



# Do large cabinets favor large governments? Evidence on the fiscal commons problem for Swiss Cantons <sup>☆</sup>

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## ABSTRACT

The fiscal commons problem is one of the most prominent explanations of excessive spending in political economics. For a panel of the 26 Swiss cantons over the 1980–1998 periods, this paper explores the role of fragmented governments on fiscal policy outcomes. We distinguish between two variants of fragmented governments: cabinet size and coalition size. In addition, we analyze whether constitutional rules for executive and legislature as well as formal fiscal restraints shape the size of government and how different rules interact with fragmentation. The results indicate that the number of ministers in the cabinet is positively associated with the size of government. While fiscal referendums effectively restrict the size of government, there is also evidence that fiscal referendums relax the fiscal commons problem to some extent.

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## 1. Introduction

In the political economics literature, the size of the cabinet is one prominent, recently studied explanatory factor of government size. Since the cabinet is the executive power that implements fiscal policies, it is reasonable to assume that the specific design of this political institution matters. But why would we expect larger cabinets to favor more government spending? Following the analyses by Buchanan and Tullock (1962) and Weingast et al., (1981), fiscal policy decisions can be explained by the degree of fragmentation in government. The starting point is the notion that the government budget represents a common pool for all political actors. These actors seek electoral support from special interest groups in order to be re-elected. Since each individual group benefits from specific programs of government spending, politicians are concerned with targeting resources from the public budget to those budget items that benefit their constituencies. In contrast, the costs of these special expenditure programs are

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spread over the whole population, assuming that taxation cannot be as easily targeted to a special segment of the population as spending programs. Consequently, each interest group and their representatives fully internalize the benefits of the targeted spending programs while they only perceive a fraction,  $1/n$ , of initiated costs, with  $n$  being the number of interest groups or their representatives (Inman and Fitts, 1990). Thus, the number of decision-makers on the public budget is positively associated with the size of government. The larger the number of  $n$  special interest groups and their appointed representatives, the smaller the degree to which they internalize the costs of their spending programs.

Following Buchanan and Tullock (1962) or Weingast et al., (1981) again, the fiscal commons problem arises from geographic fragmentation.<sup>2</sup> Representatives on the federal level try to target federal public expenditures to their own electoral districts in order to be re-elected. In our case, the fiscal commons problem is due to the fragmentation of fiscal policy-making within the cabinet and, thus, the executive branch of government. Each individual minister in the cabinet aims at extracting a larger share of the public budget to meet additional claims in its own ministry, which may originate from bureaucratic budget maximization, interest group influence or the principal-agent problems inherent in cases of political delegation. While fiscal institutions are often proposed as remedies for the fiscal commons problem (Poterba and von Hagen, 1999; Von Hagen, 2006), it is hardly analyzed to what extent they help reducing the exploitation of the fiscal commons.

Our main goal in this paper is to empirically investigate to what extent cabinet size affects the size of government. We study this fiscal commons problem for the Swiss cantons using panel data for the period 1980–1998. The rich institutional variety of the Swiss cantons allows us additionally to study which institutional conditions may relax the fiscal commons problem. Briefly, the main findings of our paper are the following: First, cabinet size matters for the size of government. Larger cabinets favor larger governments. Second, several institutional factors are robust determinants of fiscal policy but political and ideological factors are largely unimportant. Third, the fiscal commons problem can be mitigated by fiscal institutions to some extent.

The remainder of the paper is organized as follows: In Section 2, the expected impact of fragmented governments on fiscal policy outcomes is discussed. The empirical approach to study the effects of cabinet size on fiscal policy outcomes follows in Section 3. The results will be discussed in Section 4 while Section 5 offers some concluding remarks.

## 2. Fragmented governments and fiscal policy: some theoretical considerations

Several concepts of fragmented governments are discussed depending on the unit of decision-making. For instance, fragmentation in the executive or the legislative branch of government, but also the number of sub-federal jurisdictions, or the number of interest groups could serve as a test for the fragmentation hypothesis. This paper focuses on the interpretation of fragmentation in the executive branch of government.

A first line of research on government fragmentation focused on *coalition size* as an indicator for government fragmentation. According to the analyses by Roubini and Sachs (1989a, b), the rationale for this interpretation is that each party in government rather cohesively represents the interests of a specific pressure group. Thus, the more interests are represented in the government, the higher the pressure for additional public spending in favor of these pressure groups. In a panel regression for 14 OECD-countries over the 1960 to 1985 period, they provide empirical evidence that large deficits are associated with broad based coalitions ruling the government. In a re-examination of their findings, Edin and Ohlsson (1991) argue that the Roubini–Sachs cohesion variable captures the effects of minority governments rather than majority coalition governments. But in essence, they support the notion that political cohesion increases the government's ability to fight fiscal imbalance. However, De Haan and Sturm (1994), aiming at replicating the Roubini–Sachs studies, do not obtain a robust effect of coalition size. Much the same can be concluded from the empirical investigation by Alt and Lowry (1994). Using data from the 48 US states (excluding Alaska and Hawaii) over the 1968–1987 period, they find that divided governments are less capable to balance the budget, particularly in the case of different parties having a majority in the two legislative chambers. For the same time period (and without sub-sampling), Gilligan and Matsusaka (1995) do however not find such political effects.

On the other hand, Lijphart and Crepaz (1991) and Crepaz (1996) show that 'weak' multiparty coalition governments face favorable outcomes in unemployment, inflation and the number of working days lost for 18 industrialized countries over 9 elections per country. Broad-based coalition governments have to follow fiscal policies, which are representative for a huge part of the population. Thus, and in accordance with the theory by Alesina and Rosenthal (1996), divided governments are less prone to the threat of minor interest groups. On the basis of these arguments, it can also be stated that the acceptance of policy decisions is higher when they reflect the preferences of a broad majority of the electorate. This is, e.g., the case in a consensus democracy.

Another, more recent, interpretation of fragmented government refers to the number of spending ministers in the government and provides less ambiguous results. Each spending minister participates in decisions on spending projects and demands resources from the overall budget. This demand may originate from the incentives of bureaucracies to maximize budgets because of higher power, prestige and pay associated with it (Niskanen, 1971). It might also reflect the demands of particular interest groups directed at the ministry that is responsible for their policy areas. Like in the case of regulatory capture (Stigler, 1971) ministries will cooperate with the interest groups in their policy area tending to over-use the fiscal commons. Finally, the  $1/n$ -problem could result from a principal-agent relationship as each minister wants to serve her own constituency. While the represented groups receive targeted spending, general taxes spread the costs across the whole population. It could thus also be expected that over-

<sup>2</sup> See also Gilligan and Matsusaka (1995, 2001), Bradbury and Crain (2001), Baqir (2002) for empirical evidence.

spending as a result of the fiscal commons problem also leads to higher overall taxes. Excessive spending determines excessive taxation.

It is debated whether *cabinet size* should include the head of the ministry of finance and the prime minister. Volkerink and de Haan (2001) argue that finance and prime ministers are not concerned with spending administrations but take responsibility for the whole budget. Hence, these members of the cabinet enjoy a somewhat different position compared to the other ministers. Using a panel of 22 OECD countries over the 1971 to 1996 period, they report empirical evidence that governments with a high number of spending ministers face higher deficits while governments with a large majority in parliament have significantly lower deficits. On the other hand, Perotti and Kontopoulos (2002) use the total number of ministers in the cabinet since the influence of the ministers of finance is often not limited to the overall budget. They also have a large influence on the selection of specific spending projects. For a panel of 19 OECD countries over the 1970 to 1995 period, they report evidence that cabinet size is a robust determinant of fiscal outcomes. Especially, transfer payments are higher in a large cabinet government while investment spending remains unaffected by the number of ministers in the cabinet. In turn, the size of the coalition in charge of government and the ideological position of the government have little impact on fiscal outcomes. In a preceding analysis, Kontopoulos and Perotti (1999) find that the number of ministers in the cabinet has a very robust effect on government expenditure while the number of parties in government seems to be statistically far less robust. Summing up, there is evidence that fragmented governments actually create a fiscal commons problem in spending.

It is contested in the literature whether the fiscal commons problem could also be extended to a dynamic context. Weingast et al., (1981) assume a balanced budget implying that revenue is simply adjusted to the spending requirements that are driven by the fiscal commons problem. Buchanan and Tullock (1962, Chap. 11) consider cases in which log-rolling could result in a constant, a negative or a positive sum game. A fiscal commons will be over-used in this context by excessive spending and an accompanied higher overall tax burden. Buchanan and Yoon (2004) argue that such exploitation is restricted by a membership externality which stems from the necessary intersection of members among separate majority coalitions. Inman and Fitts (1990) and Velasco (1999) argue, however, that a dynamic fiscal commons problem emerges, if government net assets – defined as future income minus outstanding debt – are common property of all spending ministries. In a dynamic fiscal commons, each of the  $n$  agents uses the whole stock of resources and not one  $n$ th of it as a basis for budget decisions. The return on saving (i.e. spending or consumption foregone) as perceived by one agent is the interest rate (or the growth rate of natural resource stocks) minus what the other  $n-1$  agents take out. To the extent that savings depend positively on the interest rate, each agent under-saves or overspends such that public deficits are incurred and public debt is accumulated. For a dynamic fiscal commons problem to emerge, much depends on the assumption that each agent maximizes utility given the discounted value of government resources. It could be argued that government net assets cannot be inferred easily even by members of cabinets as gross debt is known, while the value of government gross assets is largely unknown due to difficulties in forecasting future revenue streams. The focus of our study is thus on spending and revenue instead of deficits and debt.<sup>3</sup>

Finally, the question emerges which institutional provisions could effectively remedy the fiscal commons problem. Feld and Kirchgässner (2001) and Feld and Matsusaka (2003) argue that fiscal referendums restrain the spending bias of governments and correct fiscal policy outcomes towards median voter preferences. If the over-spending assumed in these papers results from a fiscal commons problem, it can be hypothesized that fiscal referendums relax it effectively. The fiscal commons problem becomes less important in a fiscal referendum as citizens cannot adhere to a universalism norm and log-rolling is more difficult in a referendum. In addition, formal fiscal restraints may also restrict the fiscal commons problem although their effectiveness heavily depends on the details of the provisions. The formal fiscal constraints at the Swiss cantonal level almost automatically induce an adjustment of revenue if overspending occurs (Feld and Kirchgässner 2008). As tax increases are particularly unpopular in Swiss federalism which is characterized by intensive tax competition, the Swiss balanced-budget requirements have a feedback on the spending side leading to less spending. Overall, these two institutional provisions could thus be hypothesized to restrict the fiscal commons problem associated with larger cabinet size.

### 3. Empirical strategy

In order to evaluate, first, the impact of fragmented governments on fiscal policy and, second, the influence of institutions on restricting the fiscal commons problem, a panel regression analysis for the Swiss cantons is performed. The Swiss cantons have considerable spending and taxing autonomy as well as a rich institutional variety. They can therefore serve as a natural laboratory for such an empirical investigation. The annual panel covers the period 1980 to 1998, deflated to the year 1980, and all 26 cantons.

Detailed information concerning the two variables capturing measures of government fragmentation can be found in Table 1. The number of ministers in the cantonal cabinets currently varies between five and seven. Moreover, the cantons Bern (1989), Appenzell i. Rh. (1995), and Nidwalden (1997) have changed from nine to seven ministers in the executive body. Recently, the canton Obwalden reduced his cabinet from seven to five ministers and, due to a successful voter initiative in the canton Luzern, its cabinet counts five members since July 2003. Voters of the canton Glarus have decided to reduce the size of cabinet from seven to five ministers effective as of 2006 on their town meeting in 2004. It has to be considered, however, that some of the cantons engage their governors only part-time. This particularly holds for smaller cantons.

<sup>3</sup> In a previous version of this paper (Schaltegger and Feld, 2004), we also do not find much support for the dynamic fiscal commons problem for Swiss cantons.

**Table 1**

Political institutions in Swiss cantons

Cantons	Cabinet size (# ministers)	Part time governors	Coalition size (# parties)	Formal fiscal restraint	Proportional election of government	Term limits of government (# years)	Legislative size (# members parliament)	Majoritarian election of parliament	Term limits of members of parliament (# years)
Zuerich	7		5				180		
Bern	9/7 (1989)		3				200 (160 as of 2006)		
Luzern	7/5 (2003)		3				120 (170 until 1999)		
Uri	7	X	3				64		
Schwyz	7		3			16	100		
Obwalden	7/5 (2002)	Until 2002	2/3			16	55		16
Nidwalden	9/7 (1997)		2				60		
Glarus	7/5 (2006)	Until 2006	4			16	80		
Zug	7		3		X		80		
Fribourg	7		3/5/4	X		16	130		
Solothurn	5		3	X			144 (100 as of 2005)		
Basel–Stadt	7		5/4				130		12
Basel–Landschaft	5		4/3				90		16
Schaffhausen	5		3				80		
Appenzell a. Rh.	7		4/3	X		16	65	X	
Appenzell i. Rh.	9/7 (1995)	X	1				46	X	
St. Gallen	7		3	X			180		
Graubunden	5		3	X		12	120	X	
Aargau	5		4				200 (140 as of 2005)		
Thurgau	5		4				130		
Ticino	5		3/4		X		90		
Vaud	7		4/5				180 (200 until 1997)		
Valais	5		2				130		
Neuchâtel	5		3				115		
Genève	7		4			16	100		
Jura	5		3			16	60		12

Note: Year of institutional change in brackets; Source: see Appendix A.

Using this institutional variety in the cabinet size, we propose the following econometric model to analyze the role of government fragmentation for public finances:

$$X_{it} = \beta_0 + \beta_1 CTRL_{it} + \beta_2 CABINET\_SIZE_{it} + \beta_3 COALITION\_SIZE_{it} + TD_t + \varepsilon_{it}, \quad (1)$$

where  $i$  are the canton and  $t$  the year indices, respectively.  $X$  represents the budget variables, i.e. public spending or revenue. All dependent variables are calculated in logarithms.<sup>4</sup> The vector  $CABINET\_SIZE$  captures the number of ministers in a specific cantonal government and whether a minister is working part-time or not, while  $COALITION\_SIZE$  is the number of parties within a governing coalition. We expect both to have a positive impact on spending and revenue.  $CTRL$  is a vector of control variables (see Appendix A for description). It contains political and institutional features of the cantons as well as usual control variables. In addition to fiscal referendums (Feld and Matsusaka, 2003; Matsusaka 2004) and formal fiscal restraints on the constitutional or statutory level (Poterba, 1997; De Haan and Sturm, 2000; Danninger, 2002), term limits (Besley and Case, 1995), the budget process (Hallerberg and von Hagen, 1999), electoral and legislative rules (Persson and Tabellini, 2003), but also partisan effects (Hibbs, 1977; Blais, Blake and Dion, 1993) might be important.

Concerning electoral rules, the Swiss cantons have majoritarian elections with two exceptions (Ticino and Zug) for the executive and proportional elections with three exceptions (Graubunden, Appenzell i.Rh. and Appenzell a.Rh.) for parliament. As all cantonal governments are directly elected by voters, the regime type does not vary across Swiss cantons (Vatter, 1998). Most cantonal constitutions do not use term limits. However, eight out of 26 cantons restrict the maximum time span for governors to three or four gubernatorial terms. For members of cantonal parliaments, term limits are applied in four cantons only.

Additionally, the cantons reveal a rich variety of referendum possibilities. Some cantons use mandatory fiscal referendums with different spending thresholds to qualify for ballots. Others apply optional fiscal referendums with spending thresholds and signature requirements differing from canton to canton (Feld and Matsusaka, 2003). Some cantons (St. Gallen, Solothurn, Appenzell i.Rh., Fribourg and Graubunden) also have statutory requirements to balance the budget. These formal fiscal restraints are aimed at reducing the discretionary use of deficit spending (Stauffer, 2001; Schaltegger, 2002a, b; Kirchgässner, 2002; Feld and Kirchgässner, 2008). Such restraints are usually observed in cantons that have provisions for fiscal referendums. They force the cantons to increase tax rates if budget deficits surpass a deficit threshold. In Fribourg, this requirement is specified such that local taxes are not covered, but a bailout of

<sup>4</sup> Because the continuous variables in our model are all calculated in logs, it is not necessary to normalize public spending or revenue by population size or income. The log of income and the log of population are used as explanatory variables such that normalization would only affect the size of their estimated coefficients.

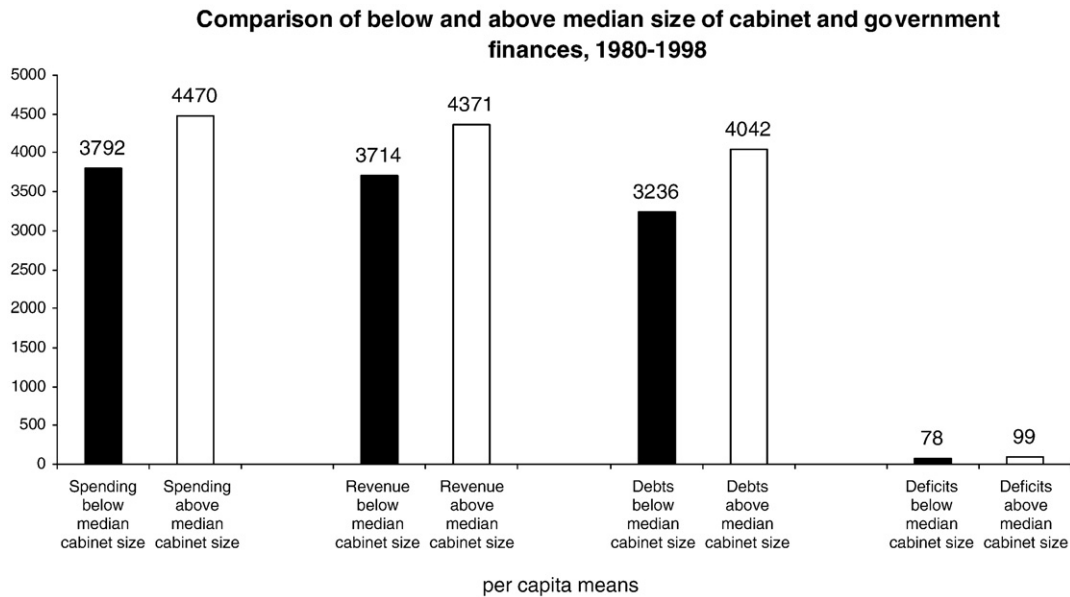


Fig. 1. Cabinet size and fiscal policy. Source: Own calculations.

the cantonal by the local level is highly improbable. The cantons of St. Gallen and Solothurn have additional restrictions on tax rate cuts that provide further restrictions on deficit financing. The requirements are less restrictive in Graubünden or in Appenzell a.Rh.

Other control variables are federal grants to the cantons, cantonal income, population size, urban share of population, number of communes within a canton, and a dummy variable taking the value 1 for German speaking cantons. In further robustness analyses, ideology of government and ideology of parliament are used as additional control variables to capture partisan effects. Finally, *TD* is a set of time dummies controlling for year specific effects whereas  $\varepsilon$  represents the error term of the regression. Appendix Table A2 provides summary statistics.

As can be seen from Table A2, some of the variables of interest, in particular cabinet size and coalition size as well as the institutional variables, fiscal referendums and fiscal restraints, mainly vary in the cross section domain. There are not many intertemporal changes of these variables as their relatively low within variance indicates. Some of the institutional features of the cantons, like term limits or proportional representation, even do not vary at all across time. These characteristics of the explanatory variables render fixed effects regressions difficult, because much of the impact of institutional factors is then captured by the fixed effects (or the institutional variables drop out due to time invariance). We thus proceed with a dual strategy. The basic equations are first estimated by OLS with time dummies and clustered standard errors (for cantons). Second, we perform fixed effects regressions and discuss to what extent the OLS results are robust to the FE specification.<sup>5</sup>

The consistency of the estimated coefficients also depends on the exogeneity of the regressands. In our case, this is problematic because cabinet size could be the result of cantons' different fiscal preferences.<sup>6</sup> For example, the reduction of cabinet size could just be an expression of electoral preferences to cut down government spending. In this case, we would find a negative impact of a reduction of cabinet size on government spending, though there is a reversed causality. Similarly, if the tasks performed by the government increase due to an exogenous shock, an additional minister may be appointed to organize the executive properly. A positive correlation between fiscal policy and cabinet size might obtain although a third variable has influenced fiscal policy. Due to the lack of convincing instruments, we cannot exclude such simultaneity problems. Our results do thus not allow us to identify causal effects and remain indicative in that respect.<sup>7</sup> They can only be cautiously interpreted.

#### 4. Results

In order to illustrate the effect of cabinet size on the size of government at the outset, we divide the sample into cantons with cabinet size above and below the median value of 7. We then compare the budgetary policy choices that have been made in a

<sup>5</sup> In a previous version of this paper (Schaltegger and Feld, 2008), we have also performed Random Effects regressions following the suggestion by Besley and Case (2003). The RE results are qualitatively similar to those of the OLS regressions. We have nevertheless focused on a parsimonious test strategy here.

<sup>6</sup> A similar problem of endogeneity applies for coalition size, fiscal restraints or part-time governors.

<sup>7</sup> In Schaltegger and Feld (2008), two stage least squares estimates are reported although exogeneity of the regressors cabinet size, coalition size, part-time governors and fiscal restraints cannot be rejected according to both a Wu–Hausman and a Durbin–Wu–Hausman test. The fraction of protestants from total population, ideology of government, a dummy variable for cantonal meetings and a dummy variable for university cantons are used as instruments. Though their statistical performance is not bad, they are unconvincing on theoretical grounds and could only be considered as weak instruments. As such they create more problems than they solve. We have thus not included the IV regressions in this paper. The IV results are again qualitatively similar to those of the OLS regressions.



**Table 2**

Development of expenditures before and after changing cabinet size of Bern

Canton	Bern	Average Swiss canton	Vaud	Solothurn	Fribourg	Luzern
Average yearly spending growth before change in cabinet size of Bern (1980 to 1989)	2.534%	1.735%	2.502%	2.026%	1.288%	0.722%
Average yearly spending growth after change in cabinet size of Bern (1989 to 1998)	1.759%	1.813%	1.764%	3.874%	3.071%	3.291%
Difference of yearly spending growth	–0.775%	0.077%	–0.737%	1.848%	1.783%	2.569%

Source: Own calculations.

cabinet below the median value of ministers with the policy decisions by cabinets with 7 and more ministers (see Fig. 1). Descriptively, cantons with larger cabinets have higher spending and revenue.

#### 4.1. Anecdotal evidence

To shed some light on the longitudinal effect of a change of cabinet size for the government finances we study the three available episodes, during which cabinet size in our data sample was changed. According to historical accounts, cabinet size was reduced in these cases for different reasons and not necessarily for reducing government spending.

First, the canton of Bern changed its cabinet size in 1989 from nine to seven ministers. This change evolved from a political crisis in the 1980s. Traditionally, the composition of the government of Bern was very stable. The cabinet was divided between four ministers from the conservative peoples' party (SVP), three social democratic (SP) ministers and two ministers from the liberals (FDP). In 1984, the audit court discovered that the government was misusing public finances for campaign financing such that parliament introduced a special investigation commission to evaluate whether the reproaches of the court were correct. During the investigations by the commission, even more inconsistencies could be detected so that the liberals lost there two ministers in the 1986 elections. This was the first time, that the government had a cabinet without any liberals since 1831. In the aftermath of this crisis, citizens launched a voter initiative to reduce the size of the cabinet from nine to seven ministers. The initiative was accepted in 1987 with a very small majority. The new law was effective as of 1989.

In the case of Bern, almost a ten year period is available before the institutional change took place and another period of about the same length after the reduction of the size of the cabinet. As indicated in Table 2 for the case of Bern, there is a considerable decline of spending growth after the introduction of a smaller cabinet. Moreover, compared to the average Swiss canton, Bern could cut back its spending growth from a level much above the average between 1980 and 1989 to a level somewhat below the average between 1989 and 1998. Very much the same can be concluded when observing spending growth of some neighboring cantons, which have a common border with Bern.

Second, in the case of the canton Appenzell i.Rh., government and parliament (Grosser Rat) proposed a reduction of the executive body (Standeskommission) from nine to seven members at the cantonal meeting on April 30, 1995 in an effort to increase administrative efficiency. Citizens approved this reduction at the cantonal meeting with a clear majority. The issue had been discussed there before for quite some years: In the beginning of the 1990s a special commission was introduced to make proposals for a re-organization of the cantonal administration and the government. Thereafter, different models of re-organization had been publicly discussed with the result that the government proposed one model to the parliament and the voters. This model included a reduction of cabinet size from nine to seven ministers.

In the case of Appenzell i.Rh., a fifteen year period before and a period of four years after the reduction of cabinet size can be observed. As indicated in Table 3, there is a slight decline of spending growth after reducing cabinet size. However, a mixed picture shows up when comparing spending growth of Appenzell i.Rh. with spending growth of neighboring cantons without changes in cabinet size. Compared to the average Swiss canton, public spending of Appenzell i.Rh. was below the average before and after the institutional change.

Third, in the case of the canton of Nidwalden, the reduction of cabinet size from nine to seven members was decided in 1997 also in the broader context of increasing administrative efficiency. Government and parliament proposed a reduction. Finally, the smaller cabinet was approved by the voters. For Nidwalden seventeen years before and two years after the reduction of cabinet size are available only. In contrast to our prediction, public spending grew after the introduction of a smaller cabinet (Table 4). However,

**Table 3**

Development of spending before and after changing cabinet size in Appenzell i.Rh.

Canton	Appenzell i.Rh.	Average Swiss canton	Appenzell a.Rh.	St. Gallen	Glarus	Thurgau
Average yearly spending growth before change in cabinet size of Appenzell i.Rh. (1980 to 1995)	1.360%	1.980%	3.304%	2.193%	1.353%	1.893%
Average yearly spending growth after change in cabinet size of Bern (1995 to 1998)	1.038%	1.072%	2.341%	3.989%	2.340%	2.707%
Difference of yearly spending growth	–0.322%	–0.908%	–0.963%	1.797%	0.988%	0.814%

Source: Own calculations.

**Table 4**

Development of expenditures before and after changing cabinet size in Nidwalden

Canton	Nidwalden	Average Swiss canton	Obwalden	Schwyz	Zug	Lucerne
Average yearly spending growth before change in cabinet size of Nidwalden (1980 to 1997)	–0.875%	1.801%	3.680%	0.869%	3.423%	2.231%
Average yearly spending growth after change in cabinet size of Bern (1997 to 1998)	1.238%	0.693%	–7.295%	4.844%	2.858%	0.381%
Difference of yearly spending growth	2.113%	–1.108%	–10.975%	3.975%	–0.565%	–1.850%

Source: Own calculations.

note that the reduction of cabinet size went along with an enlargement of occupancy in the case of Nidwalden. The latter effect dampens the effect of a reduced number of ministers.

#### 4.2. Multivariate analysis

The descriptive evidence of smaller (larger) governments in jurisdictions governed by smaller (larger) cabinets can have many unobserved reasons. Therefore, a whole set of other economic, socio-demographic, political and institutional control variables (see again Table A2) are included in the analysis in order to see the differential impact of cabinet size on the size of government (see Table 5).

Cabinet size shows the predicted positive sign and is significant for public expenditure and revenue in the pooled OLS regressions (columns 1 and 5). Not surprisingly, in the case of the fixed effects models (columns 2 and 6), the significance levels of cabinet size drop considerably, although it remains marginally significant and positive in the revenue regression. These results suggest that the differences between OLS and FE are mainly due to a drop in the size of the estimated coefficient. It should be noted that the clustering method applied in the OLS models increases the standard errors. Without clustering, the standard error of cabinet size in the OLS model is 0.0036 for spending and 0.0034 for revenue, which is about the same as the standard error of 0.0038 for spending and 0.0034 for revenue in the fixed effects models. The lacking significances of cabinet size in the FE regressions are thus due to the reduced coefficient estimates. It results from the low time variance of cabinet size (as shown in Table A2).

The effect is demonstrated by a method proposed by Hsiao (2003). In a first stage, a fixed effects regression is performed excluding the (almost) time invariant variables (columns 3 and 7). In a second stage, the fixed effects obtained from the first stage are regressed on the (almost) time invariant variables (columns 4 and 8). The estimation results for the (almost) time invariant variables in columns (4) and (8) are qualitatively similar to those in the pooled OLS regressions. The standard errors of the (almost) time invariant variables on this second stage of the Hsiao-procedure indicate as precisely estimated coefficients as in the FE models. Cabinet size exhibits the expected positive sign and is significant. The differences between the effects of cabinet size on spending and revenue, comparing OLS with OLS, FE with FE, and the Hsiao two stage procedure estimates, are quantitatively not important indicating that cabinet size is associated with significantly higher spending and revenue.

Interestingly, the second variable capturing the effects of fragmented governments is not performing very well. In comparison to cabinet size, coalition size has a smaller quantitative effect on the public budget than the number of spending ministers. The sign of the coefficient is turning from positive to negative in the fixed effects models, although it is highly significant in the Hsiao two stage regressions. Thus, the number of ministers in the cabinet is a more important and robust determinant of fiscal outcomes than the number of parties. These differentiated results for cabinet and coalition size are roughly in line with those by Perotti and Kontopoulos (2002) for a panel of OECD countries.

Looking at Table 5, further interesting results can be observed. For example, some cantons have governments with executives that are engaged only part-time.<sup>8</sup> If a government relies on part-time governors this has a significant and robust spending and revenue cutting effect in the pooled OLS and the Hsiao two stage models (in the case of fixed effects regressions, the variable had been dropped automatically due to the fact that there is absolutely no time variation). In line with previous empirical studies (Feld and Kirchgässner, 2001; Feld and Matsusaka, 2003), the fiscal referendum favors significantly smaller government spending and revenue in the pooled OLS and the Hsiao two stage models although it becomes insignificant in the FE models. The spending thresholds become significant with the expected positive sign in the FE models capturing the spending restraining influence of direct democracy. The loss of significance of the fiscal referendum variable in the fixed effects regressions is thus not puzzling as spending thresholds are highly significant and have the expected positive sign. Spending thresholds have a higher time variation and, as truly being an interaction term with fiscal referendums, show that an easier use of fiscal referendums is restrictive. Formal fiscal restraints do not exhibit a clear-cut and robust effect on spending or revenue.

<sup>8</sup> Please note again that the results remain virtually the same when we use part-time ministers per capita in order to capture a potential scaling problem.

**Table 5**

Public expenditure and revenue regressions for cantonal fiscal policy decisions, 26 Swiss cantons, 1980–1998

Variables	Public expenditure				Public revenue			
	OLS	FE	FE	OLS	OLS	FE	FE	OLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Cabinet size	0.052*** (0.016)	0.004 (0.004)	–	0.069*** (0.004)	0.050*** (0.015)	0.006* (0.003)	–	0.071*** (0.004)
Part time	–0.243*** (0.057)	dropped	–	–0.252*** (0.014)	–0.236*** (0.055)	dropped	–	–0.279*** (0.012)
Coalition size	0.039* (0.020)	–0.007* (0.003)	–	0.046*** (0.004)	0.037* (0.019)	–0.008*** (0.003)	–	0.053*** (0.004)
Formal fiscal restraints	–0.007 (0.013)	0.001 (0.003)	–	–0.025*** (0.005)	–0.0003 (0.011)	0.009*** (0.003)	–	–0.017*** (0.004)
Fiscal referendum	–0.097*** (0.021)	–0.007 (0.015)	–	–0.120*** (0.009)	–0.108*** (0.019)	–0.021 (0.014)	–	–0.145*** (0.008)
Threshold	–0.0005 (0.001)	0.001*** (0.0003)	–	–0.0007** (0.0002)	–0.0005 (0.001)	0.0005 (0.0003)	–	–0.0007** (0.0002)
Grants	0.0001*** (0.000)	0.0001*** (0.000)	0.0001*** (0.000)	–	0.0001*** (0.000)	0.0001*** (0.000)	0.0001*** (0.000)	–
Income	0.114 (0.133)	0.108*** (0.032)	0.096 (0.087)	–	0.124 (0.134)	0.079*** (0.029)	0.055 (0.081)	–
Population	–0.084*** (0.020)	0.015 (0.044)	–0.007 (0.093)	–	–0.088*** (0.019)	–0.012 (0.040)	–0.040 (0.081)	–
Urban	0.189** (0.087)	–0.151*** (0.053)	–0.141 (0.101)	–	0.182** (0.085)	–0.115** (0.048)	–0.111 (0.071)	–
Communes	–0.0001 (0.0002)	–0.0001 (0.0002)	–	–0.001*** (0.000)	–0.00005 (0.0002)	–0.0001 (0.0001)	–	–0.001*** (0.000)
German language	–0.006 (0.033)	dropped	–	–0.038*** (0.009)	0.005 (0.032)	dropped	–	–0.093*** (0.009)
Time effects	Yes	Yes	Yes	No	Yes	Yes	Yes	No
Canton effects	No	Yes	Yes	No	No	Yes	Yes	No
Observation	494	494	494	26	494	494	494	26
R squared	0.833	0.907	0.902	0.745	0.834	0.907	0.901	0.807

Standard errors in parentheses. \*, \*\* and \*\*\* denote significance at the 10%, 5% and 1% level, respectively.

OLS: robust standard errors by cluster over cantons.

#### 4.3. Sensitivity

In the next step, we regress the same model on the cantonal means of (the log of) spending and revenue (following the methodology suggested by [Besley and Case, 2003](#)) and perform sensitivity analyses by introducing additional political and institutional control variables. We only report estimation results for the most important variables leaving the results for the control variables unconsidered in [Table 6](#) (and subsequently).

Considering the sensitivity analysis, the estimation results remain robust for cabinet size and the fiscal referendum in the OLS regressions (columns 2 and 6 repeat the respective estimation results from [Table 5](#) for convenience). The larger the cabinet the larger the government is. Very much the same applies for fiscal referendums, which limit public spending and revenue. Almost the same holds for part-time ministers whereas the impact of coalition size as well as for formal fiscal restraints remains ambiguous. Contrary to the findings of [Besley and Case \(2003\)](#), the impact of institutional variables like the fiscal referendum remains robust in the regressions on the cantonal means for the Swiss cantons. As before, the FE models change the picture even though the combined effect of fiscal referendums and spending thresholds underlines the spending restraining impact of direct democracy again. As before these results for cabinet size in the FE regressions are due to very low time variance. Employing Hsiao's two stage procedure again (not shown) leads to the same conclusion as in the OLS models.

A natural objection to the conclusion that cabinet size matters in Swiss cantonal finances is that budget decisions are much more shaped by the parliament than by government executives. However, since the cantonal governments are directly elected by the electorate and do not depend on parliamentary support in order to be re-elected, they can be categorized as presidential regimes. Following [Persson and Tabellini \(2003\)](#) and their main hypothesis on checks and balances, presidential regimes favor sounder public finances since they do not depend on the support of the parliament. Thus, and in order to control for the effect of parliamentary power on budgetary decisions, we additionally include the size of the cantonal legislatures in our regressions (number of seats in parliament). Interestingly, there is no systematic effect of the size of parliament on government spending and revenue decisions. This result contradicts previous findings on the Law of  $1/n$ . It appears that cabinet size is a more crucial element in determining fiscal policy choices in Swiss cantons than parliamentary decisions.

Referring to the notion that majoritarian electoral rules shape policy decisions ([Persson and Tabellini, 2003](#)), there is hardly any support observable in the case of Swiss public finances. Since only three cantons do not have majoritarian electoral rules, the



**Table 6**

Sensitivity analysis for public expenditure and revenue, 26 Swiss cantons, 1980–1998

Variables	Public expenditure				Public revenue			
	OLS (cantonal means)	OLS	OLS	FE	OLS (cantonal means)	OLS	OLS	FE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Cabinet size	0.061*** (0.019)	0.052*** (0.016)	0.051*** (0.012)	0.004 (0.004)	0.058*** (0.019)	0.050*** (0.015)	0.051*** (0.011)	0.007* (0.003)
Part time	-0.266*** (0.077)	-0.243*** (0.057)	-0.229*** (0.067)	Dropped	-0.258*** (0.074)	-0.236*** (0.055)	-0.230*** (0.064)	Dropped
Coalition size	0.053* (0.026)	0.039* (0.020)	0.025* (0.014)	-0.007** (0.004)	0.051* (0.025)	0.037* (0.019)	0.025* (0.014)	-0.008** (0.003)
Formal fiscal restraints	-0.009 (0.026)	-0.007 (0.013)	-0.001 (0.014)	0.001 (0.003)	-0.002 (0.025)	-0.0003 (0.011)	0.006 (0.012)	0.009*** (0.003)
Fiscal referendum	-0.112*** (0.049)	-0.097*** (0.021)	-0.151*** (0.031)	-0.008 (0.015)	-0.122** (0.047)	-0.108*** (0.019)	-0.163*** (0.029)	-0.018 (0.014)
Threshold	-0.578 (0.001)	-0.0005 (0.001)	0.0004 (0.001)	0.001*** (0.0003)	-0.539 (0.001)	-0.0005 (0.001)	0.0003 (0.001)	0.0005 (0.0003)
Seats in parliament	-	-	-0.001 (0.001)	0.001 (0.001)	-	-	-0.001 (0.001)	-0.0003 (0.001)
Prop. Election gov.	-	-	-0.063 (0.076)	Dropped	-	-	-0.053 (0.073)	Dropped
Maj. Election parl.	-	-	-0.002 (0.033)	Dropped	-	-	0.004 (0.031)	Dropped
Term limits (gov.)	-	-	0.050* (0.029)	Dropped	-	-	0.050* (0.026)	Dropped
Term limits (parl.)	-	-	-0.047 (0.036)	Dropped	-	-	-0.050 (0.033)	Dropped
Ideology gov.	-	-	-0.004 (0.016)	0.006 (0.005)	-	-	0.001 (0.014)	-0.005 (0.005)
Ideology parl.	-	-	0.265** (0.955)	-0.008 (0.039)	-	-	0.264*** (0.091)	-0.068* (0.035)
Shapiro–Wilk <i>W</i> test for normality	-	4.469***	0.107	2.791***	-	4.824***	0.107	6.513***
<i>p</i> -value	-	0.000	0.457	0.003	-	0.000	0.457	0.000
Time effects	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Canton effects	No	No	No	Yes	No	No	No	Yes
Observation	494	494	494	494	494	494	494	494
<i>R</i> <sup>2</sup>	0.755	0.833	0.875	0.907	0.783	0.834	0.876	0.908

For notes see Table 5.

variation in the sample is however probably too small to draw serious inferences. On the other hand, there is some indication that term limits for cantonal governors and parliaments increase spending and revenue. This is in line with the results obtained by Besley and Case (1995) for US states.

Finally, the ideological position of the government does not consistently affect public finances in Swiss cantons. This reflects the fact that there hardly exists any canton with single party governments where fiscal policy is ideologically set. The impact of the share of leftist parties in the cantonal parliament is positive and significant in the OLS regressions, but vanishes in the fixed effects regressions. More importantly, the inclusion of the different political and institutional variables does not affect the impacts of the main variables of interest, in particular of cabinet size or the fiscal referendum, on cantonal public finances. These impacts are hence robust to additional control variables. Although the estimation results are partly indicative only because of the low time variation of some of the institutional controls (in particular when all of them are added in one regression), the robustness of the impact of cabinet size and fiscal referendums in the OLS regressions is an important result.

Even though normality of residuals is not required in order to obtain unbiased estimates of the regression coefficients, we perform a Shapiro–Wilk *W* test for normality to assure that the standard errors are valid. The *p*-value is based on the assumption that the distribution is normal. In our enlarged OLS regression, the results indicate that we cannot reject the hypothesis that the residuals are normally distributed.

#### 4.4. Interaction terms: which institutions relax the fiscal commons problem?

The final investigation is concerned with interaction terms. The idea is to find out to what extent the fiscal commons problem induced by fragmented governments can be mitigated by different fiscal or constitutional institutions. We consider the impact of fiscal referendum possibilities and formal fiscal constraints.

Table 7 provides the estimation results for the interaction between the fiscal referendum and cabinet size in columns (1), (2), (5) and (6). Though the overall effects of fiscal referendums and of cabinet size remain significant according to the *F*-tests (only shown for cabinet size in Table 7), there is no significant interaction effect in the case of the OLS regressions although the interaction term has the expected negative sign. In the FE regressions we obtain a joint marginally significant restrictive

**Table 7**

Non-linear IV regressions for cantonal fiscal policy decisions, 26 Swiss cantons, 1980–1998

Variables	Expenditure				Revenue			
	OLS	FE	OLS	FE	OLS	FE	OLS	FE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Cabinet size	0.063** (0.026)	0.005 (0.009)	0.065*** (0.016)	0.004 (0.008)	0.053* (0.026)	0.009 (0.006)	0.060*** (0.016)	0.005 (0.005)
Cabinet Size*Fiscal referendum	-0.008 (0.024)	-0.001 (0.002)	–	–	-0.001 (0.023)	-0.003(*) (0.002)	–	–
Cabinet Size*Formal fiscal restraints	–	–	-0.023** (0.009)	0.021*** (0.004)	–	–	-0.017* (0.009)	0.059*** (0.004)
Part time	-0.273*** (0.066)	Dropped	-0.289*** (0.066)	Dropped	-0.265*** (0.064)	Dropped	-0.276*** (0.066)	Dropped
Coalition size	0.029* (0.017)	-0.007 (0.005)	0.033* (0.016)	-0.005 (0.005)	0.027 (0.016)	-0.008 (0.007)	0.030* (0.017)	-0.005 (0.004)
Formal fiscal restraints	-0.013 (0.016)	0.001 (0.004)	0.127** (0.046)	-0.105*** (0.025)	-0.005 (0.014)	0.009 (0.007)	0.094* (0.046)	-0.292*** (0.026)
Fiscal referendum	-0.067 (0.138)	Dropped	-0.114*** (0.021)	-0.008 (0.014)	-0.127 (0.132)	Dropped	-0.123*** (0.020)	-0.023* (0.011)
Threshold	-0.001 (0.001)	0.001* (0.0006)	-0.001 (0.001)	0.001* (0.0006)	-0.001 (0.001)	0.001 (0.001)	-0.001 (0.001)	0.0004 (0.001)
Term limits	0.048* (0.027)	Dropped	0.053** (0.025)	Dropped	0.047* (0.026)	Dropped	0.049* (0.025)	Dropped
R <sup>2</sup>	0.848	0.907	0.859	0.909	0.849	0.907	0.855	0.925
F-test: Joint significance of cabinet size	7.93***	0.18	10.42***	15.86***	7.82***	1.98	12.09***	106.41***

For notes see Table 5.

impact of the fiscal referendum and the spending threshold on public spending and revenue. Given the difficulties with the FE regressions addressed before,<sup>9</sup> we are reluctant to put much emphasis on these results and rather consider fiscal referendums as being only mildly successful in restricting fiscal commons problems.

The same procedure is repeated with formal fiscal restraints. In columns (3), (4), (7) and (8) of Table 7, an interaction term of the formal fiscal restraints variable and cabinet size is additionally included. This interaction term is significantly negative in the OLS regressions, but significantly positive in the FE regressions. Cabinet size keeps its positive impact in all four equations and is significantly increasing spending and revenue in the OLS regressions. These results indicate a lacking robustness of the effects of formal fiscal restraints. With all the cautious emphasis on the problematic time invariance of the political and institutional variables for the FE regressions, this switch in sign clearly renders the influence of formal fiscal restraints unreliable. In contrast, the fiscal referendum still has a robust negative effect on spending and revenue in these specifications with an interaction between cabinet size and formal fiscal restraints and is jointly significant with the spending threshold. Overall, the fiscal referendum thus appears to show a slightly better performance than formal fiscal restraints in restricting the fiscal commons problem.

## 5. Conclusion

This paper has focused on the question: do large cabinets favor large governments? Recent theoretical as well as empirical analyses have shown that the role of fragmented governments is crucial in explaining fiscal choices. We use data from sub-federal jurisdictions, which allow us to study whether the theory of fragmented governments finds a more general support for fiscal policy decisions. Furthermore, our sample of observations is rather homogeneous so that the problem is mitigated that tastes and preferences may explain differences between countries more than differences within a country. We focus on two different aspects of government fragmentation: the role of coalition size and of cabinet size. The novelty of this paper is twofold: first, our data set allows for comparing the impact of fragmented governments with many other institutional aspects that have proven to be important in explaining fiscal policy choices, e.g. direct legislation, formal fiscal restraints, ideology, term limits, part-time government, electoral rules and other institutions that shape budget decisions. Second, we are able to include interaction effects of some of these institutional variables and cabinet size in order to test whether fiscal institutions successfully reduce the fiscal commons problem.

In panel regressions for the 26 Swiss cantons over the 1980 to 1998 period, we provide empirical evidence that larger cabinets favor larger governments in the case of spending and revenue. In contrast, coalition size does not have such robust effects on the size of government. These results are robust for different specifications. In fixed effects regressions, the effect of cabinet size on spending and revenue becomes insignificant because of its low time variance. There is some evidence that fiscal referendums are able to mildly restrict the fiscal commons problem. Thus, the effects of fiscal referendums reported in the literature are corroborated. There is however no evidence that the formal fiscal restraints successfully remedy the fiscal commons problem.

<sup>9</sup> Please note that the fiscal referendum dummy is dropped in the FE regressions with interaction term as its low time variance is fully represented in the interaction term.

## Appendix A

Table A1

Data description

Variable name	Description	Source
Expenditure	Real total expenditure per capita	Swiss Federal Finance Administration
Revenue	Real total revenue per capita	Swiss Federal Finance Administration
Deficits	Real total deficits per capita	Swiss Federal Finance Administration
Debts	Real total debts per capita	Swiss Federal Finance Administration
Cabinet size	Number of ministers in the cantonal cabinet	anneé politique suisse
Coalition	Number of parties in the cantonal cabinet	anneé politique suisse
Part time	Dummy = 1 for cantonal cabinets engaging part time governors	Own investigations
Maj. government	Dummy = 1 for cantons with majoritarian electoral rule for the cantonal government	Lutz and Strohmann (1998)
Term limits gov.	Dummy = 1 for cantons having term limits for governors	Lutz and Strohmann (1998)
Maj. parliament	Dummy = 1 for cantons with majoritarian electoral rule for the cantonal parliament	Lutz and Strohmann (1998)
Term limits parl.	Dummy = 1 for cantons having term limits for members of parliament	Lutz and Strohmann (1998)
Seats parliament	Number of seats in the cantonal parliaments	anneé politique suisse
Formal fiscal restraints	Dummy = 1 for cantons having a formal fiscal restraint for a given year	Own calculations on the basis of Stauffer (2001)
Fiscal referendum	Dummy = 1 for cantons allowing for mandatory fiscal referendum	Own calculations on the basis of data from Trechsel and Serdült (1999)
Threshold	Quantitative threshold level of a project per capita required to qualify for ballots	Own calculations on the basis of data from Trechsel and Serdült (1999)
Grants	Real federal grants per capita	Own calculations on the basis of the Swiss Federal Finance and Tax Administration
Income	Real national income disaggregated to the cantons per capita	Swiss Federal Finance Administration
Population	Cantonal population	Swiss Federal Statistical Office
Ratio of urban population	Proportion of communes having more than 10,000 inhabitants	Swiss Federal Statistical Office
Communes	Number of communes in a canton	Swiss Federal Statistical Office
Language	Dummy = 1 for German speaking cantons	Own investigations
Ideology parl.	Share of seat by left-wing parties in the cantonal parliament	anneé politique suisse
Ideology gov.	Index between 1 (right) to 5 (left) that measures the relative strength of parties in government with reference to the Left–Right dimension	Own calculations on the basis of data from the cantonal governments
Unemployment	Share of unemployment of the cantonal population	Own calculations on the basis of Swiss Federal Statistical Office
Protestants	Fraction of protestants from total population	Swiss Federal Statistical Office
Dummy University canton	Dummy variable = 1 for cantons with a university	Own calculations

Table A2

Summary statistics

Variable	Mean	Standard Deviation	Minimum	Maximum	Observations
Expenditures	4217	1666	2274	10,938	494
Between		1570	2609	9576	26
Within		631	2172	6130	19
Revenue	4126	1560	2264	10,768	494
Between		1496	2622	9311	26
Within		553	2260	6638	19
Deficit	91	284	–1630	1758	494
Between		141	–99	595	26
Within		249	–1563	1255	19
Debt	3738	2643	795	16,820	494
Between		2476	1779	12,741	26
Within		1039	–157	9784	19
Cabinet size	6.39	1.23	5	9	494
Between		1.22	5	8.79	26
Within		0.28	4.61	7.35	19
Coalition size	3.25	0.86	1	5	494
Between		0.82	1	5	26
Within		0.30	2.36	4.36	19
Part time governors	0.31	0.46	0	1	494
Between		0.47	0	1	26
Within		0	0.31	0.31	19
Parliament size	115	48	46	200	494
Between		49	46	200	26
Within		1.20	97.37	117	19
Prop. election government	0.08	0.27	0	1	494
Between		0.27	0	1	26
Within		0	0.08	0.08	19

(continued on next page)

Table A2 (continued)

Variable	Mean	Standard Deviation	Minimum	Maximum	Observations
Maj. election parliament	0.12	0.32	0	1	494
Between		0.33	0	1	26
Within		0	0.12	0.12	19
Term limits government	0.31	0.46	0	1	494
Between		0.47	0	1	26
Within		0	0.31	0.31	19
Term limits parliament	0.15	0.36	0	1	494
Between		0.37	0	1	26
Within		0	0.15	0.15	19
Fiscal referendum	0.69	0.46	0	1	494
Between		0.47	0	1	26
Within		0.072	−0.16	0.84	19
Threshold	12	17	0	85	494
Between		17	0	79	26
Within		3.07	−7.24	25	19
Formal fiscal restraints	0.26	0.71	0	3	494
Between		0.66	0	3	26
Within		0.30	−1.79	1.21	19
Grants	1100	688	328	4152	494
Between		611	488	3260	26
Within		337	−327	2771	19
Cantonal income	25,891	5754	17,707	53,997	494
Between		5453	19,732	43,584	26
Within		2111	16,879	36,305	19
Population	1,183,570	27,1072	12,757	118,3570	494
Between		275,808	13,783	1,148,244	26
Within		13,698	210,609	299,153	19
Urban	0.31	0.24	0	0.99	494
Between		0.25	0	0.99	26
Within		0.02	0.12	0.39	19
Communes	115	113	3	412	494
Between		116	3	409	26
Within		6.29	41	132	19
German language	0.73	0.44	0	1	494
Between		0.45	0	1	26
Within		0	0.73	0.73	19
Women's right to vote	18.19	8.60	−10	39	494
Between		6.75	−1	30	26
Within		5.48	9.19	27.19	19
Dummy University canton	0.35	0.48	0	1	494
Between		0.49	0	1	26
Within		0	0.35	0.35	19
Ideology of government	3.31	0.74	2	5	494
Between		0.73	2	5	26
Within		0.20	2.41	4.26	19

Note: Financial figures are displayed in 1980 Swiss Francs.

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