How to Tame Two Leviathans? Revisiting the Effect of Direct Democracy on Local Public Expenditure in a Federation[☆]

Sergio Galletta[a,*], Mario Jametti[a]

[a]Institute of Economics (IdEP), University of Lugano, 6904 Lugano, Switzerland

Abstract

We explore how the presence of direct democracy across hierarchical levels of government in a federation affects the level of public expenditure. In so doing we revisit the effect of direct democratic institutions on public policies. Particularly, we are interested whether the effect of upper-level (state) direct democratic institutions on lower-level expenditure varies with lower-level direct democracy. Empirically, we exploit the large institutional variation in the degree of direct democracy both for state (cantons) and local governments (municipalities) in Switzerland. Considering 119 municipalities belonging to 22 cantons for the period 1993-2007, we find that the cantonal fiscal referendum increases local spending for those municipalities without fiscal referenda, while this effect is significantly reduced for municipalities that also avail of referenda. This suggests that upper-level fiscal restraint can be undone by lower-level profligacy if direct-democratic control is limited to the upper level.

< **Tables and figures at end** >
JEL Classification H72, H77, D72, D78
Keywords Direct Democracy, Local Public Expenditure, Vertical Interaction

1. Introduction

How can one tame the Leviathan, i.e., politicians' appetite for public expenditure beyond what is desired by citizens? One of the answers appears to be: direct democracy. A vast array of empirical studies have shown a moderating impact of direct democratic institutions

[*]Corresponding author.
  Email addresses: sergio.galletta@usi.ch (Sergio Galletta), mario.jametti@usi.ch (Mario Jametti)

on public expenditure.[1] All of these studies are based on countries with strong sub federal autonomy. Prominently on the list are the U.S.A. and Switzerland. However, prior research ignores, fully or partially, this federal setting. In other words, earlier work considers either the effect of direct democratic institutions on expenditure at one single level of government, or the impact of upper-level democratic institutions on lower-level expenditures.[2] To our knowledge, the full federal structure and the resulting potential vertical interdependence between upper- and lower-level democratic institutions have not been fully addressed. This despite the fact that all empirical applications use data from federations.

In this paper we analyze the impact of direct democratic institutions on public expenditure at the local level taking into account both the institutional setting at the state and local level of government. Specifically, we are interested in testing whether the impact of direct democracy at the upper level of government depends on the degree of citizen participation at the local level. We see our paper as an important complement and extension to the existing literature.

There is a continuing and growing interest in exploring the effect of institutions on economic outcomes.[3] One aspect that receives particular attention is the discussion on understanding differences in policy outcomes between representative and direct democratic systems. In both systems the citizen delegates power to politicians through elections, while in a representative system the citizen is involved only during elections, in a direct democratic system some political decisions need citizen approval. These two systems should entail the same policy outcome if the median voter theorem holds (Downs, 1957). Nevertheless, representatives' decisions can deviate from citizens' preferences either because politicians seek to maximize their own utility function (Tullock, 1980), or because, despite being welfare maximizer, they are not able to fully apprehend constituents' preferences (Matsusaka, 1992).

The theoretical literature discusses mainly the channel through which direct democratic institutions result in political decisions closer to citizens preferences at one level of government. Gerber (1996) argues that direct democracy is an instrument that reduces the gap between citizen preferences and politician behavior considering a spatial voting model. Similarly, Romer and Rosenthal (1979) find that government expenditures are usually higher than the ones wished by the median voter and never lower. The gap between median voter's preferences and policy outcome is reduced. Feld and Kirchgässner (2000) argue that with direct democracy

---

[1]Among others, see Matsusaka (1995), Feld and Kirchgässner (2001b), Feld and Matsusaka (2003) and Funk and Gathmann (2011).

[2]For example, how the referendum in Swiss cantons affects cantonal public expenditure as in Feld and Matsusaka (2003) or how the initiative in the U.S. states affects local expenditure as in Matsusaka (1995).

[3]For example: Acemoglu et al. (2001) highlight the relevance of inherited institutions from colonial countries as determinant of income per capita; Aghion et al. (2004) dealing specifically with the effect of political institutions find that democracy positively affects economic growth.

voters are involved in the decisionmaking process, they thus have an incentive in gathering more information on the issue on the ballot. Instead, Kessler (2005) comes to a somewhat different conclusion. She finds that citizens do not invest in information acquisition because their vote is unlikely to be determinant. Further, under representative democracy, the politician finds it profitable to be informed because she has discretionary power. As a result, elected representatives allow the promotion of more efficient policies with respect to the ones that would have been voted in a popular ballot.

Empirically, Pommerehne (1978) was among the first to highlight the negative effect of direct democracy on public expenditure. He used data on Swiss municipalities in the year 1970 to show that the availability of a referendum in a municipality reduces public service provision. He interprets the results to highlight that in jurisdictions where decisions are taken directly by voters the policy outcome is closer to the median voter. Hence, agency cost appear to be reduced by citizen intervention, leading to a reduction in excessive government spending. Similarly, Feld and Kirchgässner (2001b) find that municipal fiscal referenda reduce municipal public expenditure in Switzerland, while Matsusaka (1995) and Feld and Matsusaka (2003) show that this result also holds when looking respectively at U.S and Swiss States. Funk and Gathmann (2011) also find that state fiscal referenda have a negative effect on Swiss state-level expenditure, but they do not find a significant impact on municipal expenditures. This last result is in contrast to Matsusaka (1995)'s previous findings suggesting a positive effect of upper level government direct democracy on local level expenditure.

In essence, most of the theoretical and empirical results point to the fact that direct democratic participation of the citizen in the decision making process brings adopted policies closer to the preferences of voters.[4] Further, since politicians have a tendency to increase public expenditure beyond what is socially optimal implies that direct democracy has the potential to be welfare improving.

But what about a federal setting? Redoano and Scharf (2004) and Schnellenbach et al. (2010) show that representative democracy sustains centralization when direct democracy would not be able to support it, because regional policy preferences are too different. Feld et al. (2008) test the hypothesis by using a dataset of Swiss cantonal institutions for the period 1980-1998. They confirm, in line with theory, the hypothesis that direct democracy fosters decentralization. However, Funk and Gathmann (2011), again focusing on the Swiss case, highlight that direct democracy does not affect the vertical structure of government, i.e., upper level institutions do not affect decentralization. The main difference in the empirical method of these two papers is

---

[4]Direct democracy could also lead to a common pool problem leading to increased expenditure if the financing of public goods can be shifted to a minority of the electorate, see Asatryan et al. (2013).

the use of cantonal fixed effects, controlling for unobserved heterogeneity among jurisdictions by Funk and Gathmann (2011).

Interestingly, none of the studies mentioned above, although using data from countries with a federal structure, considers the institutional setting at both the upper-and lower-level.[5]

To fill this gap in the literature we use a newly assembled dataset for Switzerland. It comprises information on public expenditure and institutions for 119 of the largest municipalities from 22 of the 26 cantons (states) over the period 1993 to 2007. Switzerland presents an ideal empirical background for our focus of research. First, it is a very decentralized country leaving large spending (and revenue) autonomy to two levels of sub-federal jurisdictions. The three levels of the Swiss federation, federal, cantonal and municipal, hold roughly equal shares of public spending, similarly for revenues. Second, both across and within cantons, the second-tier jurisdiction, we observe important variation in institutional settings.[6] We concentrate on one particular instrument of direct democracy: the mandatory fiscal referendum.

We find in our data that taking the vertical interdependence of direct democratic institutions into account matters. Our results suggest that cantonal fiscal referenda increase municipal public expenditure for localities that do not avail of a referendum, while this expansionary effect is much reduced and statistically significantly different for municipalities that also have a fiscal referendum. Thus, in order to precisely assess the effect of direct democratic institutions on public policy outcomes in a federation, one ought to consider the full (vertical) structure of institutions. In other words, the Leviathan taming effect of direct democratic institutions of one level of government could potentially be annihilated by the lack thereof in another level of government.

The rest of the paper is structured as follows. Section 2 describes the theoretical channel of the effect of direct democracy on public expenditure and its potential vertical interaction. Section 3 presents the institutional setting in Switzerland, while Section 4 describes our dataset and the empirical methods we apply. Section 5 presents our results and Section 6 concludes.

2. Theoretical Considerations

Most of the theoretical literature presented above describes a revenue-reducing effect of direct democracy bringing political decisions closer to voters' preferences. There is, however, little

---

[5]Vertical interactions have also been studied within the tax competition literature (see e.g. Besley and Rosen (1998) and Brülhart and Jametti (2006)).

[6]The situation is similar for the initiative in the U.S.A. For example, within the 20 largest cities: New York City has the initiative, while New York state does not; Boston does not have the initiative, while Massachusetts does; in California the initiative exists both at the state and local level; finally, neither Indianapolis nor Indiana have the initiative.

4

theoretical work that has explored the vertical interaction among direct democratic institutions. What if two levels of government avail of potentially varying degrees of direct democratic participation in public good provision? And what about the vertical interdependence resulting from this? In this section we discuss these theoretical considerations leaving a full theoretical model for future research.

Consider a federation with two levels of government, say state and local, each with the possibility for direct democratic participation of its citizens. Let us assume that the constitution sets the basic framework for task assignment for each level of government, but that politicians have discretionary spending opportunities. Further, the two levels jointly provide a public good and citizens are not able to distinguish each level's contribution.[7] For example, in most of Switzerland, schools are jointly managed by municipal and cantonal authorities without a clear separation of tasks, such that citizens are not aware of each level's responsibility. This setting produces two main aspects affecting government behavior. On the one hand, shared accountability implies that politicians' policy decisions at one level exert a positive externality on the reelection probability of politicians at the other level. On the other hand, the common provision of public goods easens shifting discretionary expenditure, as well as rent extraction, from one level to the the other. Therefore, two potential channels are at work in this framework: i) one focusing on rent extraction and ii) another that emphasizes electoral incentives.[8] Finally, let us take seriously the common argument that direct democracy reduces expenditure because it affects the government's potential to extract rents.

Table 1 illustrates the four possible cases of direct democratic institutions, indicating, for each case, the prior for expenditure shifting and rent extraction. If both levels of government are constrained by direct democracy, we would expect reduced rent extraction possibilities for both levels of politicians. Further, electoral conditions should not be affected by expenditure shifting between levels of government. The prediction would thus be that direct democracy exerts its full expenditure-constraining potential. If, however, the state is constrained by direct democracy, while the local government not, local politicians not only can extract rents, but also state politicians have an incentive to shift discretionary expenditures to the local level because of the two mechanisms described above. On the one hand, they benefit from an electoral point of view because of the externality created through joint responsibility, on the other hand they

---

[7]Joanis (2014) uses similar assumptions by building a model of shared accountability and joint responsibility within a federation. His main insight is that the degree of decentralization might be influenced by the relative political strength of central versus local governments.

[8]In a companion paper, Galletta (2015), by working with a similar theoretical setting, suggests that both levels of government find it convenient to move expenditure to the government less exposed to citizens' scrutiny such that they can increase their probability of reelection.

might still have indirect benefits from local rent extraction. Although these two mechanisms might act independently, they both work in the same direction. The inverse reasoning applies in the third case, i.e. when the state government is unconstrained while the local one is. Finally, in absence of direct democracy at any level we would expect highest rent extraction, but no incentives for discretionary spending shifts.

As mentioned before, previous theoretical and empirical studies have only considered a subset of these cases, either only considering one level of government and ignoring the other, or only considering upper-level institutions not accounting for lower-level institutions. Our interest is in the vertical interaction of different institutional settings and its effect on lower-level expenditure. The channels at work indicate that vertical interactions matter. Then, to understand the full effect of direct democracy, one should control for all tiers of government involved in the spending process. This is exactly what we do. We test whether the existence of fiscal referendum in the state (upper level) affects local expenditure decisions and whether this effect varies with local direct democratic participation.

Our newly assembled database allows us to consider the full array of direct democratic instruments, which is the main contribution of our paper. More specifically, all previously mentioned studies use the state (or canton) as the unit of observation. As such, these authors are not able to control for institutional variation at the local level. By shifting our unit of observation to the local governments, we can control for the differential effect of state referenda depending on the existence of local referenda.

3. Institutional setting in Switzerland

Switzerland is often used as a natural laboratory to test theoretical predictions of fiscal federalism.[9] The country has three levels of government: federal, cantonal and municipal, each with wide ranging autonomy both in expenditure and revenue decisions. During the period 1990-2009 the expenditure (revenue) shares averaged 32% (31%) for federal, 41% (41%) for cantonal and 27% (28%) for local administrations. These shares are quite stable over time.

At the sub-central level each cantonal constitution defines the basic framework for public service provision. Indeed, some services are solely provided by one level of government (cantonal or municipal), while for a considerable range of public goods there is expenditure sharing by both levels of government.[10] Finally, localities provide some services based on a cantonal mandate. Table 2 presents the contribution in percent of total spending per category by each level of

---

[9]Among others: Kirchgässner and Pommerehne (1996), Brülhart and Jametti (2006) and Brülhart et al. (2012)

[10]Indeed, for many public service categories all three levels of government are involved to varying degrees.

government. While Defense is almost exclusively in the hand of the federal government, cantons carry the bulk of expenditure in Health, Security and Education. Similarly, municipalities are the main actors regarding Environment, Social Housing and Culture and Recreation.

Municipalities also have large autonomy in setting tax rates within their respective cantonal constitutions. It should be noted that, contrary to many other federations, both sub-central levels of government essentially share the same tax bases, i.e., municipalities' main source of revenues are taxes on personal and corporate income and wealth.

Similarly, all three levels of government have an array of direct democratic instruments at hand in their respective decision making process.[11] Also in this case, there is heterogeneity among cantons and municipalities. For larger municipalities the two main instruments are the popular initiative and the referendum. We concentrate on the existence of mandatory fiscal referenda within a jurisdiction. Note that fiscal referenda can be mandatory or optional.

The optional referendum is generally triggered by the collection of a certain number of signatures in a given interval of time, while for the mandatory referendum there often exists a threshold on the expenditure amount after which a referendum must be held. In Table 3 we show the use of these direct democratic instruments by level of government. The municipal data we report are from Micotti and Bützer (2003) who account for 91 municipalities for the period 1990-2000.

We see that mandatory referendum is, by far, the most used in the two sub federal jurisdictions. Similarly, Figure 1 illustrates the institutional variation for each canton in our dataset. Besides the significant variation in institutional settings across cantons, we observe a large number of cantons (both with and without referendum) displaying within-variation.

Thus, Switzerland presents an ideal setting to empirically test our hypothesis, with important variation at all levels of government in expenditure decisions as well as in the institutional framework. All this in an otherwise fairly homogeneous setting of a small country.

4. Data and empirical model

4.1. Data

To test our hypothesis we assembled a database including annual observations of 119 of the largest municipalities belonging to 22 Swiss cantons over the period 1993 to 2007. These municipalities are part of the Swiss City Union, which publishes annual data on expenditures and revenues by city. The sample represents roughly 40% of the Swiss population.[12] We use

---

[11]For research on the impact of direct democracy at the federal level in Switzerland see, e.g., Miguet (2008).

[12]Data availability both for municipal level expenditures and institutions precluded us from extending our sample to a larger share of the currently more than 2,300 municipalities in Switzerland.

as dependent variable (the log of) net municipal expenditure per capita. This value is net of transfers that are received from other jurisdictions, i.e., we exclude both vertical and horizontal transfers. Net figures correspond to expenditure decisions entirely under the autonomy of the municipality and are our main focus.[13] As robustness checks we use municipal expenditures including transfer payments as an alternative dependent variable.

We obtained information on cantonal direct democratic institutions from Fischer (2009). We consider whether the canton has a mandatory fiscal referendum for new spending projects or not. Some cantons changed their legislation in the period covered by our data, but this variation is small. In 1995, 17 cantons over 26 had mandatory fiscal referendum. In 2007 the number of these cantons decreased to 16. In total 5 cantons changed at least once.[14] The municipal institutional setting is taken from a database by Bützer (2007).[15]

About 65% of the municipalities in our sample have a mandatory fiscal referendum. This institution is almost invariant over time for our sample period. The only change is the municipality of Volkestwil (ZH) in 2002 which adopted a mandatory fiscal referendum. Some changes occurred concerning the thresholds that trigger mandatory referendum. Interestingly for our identification strategy is that there have been no changes at the municipal level following any of the changes in cantonal legislation. Although the number of municipalities considered is not large, our sample allows us to consider all possible institutional interactions. As reported in Table 4 during the period covered in our analysis 27% of the municipalities are without referendum in cantons without referendum, while 8% are municipalities without referendum in cantons with. Municipalities with referendum that belong to cantons without referendum are 29% of the total, while 36% of the municipalities with referendum are in cantons also with referendum.

Table 4 also presents the average of local expenditures for each case in our sample. Yearly expenditure is highest (about CHF 3,800 per capita) in municipalities without referendum located in cantons with referendum, and lowest (CHF 3,300) for municipalities without referendum in cantons also without referendum. Two of the four cases present differences that are statistically significant. First, in cantons availing of mandatory fiscal referenda, municipalities with this instrument spend roughly 12% less than municipalities without it. Second, for municipalities without referendum, a cantonal referendum increases local expenditure by almost 17%.

To go beyond unconditional average effects we supplement the institutional information with

---

[13]See Buettner and Wildasin (2006) on how the municipal fiscal budget is affected by intergovernmental transfers.

[14]Funk and Gathmann (2011) present details of the variation for the period 1890-2000.

[15]Feld et al. (2011) use the same data source to revisit the analysis done by Feld and Kirchgässner (2001a). We extend the dataset of Bützer (2007) by including information on a few additional municipalities: Basel (BS), Glarus (GL), Horgen (ZH), Lenzburg (AG), Romanshorn (TG), St. Moritz (GR), Sursee (LU) and Zofingen (AG).

an array of control variables covering socio-economic and political characteristics. Specifically, we control for *population* to consider possible economies of scale in the provision of public goods. We use population age shares for old and young (*share pop > 64* and *share pop < 20*), to consider differences in the demand of public goods. The *share of foreigners* is included for the same reason. Municipal *area* proxies higher costs in provision of public services, as area is closely related to municipal topography. *Unemployment* controls both for the economic environment as well as the effect on social security, thus we should expect a positive effect on expenditure. The presence of a *university* in a municipality should affect positively the level of expenditure either because of direct funding or because of related facilities. We also control for municipalities that are *urban centers*, to consider the possible higher demand for public goods for central places. Given that data on income are not available by municipality we use the per capita amount of *federal income taxes*. Again with this variable we control for the demand of public goods and use it as a proxy for tax revenues (see below).

Further, we control for political variables. Funk and Gathmann (2013) show that citizens' preferences are relevant controls when estimating the effect of direct democracy. The number of *municipal councilors* in the executive and the number of *parties in the government* should be positively related with expenditure because of the common pool problem (Roubini and Sachs, 1989). The share of *left-wing* municipal councilors in the executive is usually used as proxy for citizens' preferences. Left-wing parties should be more in favor of government intervention implying a higher level of expenditure. Table 5 presents summary statistics of the data and Appendix Table A.1 gives the definition and source of each variable.

4.2. Empirical model

The model we estimate is:

$$Y_{ict} = \beta_1 MunRef_i + \beta_2 CanRef_{ct} + \beta_3 MunRef_i * CanRef_{ct} + \beta_4 \mathbf{X}_{ict} + t_t + \epsilon_{ict} \qquad (1)$$

where i denotes the municipality, c the canton and t the year. The dependent variable Y is the log of municipal expenditure per capita. $MunRef$ and $CanRef$ are dummy variables whether a municipality or a canton avails of a mandatory fiscal referendum, respectively. X_{ict} are other control variables including the political and socio-economic ones discussed above, while t_t are year fixed effects. ϵ_{ict} is the error term.

We start by estimating the model in Equation (1) without considering institutional interaction, mainly for comparison to prior studies. We then proceed to add the interaction term to test our main hypothesis. Prior to presenting our results, discussion of a few methodological points is in order.

4.2.1. Cantonal (unobserved) heterogeneity

Funk and Gathmann (2011) find that cantonal unobserved heterogeneity affects in an important way the impact of direct democratic institutions on public expenditure. To control for unobserved heterogeneity they include canton fixed effects.

Ideally, our estimation of Equation (1) would also include canton fixed effects. However, as mentioned above, the institutional variability at the cantonal level is very small. As such, the effect of a mandatory cantonal referendum would only be identified by those municipalities which belong to cantons with changes in the year of the change. In our case, this would be only 43 over a sample of 1,785 observations. We thus report results using cantonal fixed effects as a robustness check to our baseline results.

Nevertheless, accounting for cantonal heterogeneity is important. Therefore, we control, as an alternative to fixed effects, for observable cantonal differences in most of our specifications, i.e., we extend the set of controls $\mathbf{X}_{ict}$ by canton level variables. We include a dummy for Latin *language* cantons to control for cultural differences across regions. Further, we control for political preferences using the share of seats of *left wing* parties in the cantonal parliament. To take into account the demand side we include *cantonal population* and the *dependence ratio*. In addition, we use dummy variables for the cantons of Basel-City and Geneva. Both city-cantons, with special (cantonal) revenue sharing agreements between the city and the (much smaller) other municipalities in the canton. Additionally, in some specifications we control for aggregate municipal expenditure in the canton and canton-level degree of decentralization. Summary statistics are included in Table 5. As a further robustness check, we use random effects estimation (Baltagi et al., 2001).

Finally, one could argue that unobserved characteristics (for example fiscal conservatism) could determine both the choice of institutions and the level of expenditure. We address this issue in two ways. First, institutions are highly persistent. The introduction of fiscal referenda both at cantonal and municipal levels starts in the end of the 19th century. For most of the cantons and municipalities in the sample, the set of institutions has been in place decades before the beginning of our sample. We thus regard institutions at least as predetermined. We would argue that this approach of identification is strengthened by the fact that, as mentioned above, no municipality in our sample changed institutions following any of the (few) cantonal changes we observe. Second, to acknowledge that our variation is mostly cross-sectional, we run a specification using municipal averages.[16]

---

[16]Data limitations preclude us to apply the instrumental variable (IV) strategy of Funk and Gathmann (2011).

4.2.2. Inference

We use as baseline standard errors clustered by cantons, since the dependent variable is explained by variables that are observed on a more aggregate level (Moulton, 1990). In our case, the cantonal referendum and controls. As a robustness check for inference we apply the wild-boostrap method proposed by Miller et al. (2008), which controls for the limited number of clusters available in our sample. Further, we present results using two-way (canton - year) clusters, which controls both for spatial and serial correlation (Cameron et al., 2011).

5. Results

5.1. Main results

In Table 6 we show the results of our analysis without considering the interaction term. This allows for comparison with earlier studies based on our sample.

In line with the results of the cross-sectional analysis by Feld and Kirchgässner (2001b) we find, in our sample, that direct democratic institution at municipal level has a negative direct effect on local expenditure. By looking at the first two columns of Table 6 this is robust to controlling for socio-economic and political variables. In columns (3) and (4) of Table 6 we show that cantonal referendum affects municipal expenditure positively in our sample. This is, again, coherent with the finding of Matsusaka (1995) but in contrast with Funk and Gathmann (2011). Municipalities that belong to cantons with mandatory referendum present an expenditure level that is around 15% higher (column 4) than the ones belonging to cantons without referendum. In the last two columns of Table 6 we include both the municipal and cantonal referendum dummies, but without the interaction term. The results of our main variables vary only slightly and they are both significant.

The control variables that are always significant are the *share of young population*, the municipal *area*, the *university* dummy and the *federal tax income*. A younger population negatively affects municipal expenditure, while municipal area, a university and income have a positive effect.

In Table 7 we present our main results including the interaction term. Our model performs quite well. In the full specification we explain more than 50% of the variation in our data. Besides our main variables we include only canton-level controls and year effects, in column (1). We next add socio-economic, column (2), and political controls, column (3). In column (4) we control for the within-canton degree of centralization, while in column (5) we control for aggregate municipal expenditure in the canton. Finally, column (6) uses municipal expenditure including transfer payments as dependent variable. Note that the coefficients on the controls do not differ much from Table 6. As such we do not discuss them further here.

Municipal referendum has a positive sign in the first column only. It turns negative, but is never statistically significant, in all other specifications. Instead, the main effect of cantonal referendum is always positive and significant at the 1% level. These results are in line with the ones without the interaction term.

The interaction term between cantonal and municipal referendum is always negative and statistically significantly so in columns (2) to (6). Thus, a municipal referendum seems to significantly reduce the positive effect on expenditure from cantonal referendum. These results are robust to controlling for the degree of centralization, column (4),[17] and aggregate municipal expenditure in the canton, column (5). Finally, considering expenditure including transfer payments, column (6), leaves our main results virtually unchanged.

More in detail considering column (3) of Table 7. Cantonal mandatory referendum increases municipal expenditure by 30% if the municipality does not have a referendum. Evaluated at the mean, this would imply an increase of nearly 1,000 CHF per capita. However, if the municipality also avails of a referendum this positive effect on local expenditure is reduced from 30% to 11% ($0.298 - 0.182 = 0.116$). This means that expenditure is decreased by almost 19 percentage-points, which is not that far from the unconditional difference of 12 percentege-points we show in Table 4. In other words, the expenditure would increase at the mean of around 350 CHF per capita. The F-statistic for joint significance of the coefficients for cantonal referndum and the interaction is significant at the 99% confidence level.

Our data thus confirms our hypothesis that cantonal referendum affects municipal policies depending on whether it also has a referendum or not. Following our intuition, it seems that if citizens control is at just one level of government, then the other level of government, if it is free to choose, spends more. These higher expenditures from a political economy point of view could represent rent seeking of politicians and discretionary spending shifts. Then, in order to tame the Leviathan in a federation, it is not enough to tighten the control of citizens at just one level of government. The only way to reduce it, seems to be by extending direct democratic instruments to both (or all) levels of government. Our results could also explain why Funk and Gathmann (2011) did not find a statistically significant effect of cantonal referendum on municipal expenditures, as they are unable to control for the within-canton institutional variation. Our results suggest that this variation does indeed matter.

---

[17]The results in column (4) need to be interpreted with some caution since the (independent) centralization variable contains the dependent variable (municipal expenditure) in its construction. The observed reduction (of approximately 40%) in the coefficient value of the cantonal referendum can be explained by a negative correlation between cantonal referendum and centralization as found by Feld et al. (2008).

5.2. Robustness checks

In Table 8 we show our results after subjecting the baseline regression in column (3) of Table 7 to different robustness checks.

The first two columns deal with potential issues related with inference. In column (1) we repeat the baseline coefficients and standard errors. In addition, we report below the standard errors, the p-value computed by using the wild-bootstrap method. Instead, in column (2) we show results that report standard errors clustered two-ways by canton and year. Both columns generally confirm the level of significance of the main analysis and, interestingly, in the second column the interaction term is significant at the 1% level.

From column (3) to (6) we deal with endogeneity and unobserved cantonal heterogeneity.

Column (3) omits municipal per capita income. Since personal income represents the main tax base for municipalities, this would imply that income and expenditure might be jointly determined through the municipal budget constraint, and as such would be endogenous. Omitting the income variable does not affect our main results.

In column (4) we focus only on the cross-section variation in our sample using time-averages of our data and institutions from the year 2000. The coefficients slightly increase in absolute value but remain statistically significant. Incidentally, in this specification the positive effect of a cantonal referendum is cancelled out by the presence of a municipal referendum (0.37-0.35).

In column (5) we use a random effect estimation. Again, only cantonal referendum and the interaction term are significant. Also in this specification, the cantonal effect on local expenditure is erased by the presence of referendum also at the municipal level.

The last column reports the results by using cantonal fixed effects. The variables of interest still present the signs that we previously found, but we lose, as expected, significance of the interaction term. Cantonal referendum is now significant only at the 10% level.

Overall, all our robustness checks confirm our main results.

6. Conclusion

We revisit empirical findings on the relationship between direct democratic instruments and public expenditure. While most of the earlier empirical research was based on data from federations, those studies did not, or only partially, address the potential vertical structure of those instruments. In other words, prior research focused on the effect of direct democracy in one level of government on the public expenditure of that same level, or of the effect of upper-level direct democracy on lower-level expenditure. By changing the unit of observation to the lower level of government, our dataset allows to control for the existence of direct democratic instruments at two levels of government. In particular, we can investigate whether upper-level

(state) direct democracy has a differential effect on local public expenditure depending on the existence of lower-level (local) direct participation of the citizen in policy decisions.

Using a newly assembled database of Swiss municipalities in 22 cantons (states) over the period 1993 to 2007, we consistently find that local expenditures increase with the presence of mandatory fiscal referenda at the canton level. However, this effect is significantly reduced by the presence of such referenda also at the municipal level. In some specifications, the expansionary effect on expenditure of upper-level direct democracy is actually eliminated by the presence of fiscal referenda at the local level.

We would argue that this novel result, while interesting in itself, has much wider relevance for policy and empirical research. Our results show that the full variation of institutions at different levels of government should be considered when addressing empirically the impact of direct democracy on policy decisions in a federation. Further, our results suggest that concentrating on direct democratic instruments at one level of government (e.g., state) might not be enough to bring policy decisions closer to voters preferences, as rent extraction might be increased by another authority, unconstrained by citizen control. To effectively tame the Leviathan all levels of government involved in the public good provision should present some degree of direct democracy.

Our paper is mainly empirical. In future research we intend to investigate also on a more theoretical level the channels through which vertical interaction between direct democratic instruments at different levels of government play out. Further, we seek to understand how variation in institutions in a federation can affect the degree of decentralization.

Acemoglu, D., Johnson, S., Robinson, J. A., 2001. The colonial origins of comparative development: An empirical investigation. American Economic Review 91 (5), 1369–1401.

Aghion, P., Alesina, A., Trebbi, F., 2004. Endogenous political institutions. The Quarterly Journal of Economics 119 (2), 565–611.

Asatryan, Z., Baskaran, T., Grigoriadis, T., Heinemann, F., 2013. Direct democracy and local public finances under cooperative federalism. ZEW Discussion Papers 13-038, ZEW - Zentrum für Europäische Wirtschaftsforschung / Center for European Economic Research.

Baltagi, B., Heun Song, S., Cheol Jung, B., 2001. The unbalanced nested error component regression model. Journal of Econometrics 101 (2), 357–381.

Besley, T. J., Rosen, H. S., 1998. Vertical externalities in tax setting: evidence from gasoline and cigarettes. Journal of Public Economics 70 (3), 383–398.

Brülhart, M., Jametti, M., 2006. Vertical versus horizontal tax externalities: An empirical test. Journal of Public Economics 90 (10-11), 2027–2062.

Brülhart, M., Jametti, M., Schmidheiny, K., 2012. Do agglomeration economies reduce the sensitivity of firm location to tax differentials? Economic Journal 122 (563), 1069–1093.

Buettner, T., Wildasin, D. E., 2006. The dynamics of municipal fiscal adjustment. Journal of Public Economics 90 (6-7), 1115–1132.

Bützer, G., 2007. Direkte Demokratie in Schweizer Städten: Ursprung, Ausgestaltung und Gebrauch im Vergleich. Baden-Baden: Nomos.

Cameron, A. C., Gelbach, J. B., Miller, D. L., 2011. Robust Inference With Multiway Clustering. Journal of Business & Economic Statistics 29 (2), 238–249.

Downs, A., 1957. An economic theory of political action in a democracy. Journal of Political Economy 65, 135.

Feld, L. P., Kirchgässner, G., 2000. Direct democracy, political culture, and the outcome of economic policy: a report on the swiss experience. European Journal of Political Economy 16 (2), 287–306.

Feld, L. P., Kirchgässner, G., 2001a. Does direct democracy reduce public debt? evidence from swiss municipalities. Public Choice 109 (3-4), 347–70.

Feld, L. P., Kirchgässner, G., 2001b. The political economy of direct legislation: direct democracy and local decision-making. Economic Policy 16 (33), 329–367.

Feld, L. P., Kirchgässner, G., Schaltegger, C., 2011. Municipal debt in switzerland: new empirical results. Public Choice 149 (1), 49–64.

Feld, L. P., Matsusaka, J. G., 2003. Budget referendums and government spending: evidence from swiss cantons. Journal of Public Economics 87 (12), 2703–2724.

Feld, L. P., Schaltegger, C. A., Schnellenbach, J., 2008. On government centralization and fiscal referendums. European Economic Review 52 (4), 611–645.

Fischer, J. A., 2009. Development of direct democracy in swiss cantons between 1997 and 2003. Mpra paper, University Library of Munich, Germany.

Funk, P., Gathmann, C., 2011. Does direct democracy reduce the size of government? new evidence from historical data, $1890 - 2000$. Economic Journal 121 (557), 1252–1280.

Funk, P., Gathmann, C., 2013. Voter preferences, direct democracy and government spending. European Journal of Political Economy 32 (C), 300–319.

Galletta, S., Jan. 2015. Direct Democracy, Partial Decentralization and Voter Information: Evidence from Swiss Municipalities. IdEP Economic Papers 1501, USI Università della Svizzera italiana.

Gerber, E. R., 1996. Legislative response to the threat of popular initiatives. American Journal of Political Science 40 (1), pp. 99–128.

Joanis, M., 2014. Shared accountability and partial decentralization in local public good provision. Journal of Development Economics 107, 28–37.

Kessler, A., 2005. Representative versus direct democracy: The role of informational asymmetries. Public Choice 122 (1), 9–38.

Kirchgässner, G., Pommerehne, W. W., 1996. Tax harmonization and tax competition in the european union: Lessons from switzerland. Journal of Public Economics 60 (3), 351–371.

Matsusaka, J. G., 1992. Economics of direct legislation. The Quarterly Journal of Economics 107 (2), 541–71.

Matsusaka, J. G., 1995. Fiscal effects of the voter initiative: Evidence from the last 30 years. Journal of Political Economy 103 (3), 587–623.

Micotti, S., Bützer, G., 2003. Municipal democracy in switzerland: General view, institutions and experiences in the cities 1990-2000. Rapport de recherche au FNS/SNF.

Miguet, F., 2008. Voting about immigration policy: What does the Swiss experience tell us? European Journal of Political Economy 24 (3), 628–641.

Miller, D. L., Gelbach, J. B., Cameron, A. C., 2008. Bootstrap-based improvements for inference with clustered errors. The Review of Economics and Statistics 90 (3), 414–427.

Moulton, B. R., 1990. An illustration of a pitfall in estimating the effects of aggregate variables on micro unit. The Review of Economics and Statistics 72 (2), 334–38.

Pommerehne, W. W., 1978. Institutional approaches to public expenditure : Empirical evidence from swiss municipalities. Journal of Public Economics 9 (2), 255–280.

Redoano, M., Scharf, K. A., 2004. The political economy of policy centralization: direct versus representative democracy. Journal of Public Economics 88 (3-4), 799–817.

Romer, T., Rosenthal, H., 1979. Bureaucrats versus voters: On the political economy of resource allocation by direct democracy. The Quarterly Journal of Economics 93 (4), 563–87.

Roubini, N., Sachs, J. D., 1989. Political and economic determinants of budget deficits in the industrial democracies. European Economic Review 33 (5), 903–933.

Schnellenbach, J., Feld, L., Schaltegger, C., 2010. The impact of referendums on the centralisation of public goods provision: a political economy approach. Economics of Governance 11 (1), 3–26.

Tullock, G., 1980. Efficient rent seeking. In: Buchanan, J., Tollison, R. D., Tullock, G. (Eds.), Towards A Theory of the Rent-Seeking Society. Texas A & M University Press, pp. 97–112.
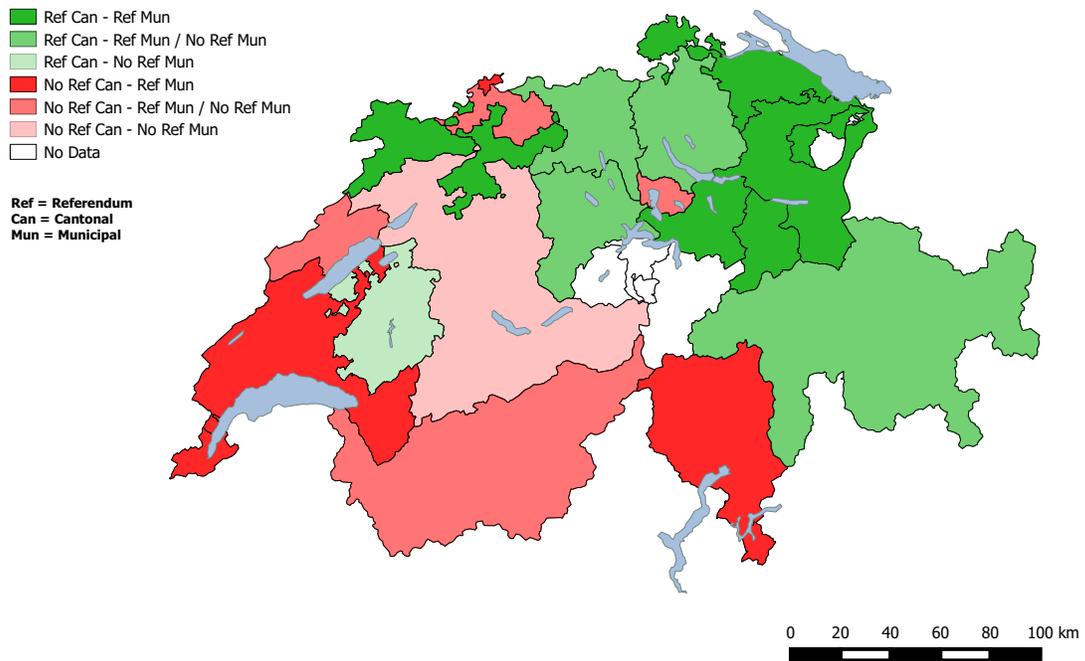
Figure 1: Variability of mandatory fiscal referendum in Switzerland.

Table 1: Details on institutional interactions

		STATE	
		No Direct Democracy	Direct Democracy
LOCAL	No Direct Democracy	Rent extraction from both levels; No incentives to shift expenditure	Rent extraction only from the local level; State level has incentives to shift expenditure
	Direct Democracy	Rent extraction only from the state level; Local level has incentives to shift expenditure	No rent extraction; No incentives to shift expenditure

Note: the table shows, for each possible institutional interaction the expected outcome.

Table 2: Destination of public expenditure by level of government in percentage, 2009

	State	Cantons	Municipalities	Total
Administration	57%	23%	20%	100%
Defense	91%	4%	5%	100%
Security	10%	64%	26%	100%
Economy	41%	38%	21%	100%
Environment	17%	22%	61%	100%
Social housing	1%	17%	82%	100%
Health	3%	84%	13%	100%
Culture and recreation	8%	32%	60%	100%
Education	9%	60%	31%	100%
Welfare	42%	38%	20%	100%

Source: Swiss Federal Department of Finance

Table 3: Use of direct democratic institutions, 1990-2010

	Federal	Cantons	Municipalities*
Initiative	76	354	187
Optional referendum	67	362	337
Mandatory referendum	45	1,374	2,918

Source: C2D (http://www.c2d.ch), Micotti and Bützer (2003).
*Based on 91 municipalities for the period 1990-2000

Table 4: Details on institutional interaction and municipal expenditure

		Canton		
		Referendum	No Referendum	Difference
Municipality	Referendum	3,368 (36%)	3,307 (29%)	59
	No Referendum	3,847 (8%)	3,301 (27%)	546***
	Difference	-479***	6	

The table shows, for each possible institutional interaction, the average value of the net municipal expenditure per capita. It also reports the difference and the significance of the t-stat for equality of means. In parenthesis the share of municipalities belonging to each case.

Table 5: Summary statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
Municipal expenditure p/c	5,455.27	2,506.91	1,494.71	31,279.48	1,782
Municipal expenditure p/c net of transfers	3,374.71	1,477.82	777.18	18,295.57	1,782
Mandatory ref. (mun)	0.64	0.47	0	1	1,782
Mandatory ref. (can)	0.44	0.49	0	1	1,782
Population (mun)	25,218.33	39,437.89	4,994	358,540	1,782
Share pop foreigner (mun)	0.25	0.08	0.07	0.51	1,782
Share pop < 20 (mun)	0.21	0.02	0.15	0.28	1,782
Share pop > 64 (mun)	0.16	0.03	0.07	0.24	1,782
Area (mun)	0.20	0.27	0.02	2.54	1,782
Unemployment (mun)	4.12	2.02	0.2	12.3	1,782
University (mun)	0.07	0.26	0	1	1,782
Urban center dummy (mun)	0.42	0.49	0	1	1,782
Federal tax on income p/c (mun)	997.76	874.5	176.87	11,099.64	1,782
Left wing (mun)	0.26	0.17	0	0.8	1,780
Municipal councilors (mun)	7.31	3.43	3	30	1,780
Parties in Gov (mun)	3.95	0.95	2	8	1,780
Language (can)	0.28	0.45	0	1	1,782
Left wing (can)	0.27	0.12	0	0.6	1,782
Dependency ratio (can)	59.25	16.39	-170.20	73.34	1,782
Population (can)	573,639.15	399,055.72	38,084	1,307,570	1,782
Aggregate municipal expenditure p/c (can)	7,935.68	3,309.16	376	27,614	1,782
Aggregate expenditure centralization (can)	0.66	0.09	0.52	0.98	1,782

Table 6: Model without interaction term for the period 1993-2007

Municipal expenditure p/c (Log)	(1)	(2)	(3)	(4)	(5)	(6)
Mandatory ref. (mun)	-0.022	-0.030			-0.065	-0.078**
	(0.081)	(0.037)			(0.072)	(0.037)
Mandatory ref. (can)			0.148**	0.172***	0.156**	0.181***
			(0.062)	(0.050)	(0.061)	(0.051)
Population (Log) (mun)		0.010		0.008		0.010
		(0.037)		(0.034)		(0.034)
Share pop foreigner (mun)		0.459		0.131		0.088
		(0.340)		(0.307)		(0.308)
Share pop < 20 (mun)		-3.525*		-4.362**		-4.320**
		(1.875)		(1.690)		(1.631)
Share pop > 64 (mun)		0.690		0.137		0.226
		(1.094)		(1.222)		(1.144)
Area (mun)		0.141**		0.127**		0.129***
		(0.052)		(0.046)		(0.045)
Unemployment (mun)		0.005		0.021		0.021
		(0.014)		(0.012)		(0.013)
University (mun)		0.281***		0.220**		0.212**
		(0.077)		(0.079)		(0.081)
Urban center dummy (mun)		0.079		0.079*		0.093**
		(0.049)		(0.042)		(0.043)
Federal tax on income p/c (mun)		0.193**		0.206**		0.202**
		(0.079)		(0.075)		(0.074)
Left wings parties - cabinet (mun)		-0.232*		-0.140		-0.159
		(0.117)		(0.113)		(0.112)
Parties in Gov (mun)		-0.026		-0.024		-0.022
		(0.025)		(0.024)		(0.024)
Municipal councilors (mun)		0.009		0.005		0.005
		(0.006)		(0.006)		(0.006)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Cantonal controls	Yes	Yes	Yes	Yes	Yes	Yes
Basel and Geneva dummy	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.100	0.486	0.138	0.531	0.141	0.534
N	1782	1780	1782	1780	1782	1780

The dependent variable is the log annual municipal per capita expenditure. Standard errors in parenthesis. Standard errors are clustered at the cantonal level. *$p < 0.1$, **$p < 0.05$ and ***$p < 0.01$.

Table 7: Model with interaction term for the period 1993-2007

Municipal expenditure p/c (Log)	(1)	(2)	(3)	(4)	(5)	(6)
Mandatory ref. (mun)	0.008	-0.011	-0.007	-0.012	-0.021	-0.010
	(0.075)	(0.049)	(0.047)	(0.039)	(0.039)	(0.075)
Mandatory ref. (can)	0.278**	0.290***	0.298***	0.189***	0.271***	0.384***
	(0.107)	(0.073)	(0.069)	(0.031)	(0.050)	(0.109)
Mandatory ref. (can)*(mun)	-0.183	-0.150*	-0.182**	-0.186***	-0.147**	-0.219*
	(0.128)	(0.079)	(0.075)	(0.050)	(0.057)	(0.115)
Population (Log) (mun)		-0.007	0.024	0.039	0.034	-0.017
		(0.036)	(0.033)	(0.026)	(0.029)	(0.043)
Share pop foreigner (mun)		0.113	0.199	0.470***	0.316	-0.299
		(0.320)	(0.275)	(0.132)	(0.201)	(0.438)
Share pop < 20 (mun)		-3.759**	-3.882**	-2.784**	-3.837**	-4.290**
		(1.563)	(1.509)	(1.112)	(1.393)	(1.687)
Share pop > 64 (mun)		0.360	0.508	1.164	0.238	0.172
		(1.159)	(1.130)	(0.993)	(1.176)	(1.349)
Area (mun)		0.154***	0.135***	0.084**	0.146***	0.172
		(0.052)	(0.043)	(0.039)	(0.038)	(0.110)
Unemployment (mun)		0.029**	0.025*	0.018	0.020	0.030**
		(0.013)	(0.012)	(0.011)	(0.013)	(0.012)
University (mun)		0.204**	0.197**	0.249***	0.189**	0.265**
		(0.088)	(0.083)	(0.072)	(0.086)	(0.099)
Urban center dummy (mun)		0.093*	0.088*	0.014	0.069	0.192***
		(0.049)	(0.042)	(0.038)	(0.042)	(0.059)
Federal tax on income p/c (Log) (mun)		0.228**	0.209***	0.216***	0.228***	0.073
		(0.081)	(0.071)	(0.049)	(0.065)	(0.076)
Left wings parties - cabinet (mun)			-0.210*	-0.049	-0.166	-0.184
			(0.110)	(0.092)	(0.109)	(0.144)
Parties in Gov (mun)			-0.023	-0.033*	-0.030	-0.012
			(0.023)	(0.019)	(0.021)	(0.027)
Municipal councilors (mun)			0.006	0.002	0.005	-0.000
			(0.006)	(0.003)	(0.004)	(0.008)
Centralization (can)				-1.928***		
				(0.288)		
Aggr. municipal expenditure p/c (Log) (can)					-0.056	
					(0.072)	
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Cantonal controls	Yes	Yes	Yes	Yes	Yes	Yes
Basel and Geneva dummy	Yes	Yes	Yes	Yes	Yes	Yes
Significance inter + (can)[1]	**	***	***	***	***	***
Significance inter + (mun)[2]	-	*	**	***	**	*
R^2	0.154	0.535	0.545	0.629	0.562	0.575
N	1782	1782	1780	1780	1780	1780

The dependent variable is the log annual municipal per capita expenditure net of transfers in columns (1)-(5) and log annual municipal per capita expenditure in column (6). Standard errors in parenthesis. Standard errors are clustered at the cantonal level. *$p < 0.1$, **$p < 0.05$ and ***$p < 0.01$. [1] joint significance level of cantonal referendum and interaction. [2] joint significance level of municipal referendum and interaction.

Table 8: Robustness checks

Municipal expenditure p/c (Log)	OLS - Wild Bootstrap	OLS	OLS	OLS - Cross section	Random Effect	Fixed Effect
	(1)	(2)	(3)	(4)	(5)	(6)
Mandatory ref. (mun)	-0.007	-0.007	-0.045	0.155	-0.010	-0.043
	(0.047)	(0.043)	(0.046)	(0.081)	(0.050)	(0.050)
	p=0.877					
Mandatory ref. (can)	0.298***	0.298***	0.266***	0.365***	0.109***	0.080*
	(0.069)	(0.062)	(0.065)	(0.071)	(0.035)	(0.040)
	p=0.007					
Mandatory ref. (can)*(mun)	-0.182**	-0.182***	-0.148**	-0.353***	-0.103**	-0.066
	(0.075)	(0.070)	(0.069)	(0.095)	(0.042)	(0.046)
	p=0.086					
Year FE	Yes	Yes	Yes	No	Yes	Yes
Demo-Eco controls	Yes	Yes	Yes	Yes	Yes	Yes
Federal tax on income P/C (mun)	Yes	Yes	No	Yes	Yes	Yes
Political controls	Yes	Yes	Yes	Yes	Yes	Yes
Cantonal controls	Yes	Yes	Yes	No	Yes	No
Basel and Geneva dummy	Yes	Yes	Yes	Yes	Yes	No
Cantonal FE	No	No	No	No	No	Yes
Level of clustering	Canton	Canton-Year	Canton	Canton	Canton	Canton
R^2	0.545	0.545	0.485	0.654	0.444	0.683
N	1780	1780	1780	119	1780	1780

The dependent variable is the log annual municipal per capita expenditure net of transfers. In column (4) both dependent and independent variables are averaged over-time and institutions are taken from year 2000. In column (1), below the standard errors, we report p-values using the wild bootstrap. Standard errors in parenthesis. In columns (1-3-4-5-6) standard errors are clustered at the cantonal level. In column (2) standard errors are clustered by canton and year. *p < 0.1, **p < 0.05 and ***p < 0.01.

A APPENDIX

Table A.1: Data description

Source	Variable name	Description
Statistiques des Villes Suisses	Municipal expenditure p/c	Municipal expenditure per capita
	Municipal expenditure p/c net of transfers	Municipal expenditure per capita - revenue from transfers per capita
	Unemployment (mun)	Share of unemployment people
	Share pop foreigner (mun)	Share of foreigner on municipal population in 2000
	Share pop < 20 (mun)	Share of people with age < 20 on municipal population in 2000
	Share pop > 64 (mun)	Share of people with age > 64 on municipal population in 2000
	Federal tax on income p/c (mun)	Average municipal federal tax paid on income - linear interpolation is used for missing years
	Parties in Gov (mun)	Number of parties in cabinet (municipal)
	Left wings (mun)	Share of seat in the cabinet own by a left party (Socialist, Green and other local left parties)
	Municipal councilors (mun)	Number of municipal councilors in cabinet (municipal)
Swiss Federal Statistical Office	Population (mun)	Municipal population
	Area (mun)	Municipal surface
	University (mun)	Dummy variable = 1, in case municipality with university, and zero otherwise
	Urban center dummy (mun)	Dummy variable = 1, in case municipality is a urban center, and zero otherwise
	Population (can)	Cantonal population
	Left wings (can)	Share of seat in the parliament own by a left party (Socialist, Green and other left parties)
	Dependency ratio (can)	(Number of people aged 0-19 and those aged 65 and over) / (Number of people aged 20-64)
	Language (can)	Dummy variable = 1, in case the municipality belong to a non-German speaking canton
	Aggregate municipal expenditure p/c (can)	Total municipal expenditure in a canton per capita
	Centralization (can)	(Total municipal expenditure in a canton) / (Total municipal expenditure in a canton + cantonal cantonal expenditure)
Bützer (2007),Fischer (2009) and self collection :	Mandatory ref. (mun)	Dummy variable = 1, in case mandatory expenditure referendum exist, and zero otherwise (municipal)
	Mandatory ref. (can)	Dummy variable = 1, in case mandatory expenditure referendum exist, and zero otherwise (cantonal)