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**Do Large Cabinets Favor Large  
Governments? Evidence on Institutional  
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Problem for Swiss Cantons**

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(thoroughly revised version of Working Paper 2004-15)

# Do Large Cabinets Favor Large Governments? Evidence on Institutional Restraints on the Fiscal Commons Problem for Swiss Cantons

by

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## *Abstract*

The fiscal commons problem is one of the most prominent explanations of excessive spending in political economics. The more fragmented a government, the higher its spending. In this paper we investigate to what extent this problem can be mitigated by different fiscal or constitutional institutions. 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 in determining government size. The empirical analysis of the role of fragmented governments for fiscal policy outcomes is based on a panel of 26 Swiss cantons from 1980-1998. The results indicate that the number of ministers in the cabinet is negatively associated with fiscal discipline. Furthermore, fiscal referendums effectively restrict the size of government, while formal fiscal restraints more effectively restrict the fiscal commons problem.

*JEL-Classification:* E61, E63, H61

*Keywords:* Fragmentation, Fiscal Policy, Referendums, Legislative Rules, Formal fiscal restraints

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## 1. Introduction

In recent years, the impact of political institutions on policy outcomes has gained increased attention. In particular, the political economy literature is exploiting the institutional variation across governments in order to explain the different policy choices. Among other determinants, one important institutional feature that varies over governments is the size of the cabinet. 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. Hence, our main goal in this paper is to empirically investigate and compare the role of cabinet size for the size of government.

Why can an impact of cabinet size on government size be expected? Following the analyses by Buchanan and Tullock (1962) and Weingast, Shepsle and Johnson (1981), fiscal policy decisions can be explained by the degree of fragmentation in government. The starting point of those analyses 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 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 its representative 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 expenditure. 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.

In the case of Buchanan and Tullock (1962) or Weingast, Shepsle and Johnson (1981) the fiscal commons problem arises from geographic fragmentation in the legislative branch of government.<sup>1</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 gov-

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<sup>1</sup> See also Gilligan and Matsusaka (1995, 2001), Bradbury and Crain (2001), Baqir (2002) for empirical evidence.

ernment. 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 might originate from budget maximization of bureaucrats, interest group influence or the principal-agent problems inherent in cases of political delegation. Moreover, while fiscal institutions are often proposed as remedies for the fiscal commons problem (Poterba and von Hagen, 1999; von Hagen, 2006), it is seldom analyzed to what extent they are actually reducing the likelihood that an exploitation of the fiscal commons occurs. In this paper, we consider fiscal referendums, formal fiscal restraints and term limits as three potential institutional restrictions on the fiscal commons problem and present evidence as to their ability to actually restrict it.

We study the 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 to test which institutional restraints are particularly suited to restrict 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. This holds for public expenditure as well as public revenue. 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. This particularly holds for balanced budget requirements.

The remainder of the paper is organized as follows: In *section 2*, the impact of fragmented governments on fiscal policy outcomes is discussed. The empirical implementation of the impact of all these institutions on 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**

In the literature, several concepts of fragmented governments prevail 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. The size of cabinet is used as a proxy for the extent to which government spending is internalized by the individual cabinet member.

One line of research focuses on *coalition size* as an indicator for government fragmentation. According to the analyses by Roubini and Sachs (1989a, 1989b), 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 characterized by a short average tenure of governments and by 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. 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. Similarly, De Haan and Sturm (1994), aiming at replicating the Roubini-Sachs studies, do not obtain a robust effect of coalition size.

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 interpretation of fragmented government refers to the number of spending ministers in the government. Each spending minister participates in decisions on spending projects and demands resources from the overall budget. This demand may originate from the incentives of the bureaucracies to maximize their budget because of the higher power, prestige and pay that is 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 then 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. The budgetary process in which the demands from each spending ministry are considered follows a universalism norm such that the ministers cannot costlessly negotiate and side-payments to internalize externalities will not result. Adherence to a universalism norm could even be more easily enforced in the cabinet than in the legislature as a smaller group of individuals is involved and written coalition contracts or party agreements encompassing different factions within a party exist. As the general interests are not completely represented in government, a fiscal commons problem thus results. While the represented groups – bureaucracies, particular interest groups, or particular constituencies – receive targeted spending, general taxes spread the costs across the whole population.

It is debated though whether the *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. For example, Weingast, Shepsle and Johnson (1981) assume a balanced budget implying that revenue is simply adjusted to the spending requirements that originate from the fiscal commons problem. However, Inman and Fitts (1990) and Velasco (1999) argue that a dy-

dynamic fiscal commons problem emerges, which is similar to tragedy of the commons in natural resource cases, if government net assets – defined as future income minus outstanding debt – is the common property of all fiscal authorities, in our case 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 consumption or spending 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 cameralistic bookkeeping and forecasting future revenue streams is notoriously difficult. The focus of our study is thus on spending and revenue instead of deficits and debt.<sup>2</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 restrict 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 restrict the fiscal commons problem although their effectiveness heavily depends on the details of the provisions. The successful formal fiscal constraints at the Swiss cantonal level almost automatically induce an adjustment of revenue if overspending occurs (Feld and Kirchgässner 2005). As tax increases are particularly unpopular in Swiss federalism which is characterized by intensive tax competition (Feld, Kirchgässner and Schaltegger 2003), the Swiss debt brakes have a feedback on the spending side leading to less spending. Term limits, on the other hand, can be expected to exacerbate the fiscal commons problem as each minister in the cabinet aims at extracting as much as possible from the budget during her term in office. When

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<sup>2</sup> In a previous version of this paper (Schaltegger and Feld, 2004), we find no support for the dynamic fiscal commons problem for Swiss cantons.



the number of terms is effectively restricted, the spending bias of governments even increases. Overall, these three institutional provisions could thus be hypothesized to interact with cabinet size as the main indicator for the existence of a fiscal commons problem in a particular way.

### 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 (Feld, Kirchgässner and Schaltegger, 2003). 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 Berne (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 Lucerne, 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.

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>3</sup>

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<sup>3</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.

Table 1: Political institutions in Swiss cantons

<i>Cantons</i>	<i>Cabinet size (# ministers)</i>	<i>Part time governors</i>	<i>Coalition size (# parties)</i>	<i>Formal fiscal restraint</i>	<i>Proportional election of government</i>	<i>Term limits of government (# Years)</i>	<i>Legislative size (# members parlia- ment)</i>	<i>Majoritarian election of par- liament</i>	<i>Term limits of mem- bers of parliament (# Years)</i>
Zurich	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		
Graubünden	5		3	X		12	120	X	
Aargau	5		4				200 (140 as of 2005)		
Thurgau	5		4				130		
Tessin	5		3 / 4		X		90		
Waadt	7		4 / 5				180 (200 until 1997)		
Wallis	5		2				130		
Neuchatel	5		3				115		
Genf	7		4			16	100		
Jura	5		3			16	60	12	

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

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. It contains several political and institutional features of the cantons as well as usual control variables. As mentioned above, the institutional environment is crucial for the existence of a fiscal commons problem. In addition to fiscal referendums (Feld and Matsusaka, 2003; Matsusaka 2004), formal fiscal restraints on the constitutional or statutory level (Poterba, 1997; de Haan and Sturm, 2000; Danninger, 2002), and 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 (Tessin and Zug) for the executive and proportional elections with three exceptions (Graubünden, 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 Graubünden) 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; Kirchgässner, 2002; Feld and Kirchgässner, 2005).<sup>4</sup> 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 bail-out of 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 additional restrictions on deficit financing. The requirements are less restrictive in Graubünden or in Appenzell a.Rh.

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<sup>4</sup> Recently, the implementation of a budget rule on the cantonal level has gained strong support in other cantons, too. For a survey, see Schaltegger (2002b)

*Table 2: Summary statistics*

Variable	Mean	Standard Deviation	Minimum	Maximum
Expenditures	4217	1666	2274	10938
Revenue	4126	1560	2264	10768
Cabinet size	6.39	1.22	5	9
Coalition size	3.25	0.86	1	5
Part time governors	0.31	0.46	0	1
Parliament size	115	48	46	200
Prop. election government	0.08	0.27	0	1
Maj. election parliament	0.12	0.32	0	1
Term limits government	0.31	0.46	0	1
Term limits parliament	0.15	0.36	0	1
Fiscal referendum	0.69	0.46	0	1
Threshold	12	17	0	85
Formal fiscal restraints	0.26	0.71	0	3
Grants	1100	688	328	4152
Cantonal income	25891	5754	17707	53997
Population	258519	271072	12757	1183570
Urban	0.31	0.24	0	0.99
Communes	115	113	3	412
German language	0.73	0.44	0	1
Dummy University canton	0.35	0.48	0	1
Ideology of government	3.31	0.74	2 (right)	5 (left)

*Note:* Financial figures are displayed in 1980 Swiss Francs.

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. *Table 2* provides summary statistics and the Appendix contains a description of variables in the empirical analysis.

The basic equations are first estimated by OLS. The consistency of the estimated coefficients depends however 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>5</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

<sup>5</sup> A similar problem of endogeneity applies for coalition size, fiscal restraints or part-time governors.

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.

In order to test for possible endogeneity bias we perform a “Wu-Hausman” and a “Durbin-Wu-Hausman” test. The tests of endogeneity are displayed in *Table 3*. According to both tests, exogeneity of the regressors cabinet size, coalition size, part-time governors and fiscal restraints cannot be rejected.<sup>6</sup>

*Table 3: Tests of endogeneity of politico-institutional regressors*

H0: Regressors cabinet size, coalition size, part-time governors and fiscal restraints are exogenous for spending		
Wu-Hausman F test:	20.971 F	P-value = 0.000
Durbin-Wu-Hausman chi-sq test	76.331 Chi-sq	P-value = 0.000
H0: Regressors cabinet size, coalition size, part-time governors and fiscal restraints are exogenous for revenue		
Wu-Hausman F test:	22.775 F	P-value = 0.000
Durbin-Wu-Hausman chi-sq test	81.810 Chi-sq	P-value = 0.000

However, in order to demonstrate the robustness of our results to potential endogeneity of cabinet size despite these test results, we also apply IV estimates. As instruments, we use the fraction of protestants from total population as an indicator of cantonal preferences. Historically, cantons with a protestant majority are considered to be less conservative and more liberal than those with a catholic majority in their population. If cabinet size and spending happen to be higher in the more liberal cantons, this variable could be a valid instrument. In fact, as can be seen from the first stage regression results in *Table 4*, the fraction of protestants from total population is highly correlated with the size of cabinet (t-value of 3.30). In addition, protestants do not have a significant effect on spending (t-value of 0.47, available upon request). Thus, and considering the test statistics in *Table 4*, this variable could be an adequate instrument. For the other politico-institutional variables coalition size, part-time governors and fiscal restraints, which could also be considered as endogenous, we display the first stage regression results in *Table 4*, too. Instruments are an ideology variable reflecting the ideological position of the government, a dummy variable if a canton knows the presence of a cantonal meeting and a dummy variable if the canton hosts a university. The coalition size should be higher when the government tends to the right since there are more big parties on the right

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<sup>6</sup> We use the fraction of protestants from total population, ideology of government, and dummy variables for the presence of cantonal meetings and of universities in the canton as instruments to conduct the tests.

political spectrum than on the left in Switzerland. The presence of a cantonal meeting should be positively correlated with the presence of part-time governors since both aspects apply mostly for smaller cantons. The presence of a university should be positively correlated with the presence of fiscal restraints since the exact mechanisms of the balanced budget rules have often been proposed by academics of the university paid by the respective government.<sup>7</sup>

*Table 4: First stage regressions for public expenditure*

First Stage Regressions				
Dependent variable:	Cabinet size	Coalition size	Part-time governor	Fiscal restraints
Fraction of protestants from total population	0.586*** (3.30)	-0.460*** (-3.13)	0.030 (0.52)	0.716*** (4.85)
Ideology gov.	-0.178** (-2.20)	-0.147*** (-2.64)	0.037 (1.57)	-0.035 (-0.89)
Cantonal meeting	0.315* (1.78)	0.643*** (4.95)	0.318*** (6.92)	-0.408*** (-4.92)
University	2.689*** (19.64)	-0.317*** (-2.78)	0.143*** (3.50)	0.621*** (4.85)
Grants	0.0001 (1.49)	0.0003*** (4.63)	0.0001*** (4.61)	-0.0002*** (-3.90)
Income	1.378*** (5.08)	2.006*** (7.93)	0.588*** (6.62)	-0.036 (-0.19)
Population	-0.965*** (-11.56)	0.599*** (8.28)	-0.237*** (-10.11)	0.191*** (3.18)
Urban	-1.555*** (-4.89)	0.375 (1.40)	-0.465*** (-4.59)	-1.655*** (-7.41)
Communes	0.003*** (3.85)	-0.001 (-1.31)	0.0001 (0.08)	-0.002*** (-3.47)
Fiscal referendum	-0.531*** (-4.78)	0.644*** (6.78)	-0.095*** (-2.75)	0.384*** (4.21)
Threshold	-0.002 (-0.82)	-0.005*** (3.42)	-0.003*** (-3.48)	-0.010*** (-6.06)
German language	1.129*** (9.69)	-0.386*** (-3.75)	0.309*** (8.54)	0.004 (0.05)
State (canton) effects	No	No	No	No
Year effects	Yes	Yes	Yes	Yes
F-Test of excluded instruments	127.15***	13.76***	17.54***	13.79***
Prob>F	0.000	0.000	0.000	0.000
Partial R <sup>2</sup> of excl. instruments	0.472	0.103	0.127	0.107

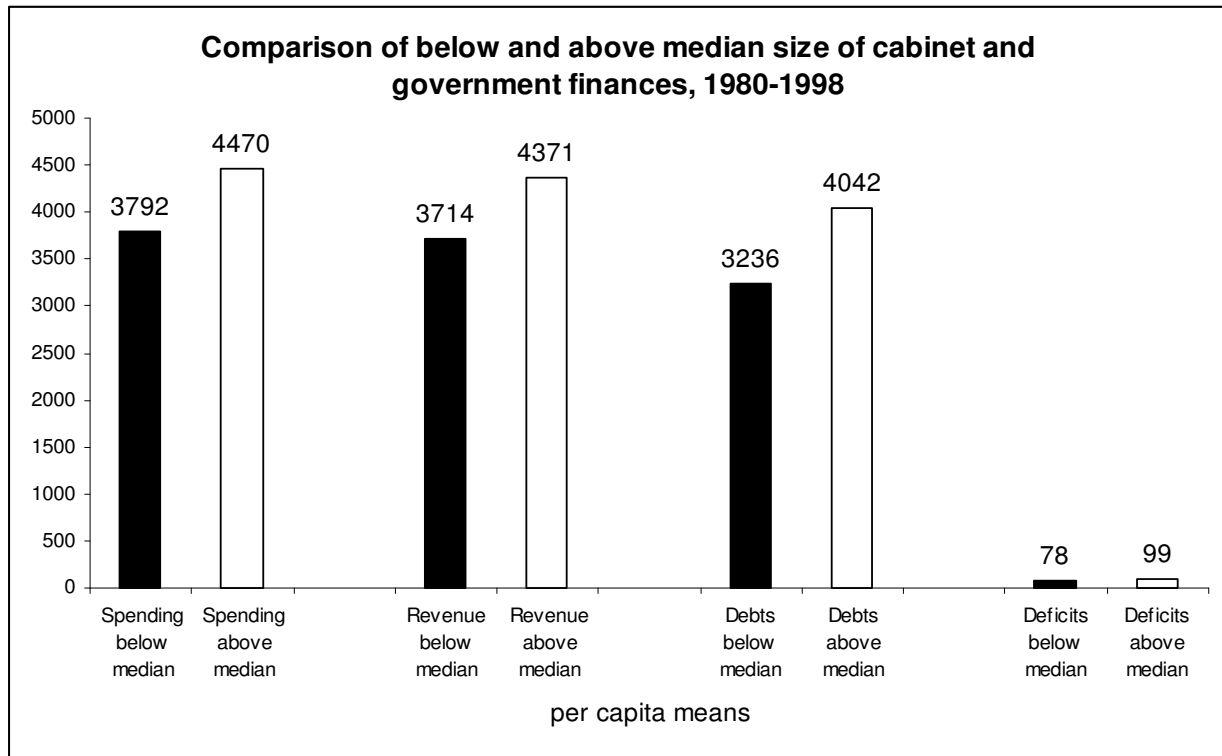
*t*-statistics in parentheses. \*, \*\* and \*\*\* denote significance at the 10%, 5% and 1% level, respectively. First stage results for public revenue do not differ considerably from public spending.

Table 4 shows that these instruments are indeed effective in explaining coalition size, part-time governors and fiscal restraints. The instruments are statistically significant at the 1% or

<sup>7</sup> Cantons with universities (Zurich, Bern, Basel, Genf, Waadt, Neuchâtel, Fribourg, St. Gallen, Luzern and Tessin) also have larger cabinets on average. Two of the university cantons have formal fiscal restraints, and Appenzell a.Rh. was advised by a professor from neighboring St. Gallen for his debt brake.

the 5% level for their specific regressors. Moreover, the  $F$ -tests for instrument exclusion set in the first-stage regression are statistically significant in all three cases at the 1% level indicating that hypothesis of no impact of the instruments can be rejected. Similar results are found for public revenue and could be obtained from the authors upon request. The subsequent estimation strategy is thus to first estimate the basic econometric model as outlined above by OLS and then proceed with random effects, fixed effects and IV (with the tested instruments) in order to present a first robustness test. In the second step, the robustness of these estimation results to the inclusion of additional institutional factors is checked. Third, only those institutional rules that turn out to have a significant impact on fiscal policy outcomes are interacted with the main fiscal commons variable in order to have an explicit test of whether particular institutions reduce the fiscal commons problem.

Figure 1: Cabinet size and fiscal policy



Source: Own calculations

#### 4. Results

In order to illustrate the effect of cabinet size on the size of government at the outset, we first 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 cabinet below the median value of ministers with the policy decisions by cabinets with 7 and more ministers. *Figure 1*

indicates that smaller cabinets appear to favor smaller governments. 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.

*Anecdotal evidence*

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 ministers from the social democrats (SP) and two ministers from the liberals (FDP). However, in 1984 the audit court discovered that the government was misusing public finances for campaign financing. Thereafter, the 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 their two ministers in the 1986 elections. This was the first time, that the government had a cabinet without any liberals since 1831. The cabinet ideology changed from right to left. 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.

*Table 5: Development of expenditures before and after changing cabinet size of Bern*

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

*Source:* Own calculations

In the case of Bern, we nearly have a ten year period before the institutional change took place and a period of about the same length after the reduction of the size of the cabinet. As indicated in *Table 5* 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. The voters approved the reduction at the cantonal meeting with a clear majority. The issue had been discussed before for quite some years in the canton: In the beginning of the 1990s a special commission was introduced to make proposals for a reorganisation of the cantonal administration and the government. Thereafter, different models of reorganisation had been discussed in the public 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.

*Table 6: Development of spending before and after changing cabinet size in Appenzell i.Rh.*

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

*Source:* Own calculations

In the case of Appenzell i.Rh., we have a fifteen year period before the institutional change and a period of four years after the reduction of cabinet size. As indicated in *Table 6*, there is a slight decline of spending growth after the reduction of cabinet size. However, we see a mixed picture when comparing the spending growth of Appenzell i.Rh with the spending growth of some 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. The government itself and the parliament proposed a reduction. Finally the smaller cabinet was approved by the voters. However, the reduction of the cabinet size was accompanied with an increase of occupancy for the members of cabinet. For Nidwalden we have a seventeen year period before the institutional change and a period of two years after the reduction of the size of the cabinet. In contrast to our prediction, public

spending grew after the introduction of a smaller cabinet (*Table 7*). However, note that the reduction of cabinet size went along with an enlargement of occupancy in the case of Nidwalden. The latter effect interferes with the effect of cabinet size.

*Table 7: Development of expenditures before and after changing cabinet size in Nidwalden*

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

*Source:* Own calculations

### *Multivariate analysis*

Of course, descriptive evidence of smaller (larger) governments in jurisdictions governed by smaller (larger) cabinets can have many unobserved reasons. Therefore, a whole set of other explanatory variables for budget decisions are included in order to see the differential impact of cabinet size on the size of government. They can be broadly distinguished into economic and socio-demographic control variables, into political variables and into other institutional variables (see *Table 2*). *Table 8* displays the results of the OLS, random effects, fixed effects as well as IV regressions. To check which model is most suitable, we perform the Lagrangian Multiplier (LM) test (see Breusch and Pagan, 1980) to assess the random effects versus the pooling model, as well as the Hausman specification test (Hausman, 1978) to compare the fixed effect versus the random effect model. The LM test indicates rejection of the null hypothesis at the 1% significance level for expenditure and revenue, which suggests that the random effects model is more efficient. According to the Hausman test, the null hypothesis is rejected at the 1% significance level in case of expenditures and 5 % significance level in case of revenues. Even though this result suggests that the fixed effects model is most efficient, it is not very suitable in our case. The cabinet size variable, our variable of interest, hardly changes over time so that canton fixed effects are capturing the effect of cabinet size. In addition, *Table 8* also reports an overidentification test to examine the validity of the exclusion restrictions. The test results indicate that the overidentification tests fail to reject the null hypotheses that our instruments are valid ones, which supports the validity of the used instruments.

Table 8: Public expenditure and revenue regressions for cantonal fiscal policy decisions, 26 Swiss cantons, 1980-1998

Variables	Public expenditure				Public revenue			
	OLS	RE	FE	IV	OLS	RE	FE	IV
Cabinet size	0.052*** (3.34)	0.008** (2.16)	0.004 (1.18)	0.048*** (3.45)	0.050*** (3.29)	0.009*** (2.73)	0.006* (1.84)	0.048*** (3.61)
Part time	-0.243*** (-4.25)	-0.101* (-1.93)	dropped	-0.133** (-1.99)	-0.236*** (-4.26)	-0.109** (-2.18)	dropped	-0.114* (-1.87)
Coalition size	0.039* (2.00)	-0.005 (-1.49)	-0.007* (-1.91)	0.120*** (2.93)	0.037* (1.90)	-0.007** (-2.28)	-0.008*** (-2.63)	0.105*** (2.72)
Formal fiscal restraints	-0.007 (-0.54)	0.001 (0.41)	0.001 (0.18)	0.053 (1.01)	-0.0003 (-0.03)	0.009*** (2.97)	0.009*** (2.84)	0.046 (0.95)
Fiscal referendum	-0.097*** (-4.74)	-0.023* (-1.65)	-0.007 (-0.49)	-0.171*** (-3.63)	-0.108*** (-5.56)	-0.037*** (-2.86)	-0.021 (-1.57)	-0.167*** (-3.93)
Threshold	-0.0004 (-0.63)	0.001*** (3.13)	0.001*** (3.77)	0.001 (1.02)	-0.0005 (-0.66)	0.0004 (1.16)	0.0005 (1.58)	0.001 (0.79)
Grants	0.0001*** (7.73)	0.0001*** (27.49)	0.0001*** (27.92)	0.0001*** (14.69)	0.0001*** (7.92)	0.0001*** (31.61)	0.0001*** (32.08)	0.0001*** (15.94)
Income	0.114 (0.86)	0.138*** (4.29)	0.108*** (3.33)	-0.098 (-1.24)	0.124 (0.92)	0.107*** (3.66)	0.079*** (2.69)	-0.073 (-0.94)
Population	-0.084*** (-4.20)	0.001 (0.03)	0.015 (0.34)	-0.105** (-2.39)	-0.088*** (-4.63)	-0.010 (-0.47)	-0.012 (-0.31)	-0.094** (-2.32)
Urban	0.189** (2.17)	-0.011 (-0.22)	-0.151*** (-2.88)	0.268*** (3.28)	0.182** (2.15)	0.001 (0.03)	-0.115** (-2.42)	0.248*** (3.20)
Communes	-0.0001 (-0.38)	-0.0002* (-1.65)	-0.0001 (-0.59)	-0.0001 (-0.11)	-0.00005 (-0.23)	-0.0002 (-1.52)	-0.0001 (0.66)	-0.0001 (-0.11)
German language	-0.006 (-0.19)	-0.072** (-1.97)	dropped	-0.009 (-0.34)	0.005 (0.15)	-0.046 (-1.29)	dropped	-0.006 (-0.26)
LM-Test		0.000				0.000		
Hausman-Test			0.005				0.010	
Hansen J-statistic				0.000				0.000
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Canton effects	No	No	Yes	No	No	No	Yes	No
Observation	494	494	494	494	494	494	494	494
R squared	0.833	0.904	0.907		0.834	0.904	0.907	
F-test				47.01***				53.37***

*t*-statistics in parentheses. \*, \*\* and \*\*\* denote significance at the 10%, 5% and 1% level, respectively.

OLS: robust standard errors by cluster over cantons

Instruments for IV-Regression are a dummy variable that is equal to one if the canton has a university; the ideological position of the cabinet; a dummy variable that is equal to one if the canton has a town meeting and the fraction of protestants from total population

Lagrangian Multiplier (LM test): tests the random effect model versus the pooling regression. Hausman specification test: tests the fixed mode versus the random model.

Turning to the estimation results, some interesting effects are found for the fragmentation variables: Cabinet size shows the predicted positive sign and is significant for public expenditure and revenue in the OLS and the random effects regressions as well as in the IV regressions. Not surprisingly, in the case of the fixed effects regressions, the significance levels of the cabinet size drops considerably. The differences between the effects of cabinet size on spending and revenue are quantitatively not important. Interestingly, the second variable capturing the effects of fragmented governments is not performing as 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 when applying random or fixed effects. Thus, it is immediately apparent that the number of ministers in the cabinet is a more important and robust determinant of fiscal outcomes than the number of parties. The obtained results are roughly in line with those by Perotti and Kon-topoulos (2002) for a panel of OECD countries.

Looking at *Table 8*, other 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 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. The spending thresholds do not have a clear significant impact on cantonal public finances as do formal fiscal restraints.

#### *Sensitivity*

In the next step, we regress the same model on the cantonal means of (the log of) spending and revenue and perform sensitivity analyses by introducing additional political and institutional control variables.<sup>9</sup> These consist of the number of seats in the cantonal parliament, two dummy-variables = 1 for those cantons that impose term limits (executive and legislative), dummy-variables = 1 for majoritarian electoral rules (executive and legislative), and executive and legislative ideology of cantonal governments. The regressions are performed employing OLS and random effects since exogeneity of the institutional variables could not be rejected according to the test statistics in *Table 3* and since fixed effects do not make sense from a theoretical point of view as argued before. We only report estimation results for the most important variables leaving the results for the control variables unconsidered in the *Tables*.

Considering the sensitivity analysis, the estimation results remain robust for cabinet size and the fiscal referendum. In all different estimates cabinet size is a significant determinant of public spending and revenue. The bigger the cabinet size the larger the government. 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

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<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.

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.

Table 9: Sensitivity analysis for public expenditure and revenue, 26 Swiss cantons, 1980-1998

Variables	Public expenditure				Public revenue			
	OLS (cantonal means)	OLS	OLS	RE	OLS (cantonal means)	OLS	OLS	RE
Cabinet size	0.061*** (3.13)	0.052*** (3.34)	0.051*** (4.32)	0.007* (1.71)	0.058*** (3.10)	0.050*** (3.29)	0.051*** (4.55)	0.009** (2.59)
Part time	-0.266*** (-3.48)	-0.243*** (-4.25)	-0.229*** (-3.39)	-0.045 (-0.65)	-0.258*** (-3.48)	-0.236*** (-4.26)	-0.230*** (-3.58)	-0.091 (-1.38)
Coalition size	0.053* (2.07)	0.039* (2.00)	0.025* (1.79)	-0.006* (-1.80)	0.051* (2.04)	0.037* (1.90)	0.025* (1.86)	-0.008** (-2.35)
Formal fiscal restraints	-0.009 (0.34)	-0.007 (-0.54)	-0.001 (-0.04)	0.001 (0.41)	-0.002 (-0.08)	-0.0003 (-0.03)	0.006 (0.47)	0.009*** (3.01)
Fiscal referendum	-0.112*** (-2.34)	-0.097*** (-4.74)	-0.151*** (-4.92)	-0.020 (-1.39)	-0.122** (-2.58)	-0.108*** (-5.56)	-0.163*** (-5.52)	-0.032** (-2.42)
Threshold	-0.578 (-0.52)	-0.0004 (-0.63)	0.0004 (0.48)	0.001*** (3.33)	-0.539 (-0.50)	-0.0005 (-0.66)	0.0003 (0.35)	0.0003 (1.28)
Seats in parliament			-0.001 (-0.85)	0.0001 (0.23)			-0.001 (-0.98)	-0.0001 (-0.25)
Prop. Election gov.			-0.063 (-0.83)	-0.004 (-0.06)			-0.053 (-0.73)	0.002 (0.02)
Maj. Election parl.			-0.002 (-0.06)	0.040 (0.63)			0.004 (0.13)	0.016 (0.27)
Term limits (gov.)			0.050* (1.74)	-0.003 (-0.07)			0.050* (1.90)	0.001 (0.02)
Term limits (parl.)			-0.047 (-1.30)	0.115** (2.06)			-0.050 (-1.50)	0.089* (1.65)
Ideology gov.			-0.004 (-0.23)	0.004 (0.75)			0.001 (0.05)	-0.005 (-1.03)
Ideology parl.			0.265** (2.77)	0.016 (0.41)			0.264*** (2.89)	-0.041 (-1.18)
Shapiro-Wilk W test for normality		4.469***	0.107			4.824***	0.107	
p-value		0.000	0.457			0.000	0.457	
Time effects	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Canton effects	No	No	No	No	No	No	No	No
Observation	494	494	494	494	494	494	494	494
R <sup>2</sup>	0.755	0.833	0.875	0.906	0.783	0.834	0.876	0.906

For notes see Table 8

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 the 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

<sup>9</sup> By regressions on the cantonal means, we follow the methodology suggested by Besley and Case (2003).

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, which additionally supports our conclusions that cabinet size is a crucial element in determining fiscal policy choices. Referring to the notion that majoritarian electoral rules shape policy decisions towards more fiscal discipline (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 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 exists hardly 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 random effect 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, formal fiscal restraints and fiscal referendums is a crucial result however. The loss of significance of the fiscal referendum variable in the random effects regressions is 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 referendum, show that an easier use of fiscal referendums with lower thresholds is restrictive.

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  $t$ -tests will be valid. The  $p$ -value is based on the assumption that the distribution is normal. In our enlarged regression, it is very large in (0.46), indicating that we cannot reject that the residuals are normally distributed.

*Interaction terms: Which institutions restrict the fiscal commons problem*

The final investigation is concerned with interaction terms. The idea is to evaluate 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, formal fiscal constraints and term limits.

*Table 10: Non-linear IV regressions for cantonal fiscal policy decisions, 26 Swiss cantons, 1980-1998*

<i>Variables</i>	<i>Expenditure</i>		<i>Revenue</i>	
	<i>OLS</i>	<i>IV</i>	<i>OLS</i>	<i>IV</i>
Cabinet size	0.063** (2.40)	0.115*** (3.99)	0.023* (2.05)	0.114*** (3.94)
Fiscal referendum * Cabinet Size	-0.008 (-0.33)	-0.082* (-1.83)	-0.127 (-0.96)	-0.086* (-1.87)
Part time	-0.273*** (-4.13)	-0.048 (-0.42)	-0.265*** (-4.16)	-0.020 (-0.17)
Coalition size	0.029* (1.74)	0.115*** (5.35)	0.027 (1.66)	0.111*** (4.95)
Formal fiscal restraints	-0.013 (-0.81)	0.007 (0.98)	-0.005 (-0.36)	0.015** (2.14)
Fiscal referendum	-0.067 (-0.48)	0.335 (1.24)	-0.127 (-0.96)	0.348 (1.26)
Threshold	-0.001 (-0.98)	0.001 (1.54)	-0.001 (-0.97)	0.001 (1.60)
Term limits	0.048* (1.78)	-0.033 (-1.61)	0.047* (1.80)	-0.037* (-1.81)
R <sup>2</sup>	0.848		0.849	
F-test			33.40***	31.89***
Joint significance of cabinet size (chi-square)	7.93***	20.65***	7.82***	19.12***
Hansen J statistics for overidentification of all instruments			0.941	0.504
p-value			0.332	0.478

*For notes see Table 8*

*Table 10* provides the estimation results for the interaction between the fiscal referendum and cabinet size. 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 10*), there is no significant interaction effect in the case of spending and revenue for the OLS regressions although the interaction term has a negative sign. These results indicate that the fiscal referendum effectively reduces government size, but does not successfully restrict the fiscal commons problem. In the IV regressions we obtain a marginally significant restrictive impact of the fiscal referendum on public spending and revenue. As the IV regressions are not focused given the

test results on endogeneity mentioned above and as overidentification cannot be rejected for these regressions, we are reluctant to put too much emphasis on these results and rather consider fiscal referendums as less successful in restricting fiscal commons problems.

Table 11: Non-linear IV regressions for cantonal fiscal policy decisions, 26 Swiss cantons, 1980-1998

Variables	Expenditure		Revenue	
	OLS	IV	OLS	IV
Cabinet size	0.065*** (4.16)	0.080*** (8.29)	0.060*** (3.82)	0.072*** (7.56)
Formal fiscal restraints * Cabinet Size	-0.023** (-2.54)	-0.038*** (-8.79)	-0.017* (-1.81)	-0.031*** (-6.89)
Part time	-0.289*** (-4.35)	-0.149** (-2.42)	-0.276*** (-4.20)	-0.125** (-2.09)
Coalition size	0.033* (2.01)	0.062*** (2.74)	0.030* (1.81)	0.063*** (2.66)
Formal fiscal restraints	0.127** (2.74)	0.229*** (8.81)	0.094* (2.03)	0.192*** (7.30)
Fiscal referendum	-0.114*** (-5.50)	-0.125*** (-9.04)	-0.123*** (-6.06)	-0.134*** (-9.68)
Threshold	-0.001 (-1.03)	-0.0004 (-1.32)	-0.001 (-1.02)	-0.0003 (-1.01)
Term limits	0.053** (2.08)	0.021 (1.51)	0.049* (1.97)	0.014 (1.02)
R <sup>2</sup>	0.859		0.855	
F-test	58.22***		55.22***	
Joint significance of cabinet size (chi-square)	10.42***	52.28***	12.09***	45.77***
Hansen J statistics for overidentification of all instruments	0.740		0.399	
p-value	0.390		0.528	

For notes see Table 8

The same procedure is repeated with formal fiscal restraints. In Table 11, an interaction term of the formal fiscal restraints variable and cabinet size is additionally included. This interaction term is significantly negative in all four equations. Cabinet size keeps its positive impact in all four equations and is significantly increasing spending and revenue. This indicates that formal fiscal restraints are able to significantly reduce the fiscal commons problem in the case of spending and revenue while the fiscal commons problem remains valid in the cantons without formal fiscal restraints. These results are thus also robust to the use of the IV estimator although the validity of the IV estimates can be questioned given the results of the overidentification test. 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. Finally, the imposition of term limits appears to exacerbate the fiscal commons prob-



lem. As *Table 12* shows, the interaction term of cabinet size and government term limits is significantly positive in the spending and revenue equations. The baseline expansionary effect of cabinet size remains significantly positive in both cases. Term limits add to this baseline effect. However, the estimated result for the interaction term between term limits and cabinet size is not robust to the IV estimation. As the OLS regressions are more reliable than the IV regression results, term limits can be considered to rather exacerbate than restrict the fiscal commons problem, but we are cautious in emphasizing this result too heavily.

*Table 12: Non-linear IV regressions for cantonal fiscal policy decisions, 26 Swiss cantons, 1980-1998*

<i>Variables</i>	<i>Expenditure</i>		<i>Revenue</i>	
	<i>OLS</i>	<i>IV</i>	<i>OLS</i>	<i>IV</i>
Cabinet size	0.048*** (4.32)	0.068*** (10.91)	0.046*** (4.21)	0.066*** (11.65)
Term limits	0.061** (2.44)	-0.039 (-1.60)	0.062** (2.52)	-0.038 (-1.58)
* Cabinet Size				
Part time	-0.325*** (-5.02)	-0.120** (-2.05)	-0.318*** (-5.30)	-0.115** (-1.98)
Coalition size	0.019 (1.37)	0.103*** (4.19)	0.017 (1.23)	0.099*** (4.09)
Formal fiscal restraints	-0.018 (-1.02)	0.008 (1.13)	-0.011 (-0.74)	0.015** (2.17)
Fiscal referendum	-0.100*** (-4.84)	-0.145*** (-10.51)	-0.109*** (-5.63)	-0.154*** (-11.63)
Threshold	-0.001 (-0.86)	0.0001 (0.10)	-0.001 (-0.87)	0.0001 (0.03)
Term limits	-0.339** (-2.21)	0.245 (1.57)	-0.343** (-2.26)	0.234 (1.54)
R <sup>2</sup>	0.867		0.870	
F-test		42.60***		44.22***
Joint significance of cabinet size (chi-square)	9.93***	54.28***	10.03***	61.02***
Hansen J statistics for overidentification of all instruments		0.029		0.056
p-value		0.865		0.813

*For notes see Table 8*

## 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 by many national governments. We use data from sub-federal jurisdictions, which allow us to evaluate whether the theory of fragmented governments finds a more general support for fiscal policy decisions. Furthermore, our sample of

observations is rather homogenous 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 the role of cabinet size. The novelty of this paper is twofold: first, our data set on Swiss cantons allows for comparing the impact of fragmented governments with many other institutional aspects that have proved 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 and which particular institutions are most successful in reducing the danger of 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 by about 5 to 6 percent. On the other hand, coalition size does not have such robust effects on the size of government. These results are robust for different specifications and different estimation procedures. There is no convincing evidence that fiscal referendums are able to restrict the fiscal commons problem although fiscal referendums significantly reduce the size of government. Thus, the effects of fiscal referendums reported in the literature (Feld and Kirchgässner, 2001; Feld and Matsusaka, 2003) are corroborated. There is however more convincing evidence that the formal fiscal restraints successfully remedy the fiscal commons problem. Moreover, term limits rather exacerbate the fiscal commons problems and are thus rather counterproductive than helpful at least in the Swiss case.

Despite all the evidence found in the literature on fiscal policy differences between presidential/ parliamentary systems, proportional representation/ majoritarian elections and direct/ representative democracy, formal fiscal restraints play a crucial role in at least partly solving fiscal commons problems. This is also a residual explanation of why citizens in some Swiss cantons have deliberately accepted or introduced formal fiscal restraints despite the fact that they can already use the instrument of fiscal referendums to restrict fiscal policies. Why fiscal referendums are less successful to cope with the fiscal commons problems than formal fiscal restraints could only be speculated. The first stage regressions from *Table 4* indicate that cantons with fiscal referendums also have a significantly higher probability of introducing formal fiscal restraints and a significantly smaller size of cabinets. It could be suspected that citizens use direct democracy to create additional institutions like formal fiscal restraints in order to cope with particular problems of representative government. Automatic adjustments in fiscal

policy that result from the institutional logic of formal fiscal restraints may save transaction costs that would be incurred with fiscal referendums. A sounder explanation based on additional evidence must be left for future research.

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## Appendix

<i>Table A: Data description</i>		
<i>Variable name</i>	<i>Description</i>	<i>Source</i>
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