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Abstract

The fiscal commons problem is one of the most prominent explanations of excessive spending and indebtedness in political economics. The more fragmented a government, the higher its spending, deficits and debt. 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. Theoretically, they both describe the degree to which the costs of spending decisions are internalized by individual decision-makers. In addition, we evaluate whether constitutional rules for executive and legislation as well as budget rules shape the size of government and how the different rules interact with fragmentation in determining government size. The empirical study of the role of fragmented governments for fiscal policy outcomes is based on a panel of the 26 Swiss cantons over the 1980-1998 period. The results indicate that the number of ministers in the cabinet is negatively associated with fiscal discipline. Furthermore, the fiscal referendum does effectively restrict the fiscal commons problem, but less successfully than the budget rule.

JEL-Classification: E61, E63, H61

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1. Introduction

Since the 1980s many central governments have problems with fiscal discipline (Tanzi and Schuknecht, 2000). But the phenomenon of long-term budget imbalance is not reserved to the national level only. The same holds for many sub-federal governments. Though average sub-national deficit accounted for 0.42 percent of GDP in a sample of 63 IMF countries during the period from 1986 to 1996, in the federalist countries Argentina and Brazil the provinces' deficits routinely exceed that of the central government. Furthermore, countries with increasing decentralization like Mexico or South-Africa¹ have a deficit growth at an alarming rate (Rodden, 2002).

Following the contributions by Weingast, Shepsle and Johnson (1981), such budgetary imbalances are explained by the degree of fragmentation in government. Usually, the starting point of that analysis 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. By 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. 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. Hence broad based governments tend to have loose fiscal discipline. The resulting asymmetry between spending and revenue growth culminates in rising budget deficits and pushes up debt on all levels of government.

The extent of fiscal imbalance varies however considerably between governments and within jurisdictions over time. Intuitively, different economic, historical, cultural and geographical conditions are seen as crucial driving forces for these differences. But as contributions in political economics have found time and again fiscal policy is extensively determined by the arrangement of political institutions. Thus, it is reasonable to assume that institutions also shape the fiscal

¹ For a survey of the decentralization tendencies in South-Africa, see Rubinfeld (2001).

commons problem. According to Buchanan (1980) we can distinguish between procedural and quantitative restrictions. Procedures define how property rights over political decisions can be acquired, and who can exercise them. Independent from partisan effects (Hibbs, 1977; Blais, Blake and Dion, 1993), institutions like electoral and legislative rules (Persson and Tabellini, 2001), the budget process (Hallerberg and von Hagen, 1999), or possibilities of direct political participation by voters on policy issues via referendums and initiatives (Feld and Kirchgässner, 2001) are of importance. The second class of institutions entails explicit budget rules on the constitutional or statutory level (Poterba, 1997). They are designed to commit policy-makers on specific policy outcomes like the existing spending, taxing, deficit or debt limitations in the United States, the European Union or Switzerland. (Shadbegian, 1998; de Haan and Sturm, 2000; Danziger, 2002).

The purpose of this paper is to investigate the impact of different procedural and quantitative institutions on fiscal policy outcomes for the 26 Swiss cantons over the 1980-1998 period. In particular, we focus on the effect of majoritarian versus proportional elections, direct legislation, term limits and budget rules to restrict the fiscal commons problem created by fragmented governments. Even though the Swiss sub-federal governments have rather sound public finances, problems of fiscal imbalance have arisen in several jurisdictions especially during the 1990's (Kirchgässner, 2002; Frey, 2002). According to our findings, only fiscal referendums and budget rules restrict the different spending ministries to overuse the fiscal commons to a significant extent. Comparing both types of rules, formal fiscal restraints appear to be more successful than fiscal referendums.

The remainder of the paper is organized as follows: In section two, the impact of fragmented governments on fiscal policy outcomes is discussed while section three addresses the role of legislative and electoral rules in shaping fiscal policy decisions. Finally, budget rules are considered as well. The empirical implementation of the impact of all these institutions on policy outcomes follows in section four. The results will be discussed in section five while section six offers some concluding remarks.

2. Fragmented governments and fiscal policy

The empirical literature uses several concepts of fragmented governments depending on the unit of decision-making. For instance, the number of sub-federal jurisdictions as well as 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 power of government. One line of empirical research uses *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. 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. However, 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 supports government's ability to fight fiscal imbalance.² 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.

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 argued that the acceptance of policy decisions is higher when they reflect the preferences of a broad majority of the electorate. This is the case in a consensus democracy.

Another interpretation of fragmented governments refers to the number of spending ministers in the government as an indicator for government fragmentation. Each spending minister participates in decisions on spending projects and demands resources from the overall budget. 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 generally not concerned with spending administrations but take responsibility for the whole budget. Hence, these

² However, de Haan and Sturm (1994) question these results for the OECD countries between 1982 and 1995.

members of the cabinet enjoy a somewhat different position compared to the other ministers. Using a panel of 22 OECD countries over the 1971-1996 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 1970-1995 period, they report evidence that cabinet size is a robust determinant of the size of government. 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 a lot of evidence that fragmented governments actually create a fiscal commons problem.

3. Electoral rules and fiscal policy

Another branch of the literature on comparative politics and public finance investigates the effects of electoral rules and regime types. Electoral rules formulate how votes are transformed into seats in parliament and take the form of proportional or majoritarian representation. Persson and Tabellini (2000, 2001, 2002, 2003), Ljiphart (1994), Milesi-Ferretti et al. (2000) and Besley and Case (2003) argue that majoritarian electoral rules are associated with smaller governments. The theoretical explanation why the electoral formula should matter is twofold: First, under proportional representation, politicians are induced to provide policy benefits to a larger segment of voters than under majoritarian elections. More groups are participating in overusing the fiscal commons. Second, proportional elections put emphasis on parties while majoritarian elections strengthen the role of candidates in electoral districts eventually fostering political accountability. Decisive districts are more strongly contested in majoritarian elections intensifying political competition while districts are less important in proportional representation systems where party lists are instrumental for allocating seats in parliament.

Furthermore, Lijphart (1999) provides empirical evidence that majoritarian electoral rules shape the party structure of a government leading to a smaller number of parties. Moreover, proportional elections favor the creation of coalition governments. Under proportional elections, more veto players are thus involved in policy-making, which, according to Roubini and Sachs (1989a,b), is the reason why these governments can be categorized as ‘weak’ as compared to ‘strong’ single party governments. As shown by Alesina and Tabellini (1990) and empirically supported by Grilli, Mascandaro and Tabellini (1991), government crisis are indeed more likely and hence occur more frequently under proportional elections favoring larger budget deficits.³

The question, how constitutional rules for the executive power shape policy decisions has been addressed by Persson, Roland and Tabellini (2000) as well as by Persson and Tabellini (2000, 2001, 2002, 2003). According to their empirical results, presidential regimes generate smaller government spending than parliamentary regimes. The theoretical argument is again based on the political accountability of incumbents. In a parliamentary regime, the executive depends on the confidence vote of a majority in the legislative assembly. This institutional connection between the executive and the legislative chamber contradicts the principle of a separation of powers and weakens accountability such that the fiscal commons problem is more widespread. In a presidential regime the government can maintain power without the support of the parliament fostering checks and balances and therefore political accountability.

Electoral accountability is not only affected by the government type but also by additional procedural provisions. Assuming that candidates have career concerns and are interested in reputation building for better reelection prospects, term limits reduce incentives to fight fiscal commons problems in the last term in office. As term limits exist in roughly half of the US states, they provide for a natural laboratory to empirically evaluate the hypothesis of reputation-building. In their empirical analyses, Crain and Tollison (1977, 1993) find that candidates for office are willing to pay more for the opportunity to serve in a state with a four-year term than in a state with a two-year term. In a very interesting paper, Besley and Case (1995) present evidence that lame duck governors in the last gubernatorial term who face term limits spend more and set higher taxes compared to their first gubernatorial term for the 48 continental US states over 1950 to 1986.

³ Casual evidence from Switzerland supports this notion: all cantons have majoritarian systems with two exceptions (Tessin since 1893 and Zug since 1894) where government crisis seldom occurs (Vatter, 1998).

Another aspect of legislative rules addresses the provision of some form of direct democracy. Recently, widespread interest in this type of fiscal institution has emerged (Kirchgässner, Feld and Savioz, 1999). The possibility of direct legislation is seen as an effective instrument to match voter preferences and policy outcomes by reducing principal-agent problems of government discretion in a representative democracy. In addition, the fiscal commons problems may be less severe in referendums because log-rolling is more difficult. Consequently, pork-barrel politics occur less frequently. Following Peltzman (1992), voters can also be seen as fiscal conservatives such that direct legislation favors smaller governments. For the US states, Matsusaka (1995) provides evidence for an expenditure and revenue cutting effect of the voter initiative. He also finds that the signature requirement to qualify for ballots is negatively associated with the level of government spending. Switzerland provides an even richer experience with different instruments of direct democracy than the US states including not only the voter initiative to put new aspects on the political agenda but also the popular referendum with which government decisions can be vetoed. Feld and Matsusaka (2003) thus use Swiss cantons to reevaluate its impact. Their findings indicate that the expenditure and revenue cutting effect of direct democracy is not a statistical artifact under North-American circumstances but also holds in the Swiss case. In addition, the referendum possibility seems to foster smaller governments more effectively than the initiative.

All in all, there is a lot of evidence that electoral rules and regime types shape fiscal policy decisions by governments. However, the effect of these rules on the problems of fiscal commons has not yet been empirically analyzed to the authors' knowledge.

4. Budget rules and fiscal policy

Budget rules represent (more or less exactly) specified policy targets. In contrast to the above mentioned procedural institutions, formal fiscal restraints are a kind of self-commitment of the political actors accustomed with the usual outcomes of the decision-making process. The implementation of budget rules in many jurisdictions dates back to the late 1970's as an expression of a broad concern about the sustainability of fiscal policy and as a reaction to persistently excessive deficits since the early 1970's. This development indicates that government deficits do not fully follow the logic of inter-temporal tax smoothing where tax rates are set in order to minimize the excess burden of taxation across time (Barro, 1979, 1986). According to the contribution by Buchanan and Wagner (1977), persistent government deficits are instead caused by an asymmetry of

incentives in democratic decision-making. The possibility to finance government spending by bond issuing can be abused by a Leviathan government for own and ideological purposes. With deficit spending it is also possible to support partial interests while the costs fall on subsequent governments. Formal fiscal restraints are supposed to restrain this fiscal commons problem because the different constituencies set the spending or deficit targets behind a veil of ignorance without knowing under what conditions they wish to incur excessive deficits. They bind themselves today for possible future situations in which they could otherwise trade votes with competing groups that finally lead to an over-use of the fiscal commons. According to Alesina and Tabellini (1990) and Persson and Svensson (1989), governments in addition have an incentive to strategically use government debt in order to commit future governments (for an empirical assessment of these hypotheses for 277 Swedish communities, see Petersson-Lidbom 2001). Therefore, to circumvent the democratic bias towards deficit spending, Buchanan (1980), Brennan and Buchanan (1980) as well as Folkers (1983) argue for limits on the discretionary use of instruments of fiscal policy by governments on the constitutional level.

The impact of budget rules on fiscal outcomes has been analyzed systematically on the state and local level in the United States, again without explicitly testing whether they restrain the fiscal commons problem. Tax and Expenditure Limitation Laws (TEL) were mainly introduced during the tax revolts associated with the passage of California's Proposition 13. Before 1978, only New Jersey and Colorado had a binding TEL. Afterwards and until 1987, many other states introduced TELs (Shadbegian, 1996; p. 23). The study by Shadbegian (1996) shows that there is an expenditure cutting effect of TELs on the relative growth of government spending compared to the growth of national income. The same holds for the local level in the US. Shadbegian (1998) provides empirical evidence indicating that TELs also have a restricting effect on the size of the local public sector. The main impact is on the property tax. Poterba (1996) argues that the effect of budget rules on fiscal policy should take possible endogeneity into account since the cross-section variation could also be influenced by different fiscal preferences rather than by the existence of a TEL. Indeed, Shadbegian (1998) carefully controls for possible endogeneity of the TELs in his panel study from 1972 to 1992.

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>Budget rule</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

In a panel study for the 26 Swiss cantons from 1980-1998, Schaltegger (2002) finds empirical evidence for the Swiss cantons that budget rules mainly restrict deficit spending by also controlling for possible endogeneity.

5. Empirical implementation

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 and 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 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. The column with the number of parties represented in the government also shows some variation across cantons, even though broad coalitions represent the normal case. Furthermore, as shown by Vatter (1998), the ideological position of cantonal governments is very persistent over time.

The cantonal parliaments have also very different sizes in terms of members of parliament. The size ranges from 46 members in Appenzell i.Rh. to 200 members in Berne and Aargau. Recently, some cantons have reduced their size of parliament like Lucerne (1999) and Vaud (1997). In Berne and Solothurn, the legislative body will be reduced after the next elections according to successfully approved voter initiatives. 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, there does not exist a variation in the regime type across the state level in Switzerland (Vatter, 1998). Most cantonal constitutions do not make use of 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 a mandatory budget referendum with different spending thresholds to qualify for ballots while others apply the optional form of the budget referendum 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)⁴ additionally have statutory requirements to balance the budget. These budget rules are aimed at reducing the discretionary use of deficit spending (Stauffer, 2001; Schaltegger, 2002 and Kirchgässner, 2002). Such restraints usually are 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 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 Appenzell a.Rh., and much less so in Graubünden.

Using this institutional variety, we propose the following econometric model to analyze the role of government fragmentation and different political and fiscal rules for public finances:

$$X_{it} = \alpha + \beta CTRL_{it} + \zeta POLITICAL_INSTITUTIONS_{it} + TD_t + \varepsilon_{it} \quad (1)$$

where i are the canton and t the year indices, respectively. X represents the budget variables, i.e. public spending, revenue, deficit or debt. All dependent variables are calculated in logarithms with the exception of the deficit variable, which is calculated in nominal values. $CTRL$ is a vector of control variables (received grants, national 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). The vector $POLITICAL_INSTITUTIONS$ captures the number of ministers in a specific cantonal government, whether a minister is working part-time or not, the number of parties governing a canton, a dummy-variable = 1 for those cantons that have a specific statutory requirement to balance the cantonal budget, a dummy variable = 1 for those cantons with a mandatory fiscal referendum as well as a variable measuring the spending thresholds applied to the mandatory fiscal referendum. Finally, TD is a set of time

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

dummies controlling for year specific effects whereas ε represents the error term of the regression. *Table 2* provides summary statistics for the 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 not unproblematic since it is possible that the size of the cabinet, the coalition size and the budget rules are the result of different fiscal preferences between the cantons. For example, the reduction of the cabinet size could just be an expression of electoral preferences to cut down government spending. In this case, we can find a negative impact of a reduction of the cabinet size on government expenditures, though there is a reversed causality. The same problem applies to coalition size and budget rules (Poterba 1996). In order to tackle the endogeneity problem of the three variables, we apply an instrumental-variable estimation. The presented IV-estimates use the cantonal fixed effects as instruments. The subsequent estimation strategy is to first estimate the basic econometric model as outlined above by OLS and IV. In the second step, the robustness of these estimation results to the inclusion of additional institutional factors is checked.

Table 2: Summary statistics

Variable	Mean	Standard Deviation	Minimum	Maximum
Expenditures	4217	1666	2274	10938
Revenue	4126	1560	2264	10768
Deficit	91	284	-1630	1758
Debt	3738	2643	795	16820
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
Budget rule	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

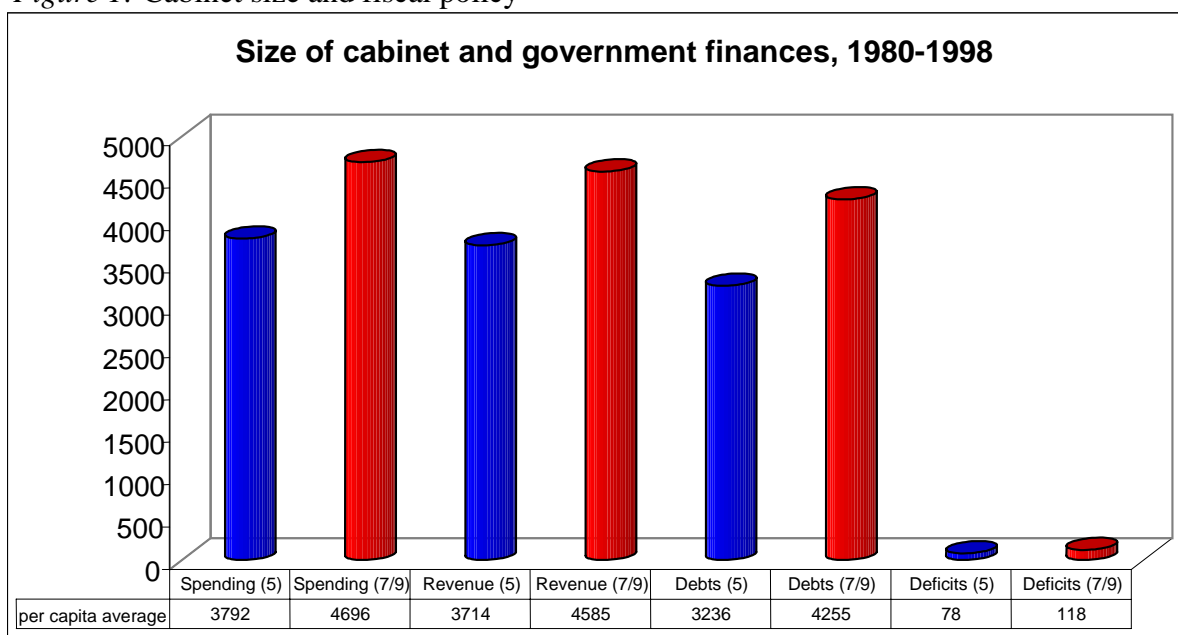
Note: Financial figures are displayed in 1980 Swiss Francs.

Third, only those institutional rules that turn out to have significant impacts of 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.

6. Results

In order to illustrate the effect of cabinet size on the size of government at the outset, we first compare the budgetary policy choices that have been made in a cabinet with five ministers with the policy decisions by cabinets with seven (nine) ministers. *Figure 1* indicates that smaller cabinets appear to favor smaller governments. This is true for government spending, which is reduced by nearly 1000 Swiss Francs per capita when 5 ministers govern the canton instead of seven (nine) as well as for government revenue, deficits and debts. *Table 3* shows the longitudinal effect of a change in the size of cabinet. In our period of observation there is only one canton, which is apt for such an investigation. The canton of Bern changed the size of cabinet in 1989 from nine to seven ministers. Therefore, we have nearly 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 3* in the case of Berne, there is a considerable decline of the spending growth after the introduction of a smaller cabinet. Moreover, compared to the average Swiss canton, Berne could cut back its spending growth from a level much above the average between 1980 to 1989 to a level somewhat below the average between 1989 to 1998. Very much the same can be concluded when observing the spending growth of some neighboring cantons, which have a common border with Bern.

Figure 1: Cabinet size and fiscal policy



Source: Own calculations

Of course, the descriptive evidence of smaller governments in jurisdictions governed by smaller 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 4* displays the results of the OLS as well as of the IV regressions.

Table 3: Development of expenditures before and after change in cabinet size of Bern

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

Source: Own calculations

The most interesting result is found for the fragmentation variables: Cabinet size shows the predicted positive and significant sign for public expenditure and revenue in the OLS regressions as well as in the IV regressions. As can be seen by the coefficients, an increasing cabinet size by one additional minister leads to between 5 and 6 percent higher public spending or revenues. Although the differences between the effects of cabinet size on spending and revenue are not important, deficits are significantly higher in cantons with larger cabinets while debt does not appear to be significantly affected. Interestingly, the second variable capturing the effects of fragmented governments is not performing similarly well. In comparison to cabinet size, coalition size has a smaller quantitative effect on the public budget than the number of spending ministers. The estimated coefficients are also only marginally or not significant in most cases. Thus, it is immediately apparent that the number of ministers in the cabinet is an important determinant of fiscal outcomes. The obtained results are in line with those by Perotti and Kontopoulos (2002) for a panel of OECD countries.

Looking at *Table 4*, other interesting results can be observed. For example, some cantons have governments with executives that are engaged only part-time. If a government relies on part-time governors this has a significant and robust spending and revenue cutting effect by approximately 24 to 26 percent, but it also significantly reduces public debt and budget deficits. In line with previous empirical studies (Feld and Kirchgässner, 2001), the results confirm that the mandatory fiscal referendum favors significantly smaller government spending and

revenue by about 10 percent. In the case of public debt, direct legislation reduces accumulated deficits significantly by a similar amount. The spending thresholds do however not have any significant impact on cantonal public finances. On the other hand, budget rules do not play a very prominent role in fostering fiscal discipline in our case. This result indicates that procedural aspects like the cabinet size and possibilities of direct legislation defining how property rights in politics are distributed and how they can be exercised are, at first sight, more effective in fostering sounder public finances than self-commitments by the government in form of quantitative restrictions. The economic control variables exhibit the expected impacts although income, regional fragmentation in communities and the language dummy do also not have any significant impact. There is an exception however: Fragmentation and the language dummy belong to the few variables influencing budget deficits of the cantons. These are significantly lower in German speaking and in more fragmented cantons.

Table 4: OLS and IV regressions for cantonal fiscal policy decisions, 26 Swiss cantons, 1980-1998

Variables	Log Expenditure		Log Revenue		Log Debt		Deficit per cap.	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Cabinet size	0.052*** (3.34)	0.058*** (3.40)	0.050*** (3.29)	0.055*** (3.33)	0.057 (1.58)	0.065 (1.70)	45.1** (2.22)	49.3** (2.18)
Part time	-0.243*** (-4.25)	-0.258*** (4.48)	-0.236*** (-4.26)	-0.250*** (-4.45)	-0.337*** (-2.95)	-0.358*** (-3.07)	-159.6** (-2.63)	-170.5** (-2.64)
Coalition size	0.039* (2.00)	0.041** (2.09)	0.037* (1.90)	0.038* (1.98)	0.001 (0.05)	0.004 (0.13)	26.5 (1.18)	27.8 (1.25)
Budget rule	-0.007 (0.54)	-0.008 (0.59)	-0.0003 (0.03)	-0.001 (-0.12)	-0.029 (-0.77)	-0.031 (0.79)	-66.6* (-1.72)	-67.4 (-1.70)
Budget referendum	-0.097*** (-4.74)	-0.101*** (-5.05)	-0.108*** (-5.56)	-0.111*** (-5.76)	-0.096** (-2.20)	-0.101** (-2.21)	53.92 (1.16)	51.5 (1.14)
Threshold ♦	-0.451 (-0.63)	-0.558 (-0.76)	-0.466 (-0.66)	-0.565 (-0.78)	0.268 (0.23)	0.121 (0.10)	-394.4 (-0.48)	-471.4 (-0.56)
Grants ♦	0.124*** (7.73)	0.124*** (7.65)	0.125*** (7.92)	0.125*** (7.85)	0.050*** (2.87)	0.050** (2.75)	9.8 (0.66)	10.1 (0.66)
Income	0.114 (0.86)	0.106 (0.82)	0.124 (0.92)	0.117 (0.89)	-0.035 (-0.13)	-0.045 (-0.17)	-11.0 (-0.13)	-16.6 (-0.19)
Population	-0.084*** (-4.20)	-0.084*** (-4.27)	-0.088*** (-4.63)	-0.088*** (-4.71)	-0.116** (-2.32)	-0.116** (-2.28)	34.9 (0.96)	34.7 (0.95)
Urban	0.189** (2.17)	0.175* (1.75)	0.182** (2.15)	0.169* (1.97)	0.544*** (3.50)	0.524*** (3.33)	89.7 (0.97)	79.6 (0.78)
Communes ♦	-0.079 (-0.38)	-0.109 (-0.51)	-0.046 (-0.23)	-0.074 (0.36)	-0.163 (-0.33)	-0.203 (-0.40)	-616.7* (-1.80)	-638.1* (-1.92)
German language	-0.006 (-0.19)	-0.004 (-0.14)	0.005 (0.15)	0.006 (0.21)	0.007 (0.11)	0.010 (0.16)	-144.9** (-2.30)	-143.4** (-2.30)
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observation	494	494	494	494	494	494	494	494
R ²	0.833	0.832	0.834	0.833	0.585	0.585	0.420	0.420

Note: Instruments for IV-Regression are all regressors with exception of minister-variable and 26 cantonal intercepts.
♦ 10³ for readability

Population size has a significantly negative influence, the urban variable has a significantly positive impact on spending, revenue and debt. Finally, grants are significantly positive in the spending, revenue and debt equations. Overall the explanatory power of the estimated models is relatively high. In the next step, we regress the same model on the cantonal means of (the log of) spending, revenue, debt and deficits, and perform sensitivity analyses by introducing additional political and institutional control variables, i.e. 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 canton governments. Finally, these variables are included together in one equation.

Table 5: Sensitivity analysis for log expenditure, 26 Swiss cantons, 1980-1998

Variables	Log Expenditure						
	OLS (cantonal means)	IV (1)	IV (2)	IV (3)	IV (4)	IV (5)	IV (6)
Cabinet size	0.061*** (3.13)	0.058*** (3.40)	0.060*** (3.52)	0.053*** (3.74)	0.065*** (4.51)	0.053*** (3.25)	0.059*** (4.59)
Part time	-0.266*** (-3.48)	-0.258*** (4.48)	-0.260*** (-4.41)	-0.236*** (-4.39)	-0.320*** (-5.01)	-0.218*** (-3.42)	-0.254*** (-3.72)
Coalition size	0.053* (2.07)	0.041** (2.09)	0.041** (2.08)	0.037** (2.15)	0.035** (2.14)	0.031* (1.76)	0.028* (1.92)
Budget rule	-0.009 (0.34)	-0.008 (0.59)	-0.006 (-0.44)	-0.008 (-0.52)	-0.015 (-0.87)	-0.004 (-0.35)	-0.003 (-0.20)
Budget referendum	-0.112*** (-2.34)	-0.101*** (-5.05)	-0.102*** (-5.10)	-0.110*** (-4.69)	-0.133*** (-5.05)	-0.103*** (-3.78)	-0.156*** (-5.21)
Threshold ♦	-0.578 (-0.52)	-0.558 (-0.76)	-0.439 (-0.62)	-0.416 (-0.60)	-0.807 (-1.22)	0.179 (0.20)	0.190 (0.23)
Seats in parliament			-0.001 (-0.91)				-0.001 (-0.85)
Prop. election gov.				0.058 (-0.75)			-0.049 (-0.66)
Maj. Election parl.				0.029 (0.93)			0.002 (0.05)
Term limits (gov.)					0.061** (2.42)		0.055* (1.96)
Term limits (parl.)					-0.043 (-1.34)		-0.049 (-1.35)
Ideology gov.						-0.021 (-1.27)	-0.001 (-0.05)
Ideology parl.						0.209 (1.52)	0.273*** (2.79)
Time effects	No	Yes	Yes	Yes	Yes	Yes	Yes
Observation	494	494	494	494	494	494	494
R ²	0.755	0.832	0.834	0.843	0.852	0.847	0.873

Note: Instruments for IV-Regression are all regressors with exception of minister-variable and 26 cantonal intercepts. ♦ 10³ for readability. Estimations include all other variables of Table 4, too.

While the regression on cantonal means is performed employing OLS due to the lack of a convincing instrument, the other sensitivity analyses are estimated by IV. The regressions for spending are presented in *Table 5*, the revenue estimates in *Table 6*, debt in *Table 7* and deficits in *Table 8*. We only report estimation results for the most important variables leaving the results for the control variables unconsidered in the Tables.

Considering first the regressions on the cantonal means, the estimation results remain surprisingly robust. This holds with respect to cabinet size, which exerts a slightly increased impact on spending, revenue, debt and deficits without obtaining any conventional significance level in the latter two cases however.

Table 6: Sensitivity analysis for log revenue, 26 Swiss cantons, 1980-1998

<i>Variables</i>	<i>Log Revenue</i>						
	<i>OLS</i> <i>(cantonal means)</i>	<i>IV</i> <i>(1)</i>	<i>IV</i> <i>(2)</i>	<i>IV</i> <i>(3)</i>	<i>IV</i> <i>(4)</i>	<i>IV</i> <i>(5)</i>	<i>IV</i> <i>(6)</i>
Cabinet size	0.058*** (3.10)	0.055*** (3.33)	0.058*** (3.49)	0.052*** (3.80)	0.062*** (4.56)	0.051*** (3.17)	0.059*** (4.90)
Part time	-0.258*** (-3.48)	-0.250*** (-4.45)	-0.252*** (-4.37)	-0.235*** (-4.32)	-0.313*** (-5.20)	-0.212*** (-3.39)	-0.254*** (-3.91)
Coalition size	0.051* (2.04)	0.038* (1.98)	0.039* (1.97)	0.036* (2.03)	0.034** (2.06)	0.030 (1.70)	0.028* (1.98)
Budget rule	-0.002 (-0.08)	-0.001 (-0.12)	-0.001 (0.08)	-0.001 (-0.11)	-0.008 (-0.56)	0.003 (0.33)	0.003 (0.25)
Budget referendum	-0.122** (-2.58)	-0.111*** (-5.76)	-0.112*** (-5.80)	-0.119*** (-5.47)	-0.144*** (-5.53)	-0.113*** (-4.26)	-0.167*** (-5.76)
Threshold ♦	-0.539 (-0.50)	-0.565 (-0.78)	-0.437 (-0.63)	-0.479 (-0.71)	-0.813 (-1.24)	0.117 (0.13)	0.087 (0.11)
Seats in parliament			-0.001 (-0.99)				-0.001 (-0.98)
Prop. election gov.				-0.047 (-0.61)			-0.040 (-0.56)
Maj. Election parl.				0.034 (1.10)			0.008 (0.24)
Term limits (gov.)					0.060** (2.59)		0.055** (2.11)
Term limits (parl.)					-0.047 (-1.52)		-0.052 (-1.55)
Ideology gov.						0.197 (1.46)	0.272*** (2.90)
Ideology parl.						-0.019 (1.20)	0.003 (0.22)
Time effects	No	Yes	Yes	Yes	Yes	Yes	Yes
Observation	494	494	494	494	494	494	494
R ²	0.783	0.833	0.836	0.843	0.855	0.847	0.875

Note: Instruments for IV-Regression are all regressors with exception of minister-variable and 26 cantonal intercepts. ♦ 10³ for readability. Estimations include all other variables of *Table 4*, too.

It also holds for part-time ministers and coalition size as well as for budget rules and the budget referendum. Contrary to the findings of Besley and Case (2003), the impact of institutional variables that has been found in previous studies remains robust in the regressions on the cantonal means for the Swiss cantons.

Second, 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 (2001) 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.

Table 7: Sensitivity analysis for log debt, 26 Swiss cantons, 1980-1998

Variables	Log Debt						
	OLS (cantonal means)	IV (1)	IV (2)	IV (3)	IV (4)	IV (5)	IV (6)
Cabinet size	0.063 (1.60)	0.065 (1.70)	0.074** (2.06)	0.054 (1.53)	0.078** (2.22)	0.058 (1.56)	0.062* (2.05)
Part time	-0.357** (-2.29)	-0.358*** (-3.07)	-0.368*** (-3.13)	-0.314** (-2.75)	-0.475*** (-3.64)	-0.315** (-2.30)	-0.333** (-2.49)
Coalition size	0.003 (0.06)	0.004 (0.13)	0.006 (0.19)	-0.003 (-0.12)	-0.005 (-0.21)	-0.010 (-0.31)	-0.001 (-0.02)
Budget rule	-0.034 (-0.64)	-0.031 (0.79)	-0.022 (-0.61)	-0.029 (-0.76)	-0.044 (-0.96)	-0.026 (-0.69)	0.001 (0.04)
Budget referendum	-0.082 (-0.83)	-0.101** (-2.21)	-0.107** (-2.51)	-0.120** (-2.52)	-0.162** (-2.39)	-0.096* (-1.71)	-0.237*** (-3.40)
Threshold♦	-0.330 (0.15)	0.121 (0.10)	0.612 (0.53)	0.423 (0.37)	-0.342 (-0.29)	1.097 (0.76)	2.108 (1.47)
Seats in parliament			-0.002** (-2.48)				-0.004*** (-3.00)
Prop. election gov.				-0.118 (-0.79)			-0.253* (-1.80)
Maj. Election parl.				0.055 (0.80)			-0.049 (-0.70)
Term limits (gov.)					0.112** (2.42)		0.058 (1.13)
Term limits (parl.)					-0.085 (-0.91)		-0.147 (-1.59)
Ideology gov.						0.218 (0.79)	0.218 (0.87)
Ideology parl.						-0.040 (-1.27)	0.027 (0.96)
Time effects	No	Yes	Yes	Yes	Yes	Yes	Yes
Observation	494	494	494	494	494	494	494
R ²	0.522	0.585	0.604	0.602	0.614	0.598	0.670

Note: Instruments for IV-Regression are all regressors with exception of minister-variable and 26 cantonal intercepts. ♦ 10³ for readability. Estimations include all other variables of Table 4, too.

Thus, and in order to control for the effect of parliamentary power on budget decisions, we additionally include the parliament size of the cantonal legislatures in our regressions. Interestingly, there is no systematic effect of the size of parliament on government spending and revenue decisions, which additionally supports our conclusions that the cabinet size is a crucial element in determining fiscal policy choices.⁵

Table 8: Sensitivity analysis for cantonal deficits per capita, 26 Swiss cantons, 1980-1998

Variables	Deficit per Capita						
	OLS (cantonal means)	IV (1)	IV (2)	IV (3)	IV (4)	IV (5)	IV (6)
Cabinet size	50.377 (1.65)	49.256** (2.18)	48.728* (1.95)	29.368 (1.20)	56.281** (2.27)	43.505** (2.17)	37.344 (1.42)
Part time	-178.134 (-1.48)	-170.521** (-2.64)	-169.790** (-2.56)	-95.579 (-1.24)	-223.216** (-2.18)	-122.806 (-1.70)	-155.393 (-1.40)
Coalition size	24.880 (0.62)	27.760 (1.25)	27.636 (1.24)	15.623 (0.62)	9.677 (0.38)	15.274 (0.52)	-10.247 (-0.34)
Budget rule	-66.513 (-1.63)	-67.440 (-1.70)	-67.878* (-1.73)	-58.667 (-1.50)	-76.603 (-1.65)	-61.856* (-1.72)	-67.726 (-1.48)
Fiscal referendum	49.267 (0.65)	51.460 (1.14)	51.834 (1.11)	31.465 (0.64)	29.028 (0.61)	50.300 (1.07)	12.149 (0.25)
Threshold ♦	-834.498 (-0.48)	-471.415 (-0.56)	-494.076 (-0.57)	189.558 (0.21)	-756.187 (-0.98)	474.145 (0.46)	474.638 (0.41)
Seats in parliament			0.092 (0.09)				0.452 (0.36)
Prop. election gov.				-145.045*** (-2.93)			-63.723 (-0.76)
Maj. Election parl.				-31.694 (-0.54)			-83.144 (-1.10)
Term limits (gov.)					84.134 (1.41)		100.958 (1.53)
Term limits (parl.)					5.711 (0.09)		-23.178 (-0.30)
Ideology gov.						257.669 (0.99)	227.904 (0.81)
Ideology parl.						-30.569 (-0.88)	-35.560 (-1.11)
Time effects	No	Yes	Yes	Yes	Yes	Yes	Yes
Observation	494	494	494	494	494	494	494
R ²	0.158	0.420	0.420	0.431	0.431	0.426	0.446

Note: Instruments for IV-Regression are all regressors with exception of minister-variable and 26 cantonal intercepts.
♦ 10³ for readability. Estimations include all other variables of Table 4, too.

Referring to the notion that majoritarian electoral rules shape policy decisions towards more fiscal discipline (Persson and Tabellini, 2001), there is hardly any support observable in the

⁵ Somewhat surprising and contrary to our hypothesis, parliament size is negatively associated with cantonal debts.

case of Swiss public finances. In the case of cantonal budget deficits, the proportional election of the government significantly reduces deficit financing without remaining robust when additional institutional variables are controlled for. In the debt table, proportional election of the government is exclusively having a marginally significant negative effect on cantonal debt when additional institutions are considered.

Table 9a: Non-linear IV regressions for cantonal fiscal policy decisions, 26 Swiss cantons, 1980-1998

<i>Variables</i>	<i>Log Expenditure IV</i>	<i>Log Revenue IV</i>	<i>Log Debt IV</i>	<i>Deficit IV</i>
Panel A				
	(1)	(2)	(3)	(4)
Cabinet size	0.058*	0.048	0.079	165.945***
	(1.84)	(1.55)	(1.20)	(3.45)
Fiscal referendum	-0.006	-0.003	-0.023	-137.729***
* Cabinet Size	(-0.23)	(-0.12)	(-0.41)	(-2.85)
Part time	-0.244***	-0.237***	-0.341***	-151.117**
	(-4.25)	(-4.28)	(-2.99)	(-2.38)
Coalition size	0.039*	0.037*	0.002	29.065
	(2.01)	(1.90)	(0.08)	(1.42)
Budget rule	-0.008	-0.000	-0.032	-81.616**
	(-0.57)	(-0.01)	(-0.86)	(-2.49)
Fiscal referendum	-0.063	-0.125	0.031	828.496***
	(-0.43)	(-0.88)	(0.10)	(3.29)
Threshold ♦	-0.469	-0.473	0.207	-543.176
	(-0.65)	(-0.66)	(0.18)	(-0.66)
R ²	0.833	0.834	0.585	0.442
F-Tests	27.235***	33.328***	4.060***	4.413***
Panel B				
	(5)	(6)	(7)	(8)
Cabinet size	0.068***	0.063***	0.094**	81.605***
	(3.44)	(3.16)	(2.54)	(3.73)
Budget Rule	-0.024**	-0.174	-0.069**	-78.372***
* Cabinet Size	(-2.32)	(-1.63)	(-2.55)	(-4.65)
Part time	-0.274***	-0.262***	-0.404***	-221.284***
	(-4.64)	(-4.43)	(-3.71)	(-3.84)
Coalition size	0.046**	0.042**	0.019	44.850**
	(2.34)	(2.11)	(0.65)	(2.22)
Budget rule	0.136**	0.102*	0.381**	400.980***
	(2.47)	(1.81)	(2.72)	(4.56)
Fiscal referendum	-0.103***	-0.112***	-0.106**	45.451
	(-5.23)	(-5.87)	(-2.27)	(1.01)
Threshold ♦	-0.640	-0.625	-0.107	-0.720
	(-0.82)	(-0.82)	(-0.09)	(-0.78)
R ²	0.840	0.837	0.619	0.450
F-Tests	32.570***	39.343***	7.110***	5.523***
<i>Note:</i> Instruments for IV-Regression are all regressors with exception of minister-variable and 26 cantonal intercepts. ♦ 10 ³ for readability				

Since only three cantons do not have majoritarian electoral rules, the variation in the sample is probably too small in order to draw serious inferences however. On the other hand, term limits for cantonal governors significantly and robustly increase spending and revenue while term limits for members of the cantonal parliament have essentially no effect on public finances. The impact of term limits of the government members on public debt is not robust when controlling for other institutional variables. This is somewhat in contrast to results obtained by Besley and Case (1995), who find consistent negative effects of term limits for state governors for US states.

Finally, the ideological position of the government does not consistently affect public finances in Swiss cantons although there is a significantly positive impact on cantonal revenue when controlling for other institutional variables. This reflects the fact that there exists hardly any canton with single party governments where fiscal policy can follow an ideological position. Very much the same holds for the share of leftist parties in the cantonal parliament, which has a significant but not robust spending expanding effect. More importantly, the inclusion of these different political and institutional variables does not affect the impacts of the main variables of interest, in particular of cabinet size on cantonal public finances. These impacts are hence robust to additional control variables.

The final investigation is concerned with potential non-linearities. *Table 9* indicates the IV estimates of the familiar variables of interest. *Panel A* of *Table 9a* additionally includes an interaction term of the fiscal referendum and cabinet size. Though the overall effect of fiscal referendums and of cabinet size remains significant according to the F-tests (only the latter is shown in the Table), there is no significant interaction effect in the case of spending, revenue and debt although the interaction term has a negative sign. This indicates that fiscal referendums reduce the problem of fiscal commons, but this effect is statistically not secured. In the case of cantonal budget deficits, an interesting result emerges, however. Cabinet size now becomes significantly positive showing that the fiscal commons problem emerges for budget deficits in those cantons without fiscal referendums, while the significantly negative interaction term indicates a reduction of the fiscal commons problem in deficits for cantons with fiscal referendums. In cantons with fiscal referendums, but small cabinet sizes, significantly higher deficits can be found.

The same procedure is repeated with budget rules. In *Panel B* of *Table 9a*, an interaction term of the budget rule variable and cabinet size is additionally included. With the exception of public debt, where the interaction term of budget rules and cabinet size falls short of statistical

significance, this interaction term is significantly negative in all other equations. Cabinet size keeps its significantly positive impact in all four equations. This indicates that budget rules are able to significantly reduce the fiscal commons problem in the case of spending, debt and deficits while the fiscal commons problem remains valid in the cantons without budget rules.

Table 9b: Non-linear IV regressions for cantonal fiscal policy decisions, 26 Swiss cantons, 1980-1998

<i>Variables</i>	<i>Log Expenditure IV</i>	<i>Log Revenue IV</i>	<i>Log Debt IV</i>	<i>Deficit IV</i>
Panel C				
	(1)	(2)	(3)	(4)
Cabinet size	0.054*** (4.51)	0.051*** (4.35)	0.055 (1.42)	55.008** (2.57)
Term Limits	0.057** (2.26)	0.058** (2.33)	0.132* (1.87)	11.564 (0.28)
* Cabinet Size				
Part time	-0.338*** (-5.31)	-0.329*** (-5.58)	-0.525*** (-4.55)	-236.300** (-2.39)
Coalition size	0.021 (1.49)	0.019 (1.33)	-0.036 (-1.33)	8.471 (0.30)
Budget rule	-0.019 (-1.04)	-0.012 (-0.78)	-0.052 (-1.19)	-77.748 (-1.69)
Term Limits	-0.313* (-1.99)	-0.320* (-2.03)	-0.742 (-1.63)	12.181 (0.05)
Fiscal referendum	-0.104*** (-5.17)	-0.113*** (-5.85)	-0.101** (-2.38)	29.062 (0.71)
Threshold ♦	-0.646 (-1.05)	-0.644 (-1.05)	0.041 (0.00)	-0.748 (-1.03)
R ²	0.866	0.869	0.645	0.431
F-Tests	32.555***	33.609***	9.363***	2.764*
Panel D				
	(5)	(6)	(7)	(8)
Cabinet size	0.200 (1.70)	0.200* (1.83)	-0.091 (-0.33)	151.861 (0.59)
Cabinet Size	-0.011 (-1.25)	-0.011 (-1.36)	0.012 (0.59)	-7.621 (-0.43)
Squared				
Part time	-0.296*** (-4.65)	-0.288*** (-4.82)	-0.317** (-2.45)	-197.909* (-1.83)
Coalition size	0.029 (1.52)	0.027 (1.40)	0.016 (0.48)	19.541 (0.69)
Budget rule	-0.016 (-0.89)	-0.009 (-0.63)	-0.022 (-0.63)	-73.154 (-1.52)
Fiscal referendum	-0.095*** (-4.69)	-0.105*** (-5.27)	-0.107** (-2.46)	55.395 (1.28)
Threshold ♦	-0.961 (-1.30)	-0.974 (-1.33)	0.562 (0.46)	-0.762 (-0.77)
R ²	0.843	0.845	0.580	0.421
F-Tests	20.481***	20.392***	3.628**	2.303
<i>Note:</i> Instruments for IV-Regression are all regressors with exception of minister-variable and 26 cantonal intercepts. ♦ 10 ³ for readability				

The imposition of term limits exacerbates the fiscal commons problem however. As *Panel C* of *Table 9b* shows, the interaction term of cabinet size and term limits of the government is significantly positive in the spending, revenue and debt equations. Again the baseline expansionary effect of cabinet size remains significant in almost all fiscal policy equations. Term limits add to this baseline effect. Finally, the IV estimates in *Panel D* of *Table 9b* contain cabinet size squared in order to investigate a potential optimum of cabinet size. Since cabinet size and its squared term are not individually significant in any of the four regressions, we abstain from determining that optimum and from putting too much emphasis on it. In all regressions, the control variables remain relatively robust. This holds for the institutional variables in those equations where they are not used in interaction terms, but also for the economic and socio-demographic control variables not shown in *Table 9* (but available on request).

7. 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, budget rules, 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 a panel regressions for the 26 Swiss cantons over the 1980-1998 period, we provide empirical evidence that larger cabinets favor by about 5 to 6 percent larger governments in the case of per capita spending and per capita revenue. 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 only weak evidence that fiscal referendums are able to restrict the fiscal commons problem in the case of budget deficits.

There is however strong evidence that formal fiscal restraints are most successful in restraining the fiscal commons problem. Moreover, term limits exacerbate fiscal commons problems and are thus counterproductive. Despite all the evidence found in the literature on fiscal policy differences between presidential/parliamentarian 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 budget rules despite the fact that they can already use the instrument of fiscal referendums to restrict fiscal policies.

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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 Strohmam (1998)
Term limits gov.	Dummy = 1 for cantons having term limits for governors	Lutz and Strohmam (1998)
Maj. parliament	Dummy = 1 for cantons with majoritarian electoral rule for the cantonal parliament	Lutz and Strohmam (1998)
Term limits parl.	Dummy = 1 for cantons having term limits for members of parliament	Lutz and Strohmam (1998)
Seats parliament	Number of seats in the cantonal parliaments	anneé politique suisse
Budget rules	Dummy = 1 for cantons having a budget rule for a given year	Own calculations on the basis of Stauffer (2001)
Budget referendum	Dummy = 1 for cantons allowing for mandatory budget 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