referendum. The draft of the new constitution included the mandatory budget referendum for projects with extraordinary expenditures of 150,000 or recurrent expenditures of 15,000; it was approved by the electorate in 1895 (Schneider, 1993).[18]

The new constitution of the Swiss federation in 1848 mandated that all cantons adopt the constitutional initiative. Cantons differ however, in the number of signatures required to launch such an initiative. High signature requirements impose significant barriers for constitutional reform by the electorate. Hence, the constitutional initiative should have a stronger effect if the signature requirement is low.

Additional support for this argument comes from an examination of the few cases where direct democracy was examined without a constitutional initiative. In all four cantons, the signature requirements for a constitutional revision were high: for example, *Berne* required 15,000 signatures and *Fribourg* 6,000 signatures already in 1900. As for the voter initiative, we calculate the signature requirement for the constitutional initiative in percentage of the eligible population. On average, 3.4 percent of the electorate is required to request a change or amendment to the canton constitution.

The constitutional initiative shifts the costs of changing both the budget referendum and

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[18]Other examples of the role of the constitutional initiative for the expansion of the voter initiative and mandatory budget referendum after 1890 can be found in *Lucerne, Sankt Gallen, Schwyz, Uri, Valais* and *Zug* (Möckli, 1987; Kölz, 2004).

the voter initiative. To separate the causal effect of the two institutions, we exploit the long time horizon of our data. As an additional instrument, we use the provisions for the mandatory budget referendum two decades earlier. Note that the fixed effects specifications ensures that current direct democratic institutions are only affected by past changes in the budget referendum; they are not affected by the presence of absence of a mandatory budget referendum per se.

Table 6 shows the results of the first stage regressions. The dependent variable is whether the canton has a budget referendum in place (column (1)) and the signature requirement of the voter initiative (column (2)). As expected, a higher signature requirement to revise the constitution is associated with a higher signature requirement for the voter initiative. Changes in the provisions of the budget referendum in the past are positively correlated with changes in current provisions for the budget referendum.

How strong are these effects? If we raised the costs of launching a constitutional initiative by one standard deviation or 2.42 percent, the signature requirement for the voter initiative would be 1.53 percent higher. The statistics at the bottom of the table show that we have enough independent variation in the instruments. Shea's partial R^2 is 0.08 for the voter initiative and 0.09 for the budget referendum. The F-statistics of the instruments also suggest that our instruments are not weak (Stock and Yogo, 2005).

5.3 Instrumental Variable Results

The first stage shows a strong correlation between changes in direct democratic institutions and our instruments. Can we also plausibly exclude the instruments from the spending equation conditional on our control variables? The exclusion restriction would be invalid if the constitutional initiative can be used to directly influence spending or revenue decisions.

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An examination of each canton's constitutions, however, reveals this is not the case. The constitutional initiative cannot be used to set spending levels, spending growth or limit public debt at the canton level directly.[19]

Such a restriction would also be invalid if other political institutions are correlated both with spending and the constitutional initiative. For example, the constitutional initiative might be used to change the number of political decision-makers or voting rights. Both are likely to affect spending because of log-rolling or changes in the median voter. To account for these influences, we include in our specification controls for institutional changes over our sample period: the number of decision-makers in the executive (cabinet size) and legislative and the provision for the mandatory law referendum. We also include changes in voting rights: the enfranchisement of women and the adoption of proportional representation for the legislature. Finally, we add whether a balanced budget is required by the constitution. Note also that all other permanent differences between cantons are absorbed by the canton fixed effects. Conditional on these institutions, canton characteristics and fixed effects, the barrier for a constitutional initiative and past changes in the budget referendum appear to be plausible instruments.

The second-stage results are shown on the right-hand side of table 6. We first report the least squares results for canton (column (3)) and local expenditures (column (6)) as a benchmark. Both are very similar to the results reported in table 3 and 4. We expect the instrumental variable estimates to be larger in magnitude than least squares; the reason is that higher spending in the past increases the likelihood of stricter direct democratic

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[19]Since 2000, three cantons have amended their constitutions to incorporate debt and deficit limitations; these prescribe rules and sanctions if canton deficits exceeds a prescribed threshold. Note that these differ from constitutional balanced budget rules which do not specify a specific procedure or sanctions if deficits occur. However, explicit rules to restrict deficits and hence indirectly affect spending decisions did not exist in our study period from 1890 to 2000.

institutions. Our first set of instrumental variable estimates is shown in columns (4) and (7).

The second set of estimates (columns (5) and (8)) also includes interaction effects between the signature requirements and year dummies as additional instruments. This specification allows for greater flexibility in how the instrument affects direct democracy. In particular, the constitutional initiative can be used to adopt a mandatory budget referendum in one year and abolish it at a later point (or vice versa).

The instrumental variable estimates indicate that canton spending is 9 percent lower if a budget referendum is mandatory. For the voter initiative, a one percent higher signature requirement increases spending by 2.2 percent. Using a novel instrument to account for policy endogeneity, we still find that the impact of direct democracy on canton spending is moderate. For local expenditures, we find a negative for both the budget referendum and the voter initiative; the coefficient for the budget referendum is, however, barely significant. Hence, the instrumental variables confirm that direct voter control at the canton level does not shift spending to lower levels of governments.

As expected, the instrumental variable estimates are larger in magnitude than least squares. Are the estimates also plausible given that they are much larger than the OLS results? We believe the results are reasonable for three reasons. First, it is not uncommon in the literature on endogenous institutions to find that instrumental variables are several times larger than least squares (for example, Levitt, 1997; Levitt, 2002). Second, our estimated effects of direct democratic institutions on canton spending are less than half the estimates in comparable studies (Feld and Matsusaka, 2003). Finally, large estimates might be an indication that the instruments should be included as controls in the second stage. However, the overidentification test reported at the bottom of table does not speak to this concern: we cannot reject the null hypothesis that our instruments can be excluded from the second

stage.

6 Conclusion

This article presents new evidence on the causal effect of direct democracy on public spending. We find that both mandatory budget referendum and voter initiative reduce canton spending. The constraining effects of both institutions are however moderate especially if compared to the previous, cross-sectional literature. Our findings highlight the importance of accounting for unobservable differences across cantons and to address the bias from potential endogeneity and omitted variables.

We also show that direct democratic institutions at the canton level play a limited role for the vertical structure of government. Mandatory budget referendums do not shift spending to the local level; if anything, they tend to reduce spending at the local level. We also find no strong effect of the voter initiative on local spending. And neither the budget referendum nor the voter initiative decentralizes spending to the local level. These results are novel and contradict previous evidence based on cross-sectional variation.

Both voter initiative and budget referendum reduce government spending at the canton level but have only a limited impact on lower levels of government. While the costs of launching an initiative are higher, it also gives citizens more leverage how to control the spending decisions of their governments. It would be interesting to compare the initiative and referendum along other dimensions; for example, how much politicians are bound by referendums and initiatives or how much information about preferences they provide for politicians.

Finally, we would like to point out that our results do not imply that direct democracy

improves welfare. To do so, we would need to compare the desired spending levels of the median voter with the costs of direct democratic participation to voters. While such an analysis is feasible in principle, we leave an exploration of these welfare effects for future research.

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A   Data Appendix

The appendix describes the data sources and construction of variables. Our outcome variables are canton expenditures, revenues and local expenditures. All expenditure and revenue categories are expressed per capita and deflated to 2000 Swiss Francs using the annual consumer price index reported in Schuppli and Studer (2004). Canton expenditures and revenues are taken from the annual publication *Statistisches Jahrbuch der Schweiz* for the years 1890 to 1950 and from *Öffentliche Finanzen der Schweiz* for 1950 to 2000. Government expenditures and revenues are interpolated for two years with missing observations (1967 and 1968). Local expenditures are taken from *Historical Statistics of Switzerland* and available for 1863, 1900, 1910, 1938 and annually since 1950. Data are missing in *Nidwalden, Uri* and *Schaffhouse* for 1863, 1900 and 1910 as well as in *Obwalden, Solothurn, Appenzell-Innerrhode* and *Appenzell-Outerrhode* in 1900 and 1910. Data for all cantons are missing in 1967 and 1968. Federal subsidies are revenues for cantons comprised of subsidies by the federal state

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for roads, education, welfare, agriculture and other areas. This control variable is obtained from *Historical Statistics of Switzerland* prior to 1955 and *Öffentliche Finanzen der Schweiz* thereafter. The data are available for 1893, annually between 1915 and 1926, 1928, 1930, 1931, 1933, 1935-1937, 1940, 1942, 1943, 1945, 1946, 1949 and annually since 1953, but missing between 1968 and 1977. Missing years were obtained by linear interpolation.

Our main institutional variable is the mandatory budget referendum and the signature requirement for the voter initiative. We gathered this information from each canton's past and current constitutions (available at http://www.verfassungen.de/ch) and relevant canton laws. We employed published sources to validate and cross-check our coding of the institutional variables (Kölz, 2004; Monnier, 1996; Ritzmann-Blickernstorfer, 1996; Trechsel and Serdült, 1999; Vatter, 2002). If in doubt, we contacted the cantonal Public Record Offices (*Staatsarchive*) to clarify any inconsistencies. Our first measure is a binary indicator equal to one if the canton had a mandatory budget referendum in that year. The indicator is zero if the canton had an optional or no budget referendum. For the voter initiative, we use the signature requirement for launching an initiative measured in percentage of the eligible population. We assigned a signature requirement of 30 percent if the voter initiative was not adopted in that year. Three cantons adopted the voter initiative shortly after 1890: *Geneva* in 1891, *Ticino* in 1892 and *Berne* in 1893. The remaining three cantons adopted it in 1906 (*Lucerne*), 1907 (*Valais*) and 1921 (*Fribourg*). Estimates are not sensitive to alternative specifications of the 30 percent threshold. We examine the influence of the mandatory law referendum that requires all canton laws to be approved by the electorate. The variable is a binary indicator if a canton has a mandatory law referendum in place and zero otherwise. We also construct two measures of fiscal constraints: first, a binary indicator equal to one if the canton has a balanced budget rule in their constitution in a given year and zero otherwise. Second, a binary indicator equal to one if the canton has constitutional or statutory deficit or debt limitations in place in a year and zero otherwise. Both were coded from the canton constitutions and Stauffer (2001).

Information on voter support for more spending is collected from the online database of all federal propositions by the Federal Statistical Office (http://www.admin.ch/ch/d/pore/va/). We calculate our measure of voter preferences as the percentage of votes for propositions that would increase spending if approved. To identify votes with fiscal consequences, we use the official documents by the federal government (http://www.ads.bar.admin.ch/ADS/showHome.do). They contain the arguments for and against each proposition as well as its estimated financial consequences, i.e. whether and by how much expenditures or taxes would increase if the proposition was approved. Our second preference measure is calculated from the number of seats held by left-wing parties divided by the number of seats in the canton parliament. Both are compiled from Hofferbert (1967), the *Statistisches Jahrbuch der Schweiz*, all past and cur-

rent constitutions and information provided by each canton's Public Record Office. Left-wing party seats are missing for two cantons (*Appenzell-Innerrhode* and *Appenzell-Outerrhode*). No party seat information is available for *Nidwalden* prior to 1943 and *Obwalden* prior to 1966. Party affiliations were often not well-defined in the late 19th and early 20th century. For seven cantons (*Basle City, Geneva, Neuchatel, Lucerne, Solothurn, Schwyz* and *Zug*), we have party affiliation over the whole period; for seven more (*Aargau, Saint Gallen, Zurich, Basle County, Fribourg, Thurgau* and *Grisons*) we have information since the 1910s. Information in four cantons (*Berne, Glarus, Ticino* and *Valais*) is available since the 1920s and for the remaining three since the early 1930s.

Our control variables are taken from the decennial Census as reported in *Historical Statistics of Switzerland*, Hofferbert (1976) and *Statistisches Jahrbuch der Schweiz*; the data are available for 1888, 1900, 1910, 1920, 1930, 1941, 1950, 1960, 1970, 1980, 1990 and 2000. The population in each canton is from *Statistisches Jahrbuch der Schweiz* and available annually since 1888. Population density is measured as the log of a canton's population. Urban population is calculated as the share living in cities with more than 10,000 inhabitants. The data is taken from *Historical Statistics of Switzerland* and *Statistisches Jahrbuch der Schweiz* and available for 1890, 1894, 1898, 1903, for each decade between 1910 and 1960 as well as 1962, 1969, 1974, 1979, 1984, 1990 and 2000. The information on the population in the various age groups (below 20, between 20 and 64 and above 65), the number of foreigners and religious affiliation is from the decennial Census. All three variables are expressed as percentage of the total population. Religious affiliation is calculated as the share of the population that is Protestant as opposed to being Catholic or another religion. We collected several labor market indicators to control for differences in economic activity across cantons. Total employment and employment shares in agriculture and manufacturing are from the decennial Census. The labor force participation rate is then calculated by dividing the number of people employed by the canton's total population.

We use three additional variables to control for income differences across cantons. The number of doctors is calculated per 1,000 inhabitants. The data is from *Historical Statistics of Switzerland*, Hofferbert (1976) and *Statistisches Jahrbuch der Schweiz* and available for 1890, 1895, 1900, 1910, 1917, 1920, 1926, 1930, 1935, 1940, 1945, 1950, 1955, 1960, 1965, 1970, 1975. 1980. 1985, 1990, 1995 and 2000. Infant mortality denotes the number of children that died before reaching age one and is expressed per 100,000 births. The data for births and infant mortality is available annually since 1890 and taken from *Historical Statistics of Switzerland*. Car ownership is calculated as number of cars per population and is from *Historical Statistics of Switzerland* and *Statistisches Jahrbuch der Schweiz*. It is zero before the first cars emerged in 1910 and positive thereafter. Data on cars owned is available for 1910, 1914, 1917, 1923, 1929, 1934, 1939, 1945, 1947, 1950, 1954, 1958, 1962, 1966, 1970,

1975, 1978, 1982, 1986 and annually since 1990. We used linear interpolation for missing years between two data points; data before 1910 are set to zero.

Table 1: Direct Democratic Instruments in Swiss Cantons in 2000

	Mandatory Budget Referendum	Changes in Mandatory Budget Referendum	Signature Requirement Voter Initiative	Changes in Signature Requirement of Voter Initiative
Aargau (AG)	No	Abolish (1982)	3,000	Decrease (1982)
Appenzell Outerrhode (AR)	Yes	No	300	Increase (1995)
Appenzell Innerrhode (AI)	Yes	Adopt (1979)	1	No
Basle County (BL)	No	Adopt (1892), Abolish (1945)	1,500	No
Basle City (BS)	No	No	4,000	Increase (1950; 1975)
Berne (BE)	No	Adopt (1893), Abolish (1995)	15,000	Increase (1995)
Fribourg (FR)	Yes	Adopt (1972)	6,000	No
Geneva (GE)	No	Adopt (1927), Abolish (1931)	10,000	Increase (1936, 1950)
Glarus (GL)	Yes	No	1	No
Grisons (GR)	Yes	No	3,000	Decrease (1893)
Lucerne (LU)	Yes	Adopt (1969)	4,000	No
Neuchatel (NE)	Yes	Adopt (1949), Abolish (2000)	6,000	Increase (1959)
Nidwalden (NW)	Yes	Adopt (1913)	250	Increase (1996)
Obwalden (OW)	No	Adopt (1902), Abolish (1998)	500	Increase (1998)
Schaffhouse (SH)	Yes	Adopt (1895)	1,000	No
Schwyz (SZ)	Yes	No	2,000	No
Solothum (SO)	Yes	No	3,000	Increase (1977)
St. Gallen (SG)	Yes	Adopt (1929)	4,000	No
Ticino (TI)	No	No	7,000	Increase (1970)
Thurgau (TG)	Yes	No	4,000	Increase (1990)
Uri (UR)	Yes	No	600	Increase (1929, 1955, 1997)
Vaud (VD)	No	Abolish (1948), Adopt (1998)	12,000	Increase (1961)
Valais (VS)	No	Abolish (1994)	4,000	Increase (1973), Decrease (1994)
Zurich (ZH)	No	Abolish (1999)	10,000	Increase (1979)
Zug (ZG)	No	No	2,000	Decrease (1894), Increase (1991)

Notes: The table summarizes the key features of direct democracy in Swiss cantons. Column (1) reports whether cantons have a mandatory budget referendum in 2000, while column (2) shows whether and when cantons changed their provisions for the budget referendum between 1890 and 2000. The budget referendum in *Fribourg* after 1972 and *Valais* between 1920 and 1994 applies to extraordinary expenditures only which we code as a mandatory referendum. *Obwalden* only had a referendum for spending on roads prior to 1902 which we do code as no mandatory budget referendum. Column (3) shows the absolute number of signatures required to launch a voter initiative, which is available in all cantons in 2000. Finally, column (4) shows the changes in the absolute number of signatures required over our sample period. In the empirical analysis, our measure of the voter initiative is the signature requirement in percentage of the eligible population.

Table 2: Summary Statistics by Institutional Regime

| | Mandatory Referendum | | No Mandatory Referendum | | T Statistic |
	Mean	Std. Dev	Mean	Std. Dev	Difference
Fiscal Policy					
Expenditures per capita (log)	7.15	1.24	7.18	1.31	0.5
Revenues per capita (log)	7.13	1.25	7.15	1.31	0.4
Local expenditures in canton (log)	7.07	1.19	6.63	1.13	-9.5
Degree of Centralization	53.72	12.45	61.38	17.15	-2.9
Political Institutions					
Signature requirement initiative (%)	2.13	1.68	2.72	1.83	8.4
Mandatory law referendum	0.84	0.37	0.26	0.44	-40.4
Size of Parliament	115.67	55.74	111.42	43.19	-2.0
Size of Executive	6.44	1.44	6.75	1.32	5.7
Proportional Representation	0.53	0.50	0.76	0.43	11.7
Women Suffrage Adopted?	0.28	0.45	0.26	0.44	-1.5
Balanced Budget Rule	0.03	0.18	0.04	0.21	1.6
Deficit or Debt Limitations	0.06	0.25	0.01	0.11	-6.3
Control Variables					
Language: non-German	0.14	0.35	0.43	0.49	17.9
Age 0 to 19 (%)	34.22	6.11	32.99	7.83	-4.6
Age 20 to 39 (%)	29.66	2.25	30.58	2.94	9.3
Age 40 to 64 (%)	26.50	3.07	27.33	4.04	6.1
Age 65 and Above (%)	9.63	3.47	9.10	3.70	-3.7
Log population	11.61	1.13	11.69	1.06	1.7
Urban population (%)	19.01	19.07	37.77	31.02	19.7
Federal subsidies (log)	5.43	1.21	5.16	1.07	-5.7
Employment in primary sector (%)	21.04	12.91	18.89	15.44	-3.9
Employment in secondary sector (%)	44.66	11.96	41.54	9.81	-7.0
Labor force participation	39.92	7.15	42.13	8.36	6.9
Doctors per 1,000 inhabitants	0.81	0.35	1.05	0.64	12.6
Car ownership (%)	12.58	16.50	11.70	17.01	-1.3
Infant mortality rate	59.77	106.05	61.20	89.29	0.4
Linguistic Heterogeneity	0.20	0.23	0.21	0.16	1.9
Religious Heterogeneity	0.34	0.20	0.34	0.20	-0.3

Notes: The table reports summary statistics over the whole sample period (1890-2000) separately for cantons with mandatory budget referendum and those without. The last column reports the T-value for differences in means between the two groups of cantons. The degree of centralization is the percentage of local and canton expenditures that are undertaken at the canton level. The signature requirement for the voter initiative is calculated as percentage of the population over 20. Linguistic and religious heterogeneity is calculated as one minus the Herfindahl index for three language and religious groups. Infant mortality is calculated as number of children dying before age 1 among 100,000 births.

Table 3: Direct Democracy and Fiscal Policy: Fixed Effects

	Canton Expenditures			Canton Revenues		
	(1)	(2)	(3)	(4)	(5)	(6)
Budget Referendum	-0.267	-0.093	-0.034	-0.259	-0.086	-0.018
	(0.017)***	(0.013)***	(0.014)**	(0.017)***	(0.014)***	(0.015)
Signature Requirement Initiative	-0.01	0.004	0.005	-0.011	0.005	0.006
	(0.002)***	(0.002)**	(0.001)***	(0.002)***	(0.002)***	(0.002)***
Log Population		-0.122	0.122		-0.128	0.135
		(0.008)***	(0.050)**		(0.008)***	(0.054)**
% Age 20 to 39 Years		0.056	-0.005		0.048	-0.016
		(0.005)***	(0.004)		(0.005)***	(0.004)***
% Age 40 to 64 Years		0.039	0.002		0.035	-0.002
		(0.004)***	(0.003)		(0.004)***	(0.004)
% Above Age 65		0.006	-0.04		0.008	-0.033
		(0.005)	(0.006)***		(0.005)	(0.007)***
% Urban Population		0.002	0.002		0.002	0.002
		(0.000)***	(0.001)***		(0.000)***	(0.001)***
Federal Subsidies (log)		0.138	0.146		0.117	0.128
		(0.011)***	(0.010)***		(0.012)***	(0.010)***
% Employed Agriculture		-0.014	0.004		-0.018	-0.001
		(0.002)***	(0.002)*		(0.002)***	(0.002)
% Employed Industry		-0.006	0.016		-0.007	0.015
		(0.001)***	(0.002)***		(0.001)***	(0.002)***
Labor Force Participation (%)		-0.01	-0.018		-0.011	-0.018
		(0.001)***	(0.001)***		(0.001)***	(0.001)***
Doctors (per 1,000 inhabitants)		0.089	-0.164		0.057	-0.215
		(0.029)***	(0.027)***		(0.030)*	(0.029)***
Car Ownership (%)		0.023	0.013		0.023	0.012
		(0.002)***	(0.002)***		(0.003)***	(0.002)***
Infant Mortality Rate		-0.002	-0.001		-0.002	-0.001
		(0.000)***	(0.000)***		(0.000)***	(0.000)***
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Age Structure of Canton	No	Yes	Yes	No	Yes	Yes
Canton Fixed Effects	No	No	Yes	No	No	Yes
Observations	2524	2524	2524	2524	2524	2524
R-squared	0.90	0.96	0.98	0.90	0.95	0.98
Joint Significance Canton FE			110.4			98.1
(p value)			<0.001			<0.001

Notes: The dependent variable in columns (1)-(3) is log annual canton per capita expenditures and log annual canton per capita revenues in columns (4)-(6). The first specification (columns (1) and (4)) include only whether a canton has a mandatory budget referendum in place and the signature requirement for the voter initiative as well as year dummies. The second specification adds log population, the percentage of the population in different age groups (20-39, 40-64, 65 and over with age 0-19 as the omitted category), the percentage of the population living in cities with more than 10,000 inhabitants, the percentage of workers employed in agriculture and industry, the log per capita federal subsidies to a canton, labor force participation rate, infant mortality rate, the per capita ownership of cars and the number of doctors per 1,000 inhabitants. Robust standard errors are reported in parentheses. * $p<0.1$, ** $p<0.05$ and *** $p<0.01$. The last two rows in columns (3) and (6) report the F-statistic and p-value for the joint significance of the canton fixed effects.

Table 4: Direct Democracy and Decentralization: Fixed Effects

	Local Expenditures			Centralization Measure		
	(1)	(2)	(3)	(4)	(5)	(6)
Budget Referendum	0.219	0.203	-0.024	-8.96	-6.302	-0.372
	(0.025)***	(0.024)***	(0.024)	(0.578)***	(0.552)***	(0.517)
Signature Requirement Initiative	0.002	0.019	0.017	-0.274	-0.366	-0.333
	(0.003)	(0.003)***	(0.003)***	(0.067)***	(0.074)***	(0.055)***
Log Population		0.139	-0.911		-4.882	14.947
		(0.014)***	(0.090)***		(0.330)***	(1.912)***
% Urban Population		-0.003	0.006		0.032	-0.069
		(0.001)***	(0.001)***		(0.018)*	(0.026)***
Federal Subsidies (log)		0.016	-0.062		3.389	4.388
		(0.021)	(0.018)***		(0.482)***	(0.383)***
% Employed Agriculture		-0.023	-0.019		0.017	0.289
		(0.003)***	(0.003)***		(0.069)	(0.072)***
% Employed Industry		-0.002	0.011		-0.287	-0.152
		(0.002)	(0.004)***		(0.055)***	(0.076)**
Labor Force Participation (%)		0.009	-0.001		-0.296	-0.250
		(0.002)***	(0.002)		(0.054)***	(0.050)***
Doctors (per 1,000 inhabitants)		-0.531	-0.416		5.325	-2.531
		(0.051)***	(0.047)***		(1.173)***	(0.984)**
Car Ownership (%)		0.048	0.043		-1.057	-0.962
		(0.004)***	(0.004)***		(0.102)***	(0.085)***
Infant Mortality Rate		-0.0003	-0.0002		0.042	0.030
		(0.0002)	(0.0002)		(0.004)***	(0.003)***
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Age Structure of Canton	No	Yes	Yes	No	Yes	Yes
Canton Fixed Effects	No	No	Yes	No	No	Yes
Observations	2410	2410	2410	2410	2410	2410
R-squared	0.77	0.84	0.93	0.16	0.44	0.79
Joint Significance Canton FE			117.1			152.8
(p value)			<0.001			<0.001

Notes: The dependent variable in the first three columns is log per capita expenditures of local communities in each canton; in columns (4) to (6), it is the percentage of per capita expenditures at the canton level calculated as canton spending/(canton+local spending). For three cantons (*Uri, Schaffhouse* and *Nidwalden*), local expenditures were only available since 1938. See the notes to Table 3 for an explanation of the independent variables included in the estimation. Robust standard errors are reported in parentheses. * $p<0.1$, ** $p<0.05$ and *** $p<0.01$. The last two rows in columns (3) and (6) report the F-statistic and p-value for the joint significance of the canton fixed effects.

Table 5: Robustness Checks

|	Voter Preferences (ballot support) (1)	Voter Preferences (left parties) (2)	Population Heterogeneity (3)	Change in Voting Rights (4)	Mandatory Law Referendum (5)	Size of Parliament, Executive (6)	Fiscal Restraints (7)	Account for Serial Correlation (8)
Y: Canton Expenditures								
Budget Referendum	-0.045	-0.042	-0.04	-0.034	-0.049	-0.025	-0.033	-0.017
	(0.015)**	(0.013)**	(0.014)**	(0.014)**	(0.014)***	(0.014)*	(0.012)***	(0.009)*
Signature Requirement Initiative	0.006	0.005	0.004	0.005	0.005	0.005	0.005	0.002
	(0.004)	(0.002)**	(0.001)***	(0.001)***	(0.001)***	(0.002)***	(0.002)***	(0.001)*
Voter Preferences	0.003	0						
	(0.001)**	(0.001)						
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Canton Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Canton Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1349	2399	2524	2524	2524	2524	2524	1514
R Squared	0.98	0.98	0.98	0.98	0.98	0.98	0.98	
Y: Local Expenditures								
Budget Referendum	-0.043	-0.051	-0.024	-0.024	-0.036	0.011	-0.005	-0.016
	(0.031)	(0.017)**	(0.024)	(0.024)	(0.025)	(0.024)	(0.024)	(0.016)
Signature Requirement Initiative	0.019	0.016	0.016	0.017	0.017	0.012	0.017	0.009
	(0.013)	(0.003)**	(0.003)***	(0.003)***	(0.003)***	(0.003)***	(0.005)***	(0.002)***
Voter Preferences	0.004	0.377						
	(0.002)*	(0.116)**						
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Canton Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Canton Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1322	1904	2410	2410	2410	2410	2410	1438
R Squared	0.94	0.96	0.93	0.93	0.93	0.94	0.93	

Notes: The dependent variable in the top panel is the log of canton expenditures and the log of local expenditures in the bottom panel. Column (1) and (2) adds our preference measures (voter support for more government and the share of left-wing parties in canton parliaments respectively) to the baseline. Column (3) includes two measures of religious and linguistic heterogeneity. Column (4) controls for the introduction of female suffrage and proportional represention. Column (5) also controls for the mandatory law referendum, while column (6) adds the size of executive and the size of parliament. Column (7) controls for fiscal restraints: balanced budget rules in the constitution and statutory or constitutional limits on deficits and debts. Finally, column (8) implements the before-after estimator proposed by Betrand et al. (2004) to deal with serial correlation in the case of a small number of states. All specifications include year and canton fixed effects and the same controls as in column (3) in Table 3. * $p<0.1$, ** $p<0.05$ and *** $p<0.01$. Robust standard errors in parentheses

Table 6: Direct Democracy and Fiscal Policy: Instrumental Variables

	First Stage Results		Second Stage (Canton Expenditures)			Second Stage (Local Expenditures)		
	Budget Referendum (1)	Voter Initiative (2)	OLS Estimates (3)	IV Estimates (4)	IV plus Estimates (5)	OLS Estimates (6)	IV Estimates (7)	IV plus Estimates (8)
Mandatory Budget Referendum			-0.049 (0.011)***	-0.123 (0.058)***	-0.09 (0.031)***	0.025 (0.016)	-0.091 (0.055)*	-0.091 (0.047)*
Signature Requirement Initiative			0.009 (0.002)***	0.009 (0.009)	0.022 (0.007)***	0.02 (0.003)***	0.011 (0.011)	-0.018 (0.010)*
Signature Requirement Constitutional Initiative	0.002 (0.010)	0.633 (0.044)***						
Budget Referendum 20 Years Earlier	0.364 (0.035)***	0.564 (0.161)						
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Canton Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Canton Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2275	2275	2275	2275	2275	2191	2191	2191
R Squared	0.74	0.65	0.98			0.96		
Shea's Partial R Squared of First-Stage	0.09	0.08						
F-Statistic Excluded Instruments	53.34	114.16						
Sargan statistic					66.5			72.9
(p value)					0.97			0.91

Notes: The table reports instrumental variable results. The instruments for the budget referendum and signature requirement of the voter initiative are the signature requirement to launch a constitutional initiative and the provisions for the budget referendum 20 years earlier. Columns (1) and (2) show the first stage where the dependent variable is whether a canton has a mandatory budget referendum (column (1)) or the signature requirement for the voter initiative (column (2)). The dependent variable in columns (3) to (5) are log canton expenditures and log local expenditures in columns (6) to (8). Columns (3) and (6) show the least squares regression results for the sample with valid observations of the instruments. Columns (4) and (7) show the second-stage instrumental variable estimates. Columns (5) and (8) show the second-stage instrumental variables results where the effects of the constitutional initiative varies by year. All specifications include year and canton fixed effects, the same controls as in previous tables and the following additional controls: whether the canton has a mandatory law referendum, the number of seats in the canton parliament, the size of the executive, whether a canton had women's suffrage adopted, proportional representation and constitutional fiscal restraints. Robust standard errors reported in parentheses. * $p<0.1$, ** $p<0.05$ and *** $p<0.01$.

Figure 1: Map of Swiss Cantons
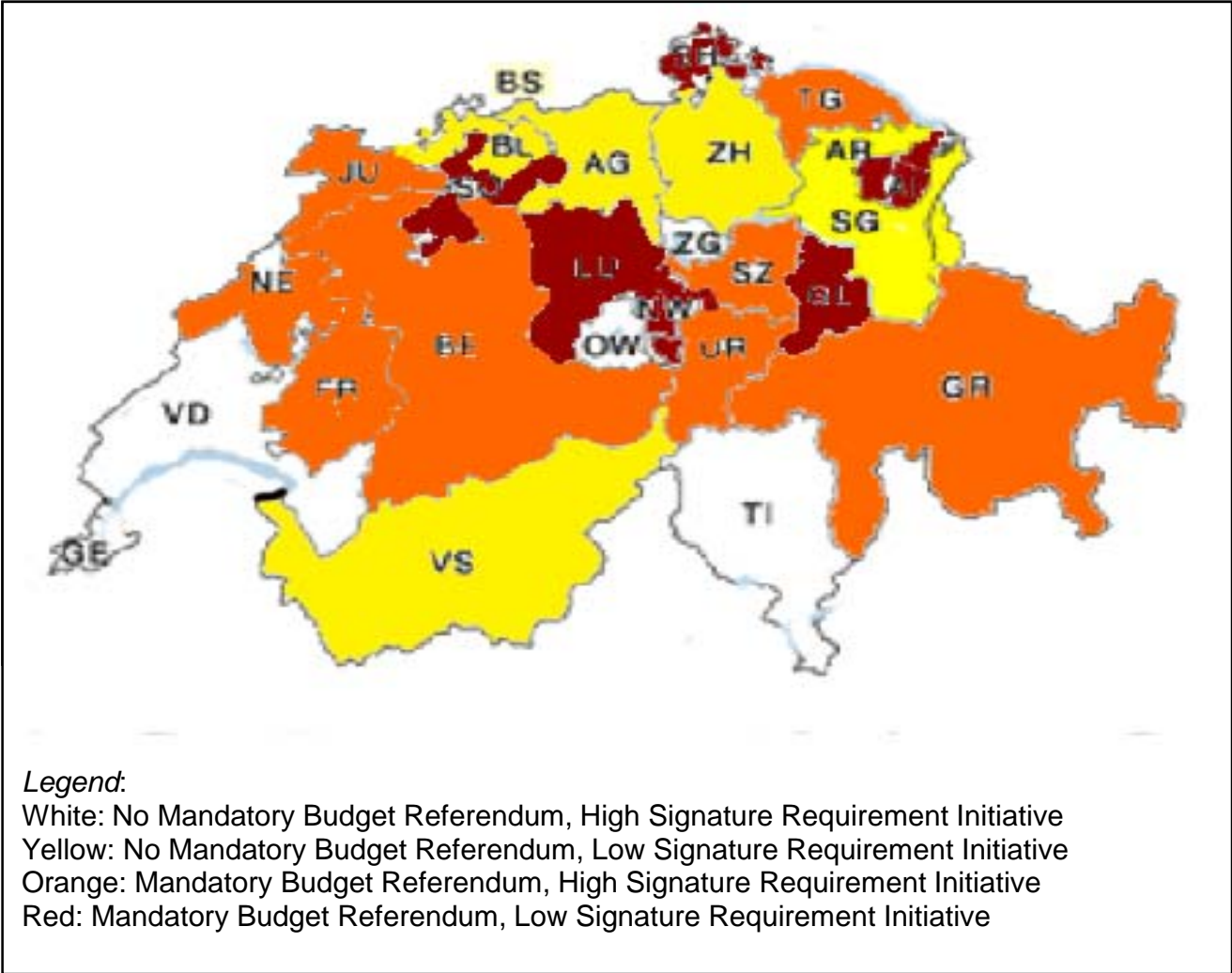
Legend:
White: No Mandatory Budget Referendum, High Signature Requirement Initiative
Yellow: No Mandatory Budget Referendum, Low Signature Requirement Initiative
Orange: Mandatory Budget Referendum, High Signature Requirement Initiative
Red: Mandatory Budget Referendum, Low Signature Requirement Initiative

Table A1: Federal Propositions inducing More Federal Spending, 1891-2000

Number	Title of Proposition	Year	% Yes	Outcome	Number	Title of Proposition	Year	% Yes	Outcome
35	Disability Insurance for Civil Servants and Public Employees	1891	21%	No	302	Removal of Canton Share in Stamp Duties	1980	67%	Yes
43	Share Customs Revenues with Cantons [lessexp]	1894	29%	No	303	Redistribution of Revenues from Alcohol Tax	1980	71%	Yes
46	Revision of Military Provisions	1895	42%	No	305	For a new Immigration Policy	1981	16%	No
52	Trade with Food (Revise Article 24, Constitution)	1897	65%	Yes	308	Improving Federal Finances	1981	69%	Yes
53	Nationalisation of Swiss Railways	1898	68%	Yes	312	Regulation of Gas Taxes	1983	53%	Yes
56	Health and Accident Insurance	1900	30%	No	313	Energy Article	1983	49%	No
60	Revision of Tariffs on Foreign Products [lessexp]	1903	60%	Yes	316	Introduction of User Fee for Heavy Traffic	1984	59%	Yes
66	Change in Organization of Swiss Military	1907	55%	Yes	317	User Fee for Highways (Nationalstrassen)	1984	53%	Yes
71	Health and Accident Insurance	1912	54%	Yes	323	Protection Motherhood	1984	15%	No
99	Initiative for Old Age, Widow and Disability Insurance	1925	42%	Yes	324	Regulation of Radio and Television	1984	69%	Yes
101	Federal Law on Old Age, Widow and Disability Insurance	1925	65%	Yes	331	Removal of Canton Share in Stamp Duties	1985	67%	Yes
102	Constitutional Amendment Regarding Corn Supply	1926	50%	No	332	Redistribution of Revenues from Alcohol Tax	1985	72%	Yes
115	Old Age and Widow Insurance	1931	40%	No	335	Subsidies for Small and Medium-Sized Firms	1985	43%	No
117	Temporary Decrease in Salaries of Public Employees	1933	45%	No	339	Culture Initiative	1986	43%	No
119	Change in Organization of Military Training	1935	54%	Yes	340	Secure Vocational Training and Retraining	1986	17%	No
121	Fight Economic Crisis	1935	43%	No	341	Domestic Sugar Industry Regulation	1986	38%	No
131	Loans for Military Investment and Reduce Unemployment	1939	69%	Yes	342	Protection of Renters	1986	63%	Yes
132	Change in Insurance for Civil Servants	1939	44%	No	348	Railway 2000	1987	56%	Yes
139	Protecting the Family	1945	76%	Yes	349	Protection of the Moor	1987	57%	Yes
141	Establishing a Right of Holding a Job	1946	19%	No	350	Reform Health Insurance	1987	28%	No
142	Economic Reforms and Right of Holding a Job	1947	31%	No	351	Constitutional Basis for Transport Policy	1988	46%	No
143	Revision of Economic Laws in the Constitution	1947	53%	Yes	352	Decrease Retirement Age	1988	35%	No
145	Regulation of Swiss Sugar Industry	1948	36%	No	363	Regulation of Wine Industry	1990	46%	No
150	Subsidies for Housing Construction	1950	46%	No	367	Energy Supply Article	1990	71%	Yes
157	Contribution to Costs of National Defense	1951	33%	No	368	Change in Traffic Law	1990	52%	Yes
159	Subsidies for Agriculture	1952	64%	Yes	370	Promoting Public Transport	1991	37%	No
168	Changes in Federal Finances	1953	42%	No	371	Reform of Federal Finances	1991	46%	No
171	Subsidies for Swiss War Veterans Living Abroad	1954	44%	No	373	Financing of Health Insurance	1992	39%	No
177	Subsidy for Canton Grisons	1956	43%	No	377	Protection of Waters	1992	66%	Yes
178	Changes in Order for Wheat Production	1956	39%	No	381	Saving the Waters	1992	37%	No
187	Improving the Road Infrastructure	1958	85%	Yes	382	Building Railway through the Alps	1992	63%	Yes
194	Subsidies for Milk Producers	1960	56%	Yes	386	Raise Salary of Parliamentary Members	1992	27%	No
196	Gas Tax for Financing Highway Construction (Nationalstrasser	1961	47%	No	387	Improve Infrastructure for Parliamentary Members	1992	30%	No
201	Salaries of Representatives and Government Members	1962	32%	No	389	Increase in Gas Tax	1993	55%	Yes
205	Scholarships and Other Training Subsidies	1963	79%	Yes	398	Unemployment Insurance	1993	70%	Yes
207	Vocational Training	1964	67%	Yes	399	Federal Finances	1993	67%	Yes
219	Subsidies for Domestic Sugar Industry	1970	54%	Yes	400	Improving Federal Finances	1993	58%	Yes
222	Housing Guarantee and Protection of Families	1970	49%	No	401	Maintenance of Social Security	1993	63%	Yes
223	Changes in Federal Finances	1970	55%	No	405	Continuing Highway Fee	1994	69%	Yes
227	Subsidies for Apartment Construction	1972	30%	No	406	Continuing Heavy Traffic Fee	1994	72%	Yes
232	Changes in Old Age and Disability Insurance	1972	16%	No	407	Introduction of User Fee for Heavy Traffic	1994	67%	Yes
235	Subsidies for Scientific Research	1973	65%	Yes	410	Promote Culture	1994	50%	No
240	Restriction on Deductions of Income Tax	1973	68%	Yes	415	Change in Health Insurance	1994	51%	Yes
245	Socially Acceptable Health Insurance	1974	27%	No	416	For a new Health Insurance	1994	23%	No
248	Financing Highway Construction (Nationalstrassen)	1975	54%	Yes	423	Securing Invalidity/Age Insurance	1995	27%	No
249	Changes in General Customs Tariffs	1975	48%	No	430	For an Environmentally Oriented Agriculture	1996	77%	Yes
258	Loan to International Development Agency	1976	44%	No	431	Re-Organisation Administration	1996	39%	No
268	Changes in Sales Tax and Direct Federal Tax	1977	41%	No	442	Introduction of User Fee for Heavy Traffic	1998	57%	Yes
281	Decrease Retirement Age	1978	21%	No	444	Reform of Age Insurance	1998	41%	No
286	Subsidies for Universities/Technical Colleges	1978	43%	No	445	Infrastructure for Public Transportation	1998	63%	Yes
289	Milk Production	1978	69%	Yes	458	Law on Insurance of Motherhood	1999	38%	No
291	Federal Responsibility for Security	1978	44%	No	465	Subsidies for Solar Energy (Solarrappen)	2000	31%	No
294	Subsidize Hiking Trails	1979	76%	Yes	469	For a flexible Age Insurance	2000	39%	No
297	Changes in Sales Tax and Direct Federal Tax	1979	35%	No	470	For a flexible Retirement Age	2000	46%	No

Notes: The table lists the federal propositions, which would have increased the size of government through higher spending, taxes or subsidies. The financial consequences of a proposition were assessed using the official documents by the federal government (available at http://www.ads.bar.admin.ch/ADS/showHome.do), which are distributed to each citizen before the vote. The first column shows the official number of the vote. Column (4) contains the percentage of voters supporting the proposition, while the last column reports the final outcome. For vote #223, the majority of the electorate voted in favor but the Council of States rejected it.

Table A2: Additional Results

	Absolute # of Signatures Law Initiative (1)	Discrete Signature Requirement (2)	Interaction Budget Ref. Law Initiative (3)	Effect by Subperiods (4)
Y: Canton Expenditures				
Budget Referendum	-0.034	-0.036	0.012	-0.048
	(0.014)**	(0.014)***	(0.016)	(0.017)***
Signature Requirement Initiative (%)			0.008	0.022
			(0.002)***	(0.005)***
# Signatures Required Initiative/100	0.001			
	(0.0004)***			
Signature Requirement 1% or less		-0.324		
		(0.043)***		
Signature Requirement 1 to 3%		-0.175		
		(0.039)***		
Signature Requirement More than 3%		-0.099		
		(0.035)***		
Interaction Effect BRef*Initiative			-0.016	
			(0.003)***	
Budget Referendum before 1945				0.014
				(0.019)
Signature Requirement before 1945				-0.017
				(0.005)***
Year Fixed Effects	Yes	Yes	Yes	Yes
Canton Fixed Effects	Yes	Yes	Yes	Yes
Canton Characteristics	Yes	Yes	Yes	Yes
Observations	2524	2524	2524	2524
R Squared	0.98	0.98	0.98	0.98
Y: Local Expenditures				
Budget Referendum	-0.058	-0.026	0.183	-0.026
	(0.027)**	(0.024)	(0.028)***	(0.029)
Signature Requirement Initiative			0.030	0.011
			(0.003)***	(0.010)
# Signatures Required Initiative/100	0.0003			
	(0.0007)			
Signature Requirement 1 % or less		-0.363		
		(0.079)***		
Signature Requirement 1 to 3 %		-0.412		
		(0.071)***		
Signature Requirement More than 3 %		-0.445		
		(0.064)***		
Interaction Effect BRef*Initiative			-0.069	
			(0.005)***	
Budget Referendum before 1945				0.008
				(0.035)
Signature Requirement before 1945				0.006
				(0.009)
Year Fixed Effects	Yes	Yes	Yes	Yes
Canton Fixed Effects	Yes	Yes	Yes	Yes
Canton Characteristics	Yes	Yes	Yes	Yes
Observations	2490	2410	2410	2410
R Squared	0.93	0.93	0.93	0.93

Notes: The table reports results for log canton expenditures (top panel) and log local expenditures (bottom panel). Column (1) uses a discrete measure for the signature requirement with the omitted group of no voter initiative. Column (2) uses the absolute number of signatures for the law initiative (divided by 1000). Column (3) includes the interaction between mandatory budget referendum and the signature requirement for the law initiative. Column (4) allows the coefficients for the direct democratic institutions to vary before and after the end of World War II in 1945. * p<0.01, ** p<0.05 and *** p<0.01. Robust standard errors are reported in parentheses.

Table A3: Dynamic Effects of Direct Democracy on Government Spending

log Canton Expenditures	4-6 Years before Change (1)	1-3 Years before Change (2)	0-4 Years after Change (3)	More than 5 Years after Change (4)	p value 4-6 vs 1-3 yrs. (6)	p value 0-4 vs 5+ yrs. (7)
Adopt Budget Referendum	-0.064 (0.023)***	0.081 (0.028)***	0.049 (0.025)*	0.005 (0.017)	0.00	0.01
Abolish Budget Referendum	0.001 (0.015)	0.04 (0.020)**	0.076 (0.025)***	0.167 (0.026)***	0.20	0.01
Change Signatures Law Initiative	0.03 (0.016)*	-0.008 (0.020)	0.035 (0.016)**	0.271 (0.030)***	0.25	0.00

Notes: The table reports estimates and standard errors (in parentheses) for dummy variables denoting time periods relative to changes in direct democratic institutions. The dependent variable is the log of canton expenditures. All specifications control for state and year fixed effects and the same canton characteristics as in column (3) of Table 3. The p-values correspond to the F-statistics are shown in the last three columns)*p<0.10, **p<0.05, ***p<0.01. Robust standard errors in parentheses.

Table A4: Feedback Effects between Spending and Changes in Direct Democracy

	Adopt Mandatory Budget Referendum		Abolish Mandatory Budget Referendum		Change Signatures Law Initiative	
	Probit (1)	OLS (2)	Probit (3)	OLS (4)	Probit (5)	OLS (6)
Log Expenditures T-2	0.019	0.034	-0.001	-0.007	-0.04	-0.023
	(0.045)	(0.013)**	(0.004)	(0.012)	(0.050)	(0.028)
Log Expenditures T-3	-0.014	-0.016	0.001	0.006	-0.023	0.012
	(0.034)	(0.015)	(0.003)	(0.014)	(0.057)	(0.031)
Log Expenditures T-5	-0.006	-0.018	0	0	0.001	0.021
	(0.015)	(0.010)*	(0.000)	(0.010)	(0.041)	(0.022)
Observations	225	2524	200	2524	1025	2524
R Squared		0.06		0.05		0.19
Log-likelihood	-23.68		-19.7		-135.59	
Δ Log Expenditures T-2	0	-0.007	0	-0.004	0.008	0
	(0.004)	(0.013)	(0.000)	(0.012)	(0.055)	(0.027)
Δ Log Expenditures T-3	0.017	0.029	0	-0.007	0.007	-0.024
	(0.043)	(0.013)**	(0.000)	(0.012)	(0.053)	(0.027)
Observations	225	2524	200	2524	1025	2524
R Squared		0.06		0.05		0.19
Log-likelihood	-25.01		-19.83		-142.66	

Notes: The table reports estimates (marginal effects in the case of probit estimates in odd columns) where the dependent variables are whether a mandatory budget referendum was adopted (columns (1) and (2)) or abolished (columns (3) and (4)) and changes in the signature requirement for the voter initiative (columns (5) and (6)). The top panel includes log epxenditures two, three and five years prior to the change in the institution. The bottom panel includes growth rates in expenditures two and three years prior to the institutional reform. All specifications include canton and year effects as well as the same canton characteristics as in previous tables. Robust standard errors are reported in parentheses.

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