Government accountability and fiscal discipline: a panel analysis using Swiss data*

by

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Abstract

Government accountability through electoral engagement, involvement and participation in the political debate can affect government performance. Using data for the full sample of Swiss cantons over the 1981–2001 period, this paper provides empirical evidence that government accountability is crucial for fiscal discipline. Specifically, in cantons with high levels of government accountability, the level of indebtedness is significantly lower, indicating that accountability supports fiscal discipline. To obtain a useful approximation for government accountability between citizens and their representatives, we use information from direct voter participation in political decisions (initiatives and public referenda) in Swiss state (cantonal) governments. Electoral support of government proposals reveals an important aspect of accountability in a real world setting.

Keywords: Government Accountability; Fiscal performance; Indebtedness, Social capital

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1. Introduction

Over the last 30 years, the governments of several OECD countries have accumulated large debts, as have their sub-federal governments. Why do certain governments incur large debts but not others? One explanation emerges from examination of the institutional framework of jurisdictions, which are particularly important for fiscal policy decisions. Fiscal institutions create the environment, incentives, rules, regulations and constraints under which budgets are drafted, approved and implemented. Thus, if properly designed, fiscal institutions can promote fiscal discipline, whereas an institutional framework that results in soft budget constraints provides incentives for loose fiscal discipline. However, these rules vary greatly across governments, so providing a reasonable explanation for cross-sectional variations in debt levels (Alesina and Perotti, 1995; Poterba and von Hagen, 1999; Persson and Tabellini, 2001).

This paper concentrates on the relationship between public debts and government accountability for a full sample of Swiss state governments over the 1981–2001 period. We measure accountability as the ratio of concurrence between Swiss state (cantonal) government recommendations of an issue to be put to vote and the actual outcome at the ballot, while using the number of ballots per year to measure the level of citizens' opportunity to express their preferences. Ballots help increase governmental accountability, which should affect fiscal performance as the government is forced to be responsive to citizen preferences resulting in a higher level of fiscal discipline. Our hypothesis states that stronger accountability, as measured by electoral support for government decisions, is a signal of stronger social cohesion between government and the electorate, which in turn results in sounder fiscal policy decisions. Our results do indeed indicate a fairly robust negative relationship between government accountability and public debt. Therefore, we conclude that fiscal policy is strongly influenced

by individuals' trust in government: a higher level of accountability leads to stronger fiscal discipline.

In addition, our paper provides some novel findings not offered, to our knowledge, in previous research. First, empirical studies in the social capital literature often use cross-country data. However, drawing conclusions from cross-cultural comparisons is difficult because institutional and cultural frameworks that typify specific countries might influence social capital: such features cannot always be controlled in a satisfactory manner. Our study, on the other hand, focuses on *within* country data at the state (cantonal) level and thus allows better isolation of the impact of accountability. Second, in the social capital literature, accountability is usually measured by *survey data* based, for example, on individual responses to questions about trust in the government and the legal system (see, e.g., Torgler, 2005). However, Glaeser et al. (2000) criticize such survey questions as interesting but "also vague, abstract, and hard to interpret" (p. 812). Moreover, it cannot be granted that attitudinal questions predict observable behaviour. Even Putnam (1995) stressed that it would be desirable to have behavioural indicators of social capital. Thus, in this paper we search for a proxy that measures individuals' *observable behaviour* rather than their attitudes or statements. Our findings indicate our behavioural variable that measures accountability to be highly correlated with trust measured at the attitudinal level by survey data. Finally, in contrast to the large number of studies using cross-sectional data, our panel analysis, encompassing over 20 years, allows exploitation of the time variation in governments' accountability.

The remainder of the paper is organised as follows. The next section provides a quick overview of the literature on government accountability and trust in politics. Section 3 develops a concept of accountability in a real world setting and presents evidence for the level of accountability among Swiss cantons over the last 20 years. Section 4 then outlines the empirical

implementation of the impact of accountability on fiscal discipline, after which Section 5 offers some concluding remarks.

2. Trust and Government Accountability

According to Knack (1999) "holding governments accountable is arguably the most important means by which social capital influences performance" (p. 7), as policy decisions must be responsive to the preferences of a large part of the population. For example, Knack (1999) provided empirical evidence that US states with a higher social capital perform significantly better than other states. Social capital can also facilitate agreement when political preferences are polarized. Third, social cohesion in a society is a breeding ground for political innovations. That is, the space for innovations is generally greater if trust is established between members of a society. If new challenges must be tackled, governments with high social capital are more flexible in adapting to the new circumstances than regions with widespread interests. Similarly, little political polarization in regions with strong social cohesion makes it easier for government to implement policies preferred by the electorate. Moreover, little social fragmentation reduces the asymmetry between the spending claims of different interest groups and tax decisions, meaning that fiscal discipline is supported by a more homogenous citizenry.

With respect to fiscal performance, an important aspect is government accountability. That is, engagement, involvement and participation in political and public issues by a large part of the electorate are important factors in keeping politicians and bureaucrats accountable. As Putnam (2000) put it, "[c]itizens in civic communities expect better government, and (in part through their own efforts) they get it … if decision makers expect citizens to hold them politically accountable, they are more inclined to temper their worst impulses rather than face public protests" (p. 346). Political participation in ballots encourages citizens to discuss the relevant issues, which helps improve their political awareness. In turn, knowing that citizens are

discussing and monitoring its behaviour provides government an incentive to govern more effectively. Such participation further contributes to more effective governance by offering citizens the opportunity to speak out and so manifest their preferences. The more aware government is of citizen preferences, the better its policies will reflect citizens' needs (see Boix and Posner, 1998).

Game theory and experimental findings have shown that a high level of social capital enables co-operation between actors and facilitates superior social outcomes. However, Boix and Posner (1998) criticized such investigation on the grounds that it "leaves us without an explicit articulation of the mechanism by which the ability of people in society to co-operate affects the performance of the governmental institutions" (p. 689). Our study takes this concern into account by investigating the interaction between citizens and their state. Specifically, we measure the level of confidence citizens have in their political leaders or institutions. Our concept of government accountability is close to "approval" and "validation" and reflects a widespread belief that government actions are in the best interests of the citizenry (Slemrod, 2003). To capture such an interpretation, we measure government accountability as the ratio of concurrence between Swiss state (cantonal) governments' recommendations of an issue be put to a vote and the actual outcome at the ballot, while also taking into account the number of ballots per year as a measure of citizens' opportunity to express their preferences. The result is a proxy that measures the *observable behaviour* of individuals interacting with government.

If citizens and authorities interact with a sense of collective responsibility influenced by institutional structures, the system may be better governed and its policies, more effective because accountability promotes effectiveness through its impact on government behaviour. It is also reasonable to argue that prudent debt management – and thus a certain level of fiscal discipline – can be seen as a proxy for governmental performance. Therefore, we focus on public debt as a dependent variable. Moreover, as stated above, ballots help increase

governmental accountability by forcing responsiveness to citizen preferences and the underlying social contract, and accountability signals stronger social cohesion between the electorate and the government. Thus, we derive the following hypothesis:

Hypothesis: *The stronger the government accountability in a jurisdiction, the better its fiscal performance*.

3. Measuring Accountability in Swiss Cantons

Data sets related to the political process in Swiss cantons offer a rich resource for measuring accountability. In this study, we use information from direct voter participation in political issues decided by voter initiatives and public referenda as an approximation for accountability (a detailed discussion of the voting system in Switzerland is provided in Appendix A). In Switzerland, several aspects of accountability are important to direct voter participation. Launching a voter initiative or vetoing government decisions by popular referendum may reflect distrust in government. Thus, even assuming the government is benevolent, such instruments can prove useful if the government falls out of step and errs in interpreting voter preferences (Matsusaka, 2004, 2005). This may be the case for example, as a result of strong political polarization on a specific issue or high information costs. Conversely, if social cohesion in the electorate is strong, government can more easily implement policies according to electoral preferences because they make fewer mistakes in interpreting voter preferences. Hence, if social cohesion is strong, fewer government decisions will be vetoed and fewer voter initiatives successfully launched. In consequence, electoral support of government decisions is a useful indication of accountability.

If the government is not benevolent, direct voter participation has the potential to control politicians' discretionary power. Not only can voter control help limit the abuse of political power by selfish politicians, but when citizens cannot completely foresee incumbents' preferences, elements of direct democracy empower them with an instrument for controlling

government. Such control has an ex ante effect on policy formulation by elected incumbents in that they must always take into account possible voter intervention. If politicians should try to abuse their policy discretion, voters will increasingly reject government proposals. Thus, the support of government decisions by direct voter participation is also a measure of trust in government. If government proposals acknowledge common interests, voters will support the trustworthiness of their incumbents at the ballots.

To take into account these aspects we collected data from all cantonal ballots held between 1981 and 2001 in all 26 Swiss cantons[1]. As Table 1 shows, of 3,100 cantonal ballots held, 75.7% succeeded in the sense that they supported government proposals. The variation ranges from Jura with a ratio of 37.7 % to Appenzell a. Rh. with a ratio of 94.3 % of government proposals accepted. Interestingly, the number of ballots held varies considerably among cantons, possibly because some cantons offer much broader opportunities for voter participation than others (see Feld and Matsusaka, 2003; Feld, Schaltegger and Schnellenbach, 2004). Even though institutional provisions on direct legislation change little over time, we take this institutional variation into account by using state (cantonal) intercepts in our regression analyses. However, the number of ballots held not only provides information on institutional variation but also on accountability, important in our case because the mere acceptance rate of ballots held during a year does not cover this special aspect. Specifically, more ballots imply a higher validation of policy choices by government. This higher validation or shorter intervals between ballots are important when electoral preferences are changing or when uncertainty exists about preferences on a concrete policy project (Matsusaka, 2004, 2005). Moreover, ballots provide additional information for the government, thereby enriching the decision-making process[2].

Based on the above, we construct our government accountability measure using the ratio of ballots accepted to government proposals multiplied by the number of ballots held (acceptance X

[1] No distinction between initiative and referendum is made.

validation). This particular measure allows incorporation of two aspects – acceptance of government decisions and validation of government decisions. We include both measures in our variable because they are not independent of each other. The validation of government decisions fosters their acceptance by offering individuals the opportunity to express their preferences. Thus, the preferences of the people who bear the costs and reap the benefits of government actions become visible, which fosters citizen trust. On the other hand, a higher acceptance of government decisions preserves government's interest in using ballots as an instrument and thus preserves the validation of government decisions[3]. As a result, it is useful to include both aspects as one variable in our model.

[TABLE 1 ABOUT HERE]

As Figure 1 shows, accountability varies considerably among cantons over the 1981–2001 period (see also Appendix C2). Canton Jura has the lowest value, 0.57; Canton Glarus, the highest at 13. As regards the standard deviation, the table in Appendix C2 also indicates a certain variation within a canton over time. Thus, accountability cannot be expected to measure anything like cantonal homogeneity[4]. A similar variation occurs in trust over time (see Figure 2). The lowest value of trust, 3.615, occurred in 2001; the highest, 5.75, in 1988. Such a strong variation both among cantons and over time allows the use of *within*-country variation to identify the effects of trust on government fiscal performances.

It is also interesting to note that the correlation between real GDP growth and government accountability is only 0.0323, indicating that our measure does not simply reflect

[2] In general, previous studies have shown that repeated interactions or a higher level of familiarity facilitate trust (see e.g. Glaeser et al., 2000; Alesina and La Ferrara, 2002).
[3] This argument is supported by the level of correlation between the variables. Moreover, it should be noted that including both aspects in one variable leads to slightly better predictions.
[4] Conducting a multivariate panel analysis will also allow better isolation of the impact of government accountability.

subjective well-being or perhaps even government's general popularity, which many empirical studies have found to be influenced by economic development[5].

[FIGURE 1 AND 2 ABOUT HERE]

One relevant issue is whether our accountability derived from field data is correlated with social capital measured with survey data. To investigate this question, we take advantage of the *International Social Survey Programme (ISSP)* – a cross-national collaboration begun in 1983 that has grown to over 30 nations (mostly European countries) – which amalgamates different types of social science projects. Specifically, we analyze the data set ISSP 1998 RELIGION II[6] (the Swiss data for 1999), which allows social capital to be measured by survey data. In line with previous social capital studies, we measure our alternative survey-based trust variable with the following question:

> *Generally speaking, would you say that people can be trusted or that you can't be too careful in dealing with people?* (1= You almost always can't be too careful in dealing with people, 2= You usually can't be too careful in dealing with people, 3= People can usually be trusted, 4= People can almost always be trusted).

The number of cantons (states) in Switzerland (26) allows us to exploit trust at the aggregated level by using the average within each canton to analyze the simple correlation between the survey trust variable and our average cantonal accountability variable derived from field data. As Figure 3 shows, there is a strong positive correlation (Pearson $r = 0.53$), which is statistically

[5] For an overview see e.g., Pickup (2004).

[6] The population surveyed in Switzerland consisted of German, French or Italian speakers aged between 16 and 75, who were living in Switzerland in 1999. The survey questions were asked in a written questionnaire sent by post to people who had already taken part in another telephone interview project, "Religion and the social bonds". The households and their representatives were selected by means of a random-random method based on a random system that prevented the questioning of several people within the same household.

significant at the 0.01 level. The correlation remains statistically significant at the 0.05 level if we use only the 1999 field data and not the average among all years (Pearson $r = 0.36$). Thus, there is a strong correlation between our behavioural variable measuring *observable behaviour* and the social capital variable derived from survey data measuring *attitudes*.

[FIGURE 3 ABOUT HERE]

4. Empirical investigation

To test whether government accountability fosters fiscal discipline, we propose the following baseline equation:

$$DEBT_{it} = \alpha + \beta\, CTRL_{it} + \zeta ACCOUNT_{it} + TD_t + CD_i + \varepsilon_{it} \quad (1)$$

where i indexes the 26 cantons in the sample, $DEBT_{it}$ denotes the cantonal debt levels per capita and per GDP over the 1981–2001 period and $ACCOUNT_{it}$ is our indicator for government accountability as described in the previous section. The regression also contains several control variables, $CTRL_{it}$, including GDP per capita, share of urban population, share of workforce, share of population with higher schooling, share of unemployed, share of pensioners, share of pupils, population and a variable for the share of German-speaking population in a canton. To control for time as well as cantonal invariant factors, we include fixed time, TD_t, and fixed cantonal effects, CD_i. ε_{it} denotes the error term[7].

4.1. Initial results

[7] For definitions of the variables, see Appendix B; summary statistics are provided in Appendix C1.

Table 2 presents three different types of empirical methodology: pooling, random effect and fixed effect regressions using cantonal debt levels per capita and debt levels per GDP as dependent variables. In the pooled estimations, the *beta* or *standardized* regression coefficients compare magnitude, which reveals the relative importance of which variables are used. To obtain robust standard errors in these estimations, we use the Huber/White/Sandwich estimators of standard errors. To check which is most suitable, we perform the Lagrangian Multiplier (LM) test (see Breusch and Pagan, 1980) to assess the random effect versus the pooling model, as well as the Hausman specification test (see 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 both dependent variables, which suggests that pooling regression is less suitable than random effect regression. Based on the Hausman test, the null hypothesis is rejected at the 5% significance level when cantonal debt levels per capita are used and at the 1% significance level when debt levels per GDP are employed. Because this outcome suggests that fixed effect models are more appropriate, for all the following extensions, we present fixed effect regressions. As the multivariate analysis shows, once other determinants are controlled for, government accountability has a statistically significant negative impact on fiscal discipline (public debt) in all the regressions presented in Table 2. Thus, our hypothesis finds strong empirical support in the examination of Swiss cantons over the period 1981–2001.

[TABLE 2 ABOUT HERE]

Not surprisingly, in most cases, the real GDP per capita reduces public debts significantly and sizeably. In contrast, the share of urban population pushes up debt levels. This latter points to a higher governmental willingness to increase public debts in urban areas, possibly because of problems specific to central cities such as social heterogeneity. Thus, provision and maintenance

of central city infrastructure like higher education, traffic, public health, public security or cultural facilities require high government revenue for the central city. At the same time, the tax bases in central cities are sensitive to high tax burdens. People react to tax incentives and move from the centre to nearby local communities whose tax burden is lower. Indeed, the asymmetry of spending claims and revenue capacity is often seen as a major driving force for problems of fiscal discipline in urban jurisdictions (Frey, 1990; Brueckner, 1983).

As might be expected, socio-demographic factors such as the share of elderly and the share of pupils also push up debt levels. These two groups have only a limited perception of the initiated costs. In addition, pensioners especially have an incentive to finance public services by deficit spending, thereby postponing the costs for future generations (Meltzer and Richard, 1981). The language variable is significantly negative, indicating that the German-speaking population cares more about fiscal discipline than their French- and Italian-speaking counterparts. This result is very much in line with those for federal ballots and parliamentary behaviour from the roman part of Switzerland. The other control variables have no robust and significant impact on public debt. In particular, highly educated citizens seemingly have no significant positive impact on fiscal discipline: that is, they do not demand a more fiscally prudent government, which is somewhat surprising. Rather, a "supply side" effect might have been expected since better educated citizens provide a larger tax base that in turn may make it easier to offer higher salaries to public servants and provide a larger pool of talent from which the government can recruit (Knack, 1999).

4.2. Endogeneity

Table 3 differs from previous tables in terms of the instruments used for our government accountability variable. Evaluating the direct effect of accountability on fiscal performance in a setting where unobserved voter preferences might affect both accountability and fiscal

performance requires an instrumental variable technique to separate the impact of accountability from underlying voter preferences. Moreover, it can be argued that citizens may be more willing to trust a government that maintains a higher level of fiscal discipline. However, when voters go to the polls, data on public debts for the current year, which are usually published the following year, are unknown[8]. This may reduce the causality problem. On the other hand, such an argument does not allow to dismiss the possibility of reverse causation to the extent that there is a certain persistence in debt levels over time. Thus, we empirically investigate any potential causality problem. In Table 3, we report eight 2SLS estimations together with several diagnostic tests and the first stage regressions in Table 4. Table 3 indicates that for the 2SLS, the coefficient of the political accountability variable remains statistically significant. Moreover, coefficients for government accountability in are not smaller compared to the previous table, suggesting little reverse causation between government debt and political accountability. If reverse causation biased the coefficient for government accountability upward in Table 2, the coefficient estimated using 2SLS should be smaller (see Knack, 1999).

To check the robustness, we use several different instruments. First we include two different weather indicators together with the cantonal level of convictions related to serious offences. Including weather conditions as an instrument for accountability is quite novel. The choice of adequate instruments for institutions is not extensively addressed in the literature (see, e.g., Kaufmann, Kraay and Zoido-Lobatón, 1999; Bai and Wei, 2000, Kaufmann, Mehrez and Gurgur, 2002). More recent studies stress the relevance of considering historical and geographic features of the countries as instrumental variables as they influence the outcome through their impact on the institutional and political environment (see, e.g., Hall and Jones, 1999; and Acemoglu, Johnson and Robinson, 2001). Recent studies such as the ones of Alesina et al.

[8] According to a yearly survey conducted on behalf of the Swiss Federal Department of Finance, the electorate is relatively well informed on public finances. In 2004 for example, 35 % of all the 1516 interview participants estimated the accumulated level of debt for the federal level correctly (the interviews were conducted by Demoscope, a professional Swiss institute of market research).

(2002) or La Porta et al. (1999) offer a broad data set to consider factors such as latitude, ethnic fractionalization, language, and religion. However, our estimation results indicate that factors such as language have an impact of our dependent variable. Thus, focusing on the weather conditions is closer linked to geographic features of a country. Moreover, there is an increasing amount of studies that stress that climatic conditions have an impact on countries' or regions' institutions and their development (see, e.g., Landes, 1998). Due to the geographic diversity of Switzerland, we also observe strong differences in the weather conditions between the cantons. We develop two weather indexes: 1) yearly cantonal precipitation (in millimeters) multiplied by the cloudiness (in percentage), and 2) cantonal precipitation multiplied by cloudiness divided by the sunshine duration (in minutes)[9]. Both weather indexes are proxies of bad weather conditions. Such external situations may not only affect the character of inhabitants and hence their culture and institutional arrangements, but may also affect voters' political awareness due to lower opportunity costs of alternative outdoor activities.

As a second instrument we include convictions of serious offences (homicides, rape, drug dealing thievery, fraud). Convictions of such serious crimes may produce a signaling that government is willing and capable in dealing with illegal activities. A better performance may make the government more accountable.

In a next step we use a proxy for cantonal's political culture to instrumentalize political accountability. Culture is embedded in the existing institutional complex, which, as Greif (1998, p. 82) pointed out, "is not a static optimal response to economic needs, [but rather] a reflection of an historical process in which past economic, political, social, and cultural features interrelate and have a lasting impact on the nature and economic implications of a society's institutions". As such a proxy we take the level of political participation (voter turnout) in ballots at the federal level. Focusing on federal rather cantonal ballots is insofar relevant, as all the cantons have to

[9] We use the place with the highest population in case there is more than one weather station in a canton. For those cantons that have not a weather station, we build the average weather conditions of all the neighbour cantons.

vote for the same issues. We observe a certain difference between the cantons with values between 35% (GR) and 68% (SH) throughout the period 1981 to 2001. Finally, we also consider the number of years since women's voting rights were introduced in the cantons. Such a variable can also be seen as an indicator of cantons' political culture.

Table 4 shows that these instruments are effective in explaining political accountability. All factors are statistically significant at the 5% or 1% level. Moreover, the *F*-tests for the instrument exclusion set in the first-stage regression are statistically significant in all three cases at the 1% level. In addition, Table 3 also reports a test for instrument relevance using the Anderson canonical correlations LR for whether the equation is identified. The test shows that the null hypothesis can be rejected, indicating that the model is identified and the instruments are relevant (see Hall, Rudebusch and Wilcox 1996). The Anderson-Rubin test suggests that the endogenous variables are jointly statistically significant. Such a test is robust to the presence of weak instruments. We also present the Sargan's (1958) test for over-identification for the first four 2SLS to examine the validity of the exclusion restrictions. The test results indicate that the Sargan tests fail to reject the null hypotheses that our instruments are valid ones (p-values between 0.75 and 0.93), which supports the validity of the used instruments.

[TABLE 3 AND 4 ABOUT HERE]

In a next step, we perform a Granger causality test to investigate the relationship between government accountability and fiscal performance (see Granger, 1969). The notion of Granger causality suggests that if lagged values of accountability help to predict the current values of fiscal performance in a forecast (formed from lagged fiscal performance and lagged accountability values), then accountability Granger causes fiscal performance. On the other hand, if the same lagged values help to predict the values of current government accountability,

we can argue that fiscal performance Granger causes government accountability. To conclude that one of the two came first, we must find unidirectional causality from one to the other. To perform the Granger causality test we perform symmetric regression tests using our two different dependent variables. Table 5 shows that in both cases we can reject the non-causality between accountability and public debt and at the same time fail to reject the non-causality between public debt and accountability. Thus, the test results indicate a rejection of the hypothesis that government accountability does not Granger cause public debt. On the other hand, they provide no such rejection of the hypothesis that public debt does not Granger cause government accountability. Therefore, we can conclude that government accountability came first.

[TABLE 5 ABOUT HERE]

4.3. Sensitivity Analysis

It can be argued that institutional differences reflect long-standing differences in voter trust of government. To check whether this claim holds true, Table 6 presents estimations that control for democratic participation rights. The direct democracy index used reflects the extent of direct democratic participation (1= the lowest and 6, the highest degree of participation) at the cantonal level.[10] As is apparent for most cases, the variable accountability remains statistically significant after democratic participation rights are controlled for. A higher level of direct democratic participation rights also has a significantly negative effect on public debts. In addition, Table 6 indicates a relatively strong quantitative effect. In general, it should be noted that there is a relatively high correlation between accountability and the index of direct democracy (r =

[10] The index includes four legal instruments: the popular initiative to change the canton's constitution, the popular initiative to change the canton's law, the compulsory and optional referendum to prevent new law or change a law and the compulsory and optional referendum to prevent new state expenditure. The index is based on the degree of restrictions in form of the necessary signatures to use an instrument, the time span to collect the signatures and the level of new expenditure that allows use of the financial referendum (for a detailed discussion, see Stutzer, 1999).

0.42***, significant at the 0.01 level), which may explain the lower effect of accountability. By taking into account the number of ballots held out, the accountability also controls for institutional variation. Moreover, government accountability and direct democratic participation rights are not independent of each other. A higher level of direct democracy may foster accountability by imposing credible constraints on politicians and public officials, thereby eliciting voter trust as a rational response (see Rose-Ackerman, 2001). As Sztompka (1999) pointed out, "the more there is institutionalized distrust, the more there will be spontaneous trust" (p. 140). The strength of the trust and the direct democratic variable were also evaluated using joint hypothesis tests. The *F*- and chi-square statistics indicate that the hypothesis is rejected, meaning that both factors together play a significant role in the determination of public debt. In combination, the variables are jointly significant at the 1% level in all regressions, providing strong evidence of their importance.

[TABLE 6 ABOUT HERE]

In a further step, we investigate whether outliers are important. As shown in Appendix D, two cantons, Basel-Stadt (BS) and Geneva (GE), are considered to be outliers because of their relatively and extraordinarily high level of indebtedness. Therefore, to check the robustness of the results, we remove these two cantons from our sample (to exclude outliers). Columns (2) and (7) in Table 7 present the results. The coefficients of the variable government accountability remain statistically significant even after outliers are excluded. In two subsequent regressions, we take into account that the canton of Appenzell a.Rh. is an outlier for 1996, in which year it sold its cantonal bank to the UBS. The results remain robust with *t*-values for our accountability variable of –2.73 (debt p.c.) and –2.15 (debt per GDP). We also run two specifications that resist the pull of outliers, giving them a better efficiency using iteratively re-weighted least squares

with Huber and bi-weight functions tuned for 95% Gaussian efficiency (Hamilton, 2004). As a consequence more extreme outliers are less heavily weighted in the regression calculations or are even dropped for very extreme cases. The results of the two regressions reported in columns (3) and (8) also indicate that our basic hypothesis is strongly supported.

In the next procedure, we include several additional variables in the baseline equation. First, a variable capturing the degree of centralization of Swiss canton governments is used to check the sensitivity of our results (see columns (4) and (9)). As shown by Shadbegian (1999) and other researchers for US states and by Feld, Kirchgässner and Schaltegger (2003) and Schaltegger (2003) for Swiss cantons, government centralization favours the size of government. De Mello (2004) has shown in a cross-country study that fiscal decentralization also strengthens social capital. Thus, it is not surprising that in our analysis, government centralization also has high explanatory power for level of government indebtedness. It should also be noted that after government centralization is included, accountability remains an important and significant feature in explaining government fiscal performance. Other institutional variations in Swiss cantons that vary little over time are not included in our regressions since state (canton) dummy variables have been included that would render these institutional feature variables insignificant.

An alternative measure of government accountability is the commitment made by house proprietors to their jurisdiction by voluntarily increasing their opportunity costs for the exit option to migrate to another jurisdiction[11]. However, the inclusion of the share of housing proprietors as a further regressor in the equation does not significantly increase the explanatory power of our public debts regressions (see columns (5) and (10)).

[11] It should be noted that the simple correlation of the variables "government accountability" and "share of housing proprietors" in our data sample is rather weak, with a value of 0.017.

We also control in columns (6) and (11) for the religious composition of the cantons[12]. Putnam (2000) recognized religion denomination as an important factor in building social capital. Knack (1999) found a high correlation between social capital and mainstream Protestants in US states. Hence, religious composition may serve as a good instrument for trust. Indeed, La Porta et al. (1997) and Knack (1999) both used religious composition as an instrument for interpersonal trust. However, in our case, there is only a weak and simple correlation between accountability and the share of Protestants (0.394) or Catholics (0.348). Thus, we performed a further sensitivity analysis to evaluate whether these two variables affect the size or the significance of our trust variable. Columns (6) and (11) show that after inclusion of the two most important religious groups in Switzerland, accountability still has a statistically significant negative impact on level of indebtedness. Interestingly, religious denomination does impact fiscal performance: we obtain a negative impact of Protestantism on cantonal indebtedness but the Catholic share of total cantonal population is positively associated with level of debt. The negative impact of the Protestant share can be explained by the Protestant work ethic, which emphasizes specific values like prudent re-investment of savings, individual entrepreneurial initiatives and independence (see Weber, 1930; Norris and Inglehart, 2004). Such individual moral values seemingly have an impact on state fiscal discipline, especially in societies based on active political participation rights.

[TABLE 7 ABOUT HERE]

In sum, after a check for endogeneity and several checks for robustness, the significant impact of government accountability remains unaffected.

[12] There is a high simple correlation between the two regressors, share of Protestants and share of Catholics (-0.921). However, eliminating either the former or the latter variable from the regression barely changes the estimated coefficients or their significance level.

5. Conclusion

This panel analysis within Switzerland provides evidence for the hypothesis that government accountability influences fiscal performance. The stronger accountability between the government and the electorate is established, the sounder the fiscal policy decisions and hence the lower the public debts. Moreover, our results remain robust after endogeneity is exploited and several robustness tests conducted (e.g. inclusion of additional variables, exclusion of outliers). In our case, we use information from direct voter participation in the political decisions (voter initiatives and public referenda) of Swiss state governments to measure government accountability. In order to take these aspects into account we collected data from all cantonal ballots held between 1981 and 2001 in all 26 Swiss cantons. In total, we analyzed data from 3,100 cantonal ballots that were held during our period of observation. Whereas 75.7 % of the ballots succeeded in the sense of supporting government proposals, 24.3% failed to support the government. However, since there is considerable variation in the extent to which Swiss cantons offer possibilities for direct voter participation, the ratio of accepted government proposals gives a biased picture of accountability. Rather, to take the institutional variation into account, we construct our accountability measure as the ratio of the ballots that accepted government proposals multiplied by the number of ballots held (acceptance X validation).

These results are consistent with those reported by Putnam (1993) for Italian regions, Knack and Keefer (1997), La Porta et al. (1999) and Zak and Knack (2001) for cross-country regressions or Knack (1999) for US state government data on government performance. However, this paper is unique in its use of an accountability proxy that measures individuals' observable behaviour rather than their attitudes or statements. The results show that our behavioural variable is highly correlated with social capital measured at the attitudinal level by

surveys. We also go beyond a cross-sectional data analysis by employing a panel study that covers a period of over 20 years.

The results presented in this paper mirror those in previous studies and underscore the importance of accountability as an essential aspect for the efficient functioning of government and the existing institutional architecture. However, understanding how social capital is built and how government can foster accountability remains a fruitful field for further research.

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TABLES

Table 1

Ballots in all 26 Swiss cantons from 1981 to 2001

Total ballots	3100
Average number of ballots per year	148
Average number of ballots per canton	119
Lowest value (number of ballots)	22 (Jura)
Highest value (number of ballots)	285 (Zurich)*
Ratio of accepted government proposals	75.7 %
Highest value (ratio of accepted government proposals)	94.3 % (Appenzell a. Rh.)
Lowest value (ratio of accepted government proposals)	37.7 % (Jura)

*In the town meeting of Canton Glarus, 294 ballots were held.

Table 2

Regression results on the impact of trust on public debt; 26 Swiss cantons, 1981–2001

Dependent variable:	Debt per capita				Debt per GDP			
Explanatory variables	OLS	OLS	RE	FE	OLS	OLS	RE	FE
Government Accountability	-0.090***	-0.075***	-0.004***	-0.004***	-0.093***	-0.066**	-0.001**	-0.001**
	(-3.71)	(-2.96)	(-2.76)	(-2.72)	(-3.52)	(-2.44)	(-2.14)	(-2.14)
GDP	-0.055	-0.379***	0.117	-0.806***	-0.512***	-0.876***	-0.254***	-0.481***
	(-0.57)	(-2.81)	(0.57)	(-2.90)	(-4.84)	(-6.24)	(-4.17)	(-5.99)
Labour force	0.005	0.079	0.329	0.564	-0.003	0.016	0.005	0.030
	(0.16)	(1.57)	(0.90)	(1.53)	(-0.09)	(0.29)	(0.05)	(0.28)
Higher schooling	0.347***	0.058	0.857***	0.227	0.419***	0.075	0.304***	0.075
	(4.77)	(0.64)	(2.96)	(0.74)	(5.19)	(0.77)	(3.58)	(0.86)
Unemployment rate	0.067**	0.033	0.021***	0.004	0.048	0.073	0.009***	0.002
	(2.09)	(0.45)	(2.74)	(0.50)	(1.22)	(0.91)	(4.11)	(1.00)
Urban	0.362*	0.613***	0.583***	0.564**	0.511**	0.868***	0.212***	0.206***
	(1.90)	(3.02)	(4.33)	(2.51)	(2.18)	(3.58)	(5.38)	(3.18)
Population	0.593	-3.279**	-0.025	-1.553***	2.781***	-1.822	-0.005	-0.223
	(0.72)	(-2.56)	(-0.33)	(-3.25)	(3.83)	(-1.24)	(-0.23)	(-1.61)
Population >65	0.318***	0.210**	2.507***	2.332***	0.465***	0.314***	0.778***	0.899***
	(4.53)	(2.30)	(3.05)	(2.53)	(5.40)	(3.10)	(3.23)	(3.38)
Population <15	0.636***	0.608***	5.626***	5.787***	0.967***	0.895***	2.048***	2.201***
	(6.39)	(4.56)	(6.76)	(6.47)	(7.90)	(5.53)	(8.39)	(8.53)
German language	-1.549***	-2.860***	-0.132	-1.856***	-3.474***	-4.888***	-0.048*	-0.819***
	(-3.18)	(-4.29)	(-1.39)	(-4.08)	(-6.00)	(-6.73)	(-1.71)	(-6.24)
State (canton) effects	Yes	Yes	No	Yes	Yes	Yes	No	Yes
Year effects	No	Yes	Yes	Yes	No	Yes	Yes	Yes
LM test			0.000				0.000	
Hausman test			0.021				0.000	
R^2	0.815	0.831	0.399	0.822	0.765	0.789	0.270	0.766
# of observations	546	546	546	546	546	546	546	546

t-statistics in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively. RE: random effect, FE: fixed effect. OLS estimations: robust standard errors and beta coefficients. Lagrangian Multiplier test (LM test): tests the random effect model versus the pooling regression. Hausman specification test: tests the fixed effect mode versus the random effect model. For definitions of variables see Appendix B, summary statistics are provided in Appendix C1.

Table 3

2SLS regression results

Dependent variable:	Debt p.c. [a]	Debt p. GDP [a]	Debt p.c. [b]	Debt p. GDP [b]	Debt p.c. [c]	Debt p. GDP [d]	Debt p.c. [d]	Debt p. GDP [e]
FE	1a	1b	2a	2b	3a	3b	4a	4b
Independent Var.	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS
Government	-0.028**	-0.005**	-0.027**	-0.006**	-0.060**	-0.017**	-0.101**	-0.032**
Accountability	(-2.47)	(-1.98)	(-2.29)	(-1.99)	(-2.16)	(-2.14)	(-2.20)	(-2.20)
GDP	-0.568	-0.434***	-0.587	-0.428***	0.754***	0.018	0.35	-0.133
	(-1.40)	(-4.51)	(-1.47)	(-4.31)	(4.05)	(0.34)	(-0.56)	(-0.68)
Labour force	0.889*	0.078	0.857*	0.087	3.588*	1.025*	-0.19	-0.078
	(1.72)	(0.64)	(1.68)	(0.69)	(1.83)	(1.85)	(-0.26)	(-0.35)
Higher schooling	0.409	0.106	0.393	0.111	2.902***	0.942***	0.865	0.267
	(0.97)	(1.06)	(0.95)	(1.08)	(3.69)	(4.24)	(1.14)	(1.12)
Unemployment rate	-0.003	0.001	-0.003	0.001	-0.015	-0.002	0.017	0.004
	(-0.29)	(0.27)	(-0.28)	(0.24)	(-0.69)	(-0.29)	(1.41)	(1.12)
Urban	0.245	0.156*	0.264	0.150	-0.118	-0.027	-0.164	-0.036
	(0.62)	(1.65)	(0.68)	(1.54)	(-0.59)	(-0.48)	(-0.24)	(-0.17)
Population	-1.528**	-0.382**	-1.551**	-0.375**	-0.017	-0.004	0.132	0.293
	(-2.21)	(-2.32)	(-2.29)	(-2.22)	(-0.48)	(-0.43)	(0.13)	(0.94)
Population >65	3.130**	1.166***	3.107**	1.173***	4.439***	1.256***	1.36	0.644
	(2.54)	(3.98)	(2.58)	(3.91)	(3.71)	(3.72)	(0.51)	(0.77)
Population <15	6.616***	2.171***	6.563***	2.186***	2.531*	1.250***	4.520**	1.889***
	(4.77)	(6.60)	(4.83)	(6.46)	(1.88)	(3.28)	(2.13)	(2.83)
German language	-1.106*	-0.611***	-1.119*	-0.608***	0.244*	0.068*	-0.884	-0.544
	(-1.89)	(-4.41)	(-1.96)	(-4.27)	(1.90)	(1.86)	(-0.81)	(-1.57)
State (canton) effects	Yes	Yes	Yes	Yes	No	No	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Anderson canon. corr. LR statistic	11.470***	11.470***	10.435***	10.435***	7.270***	7.270***	4.972**	4.972**
(*p*-value)	0.003	0.003	0.005	0.005	0.007	0.007	0.026	0.026
Anderson Rubin test	5.07***	2.46*	4.24**	2.62*	12.07***	11.19***	4.97**	51.51***
(*p*-value)	0.007	0.087	0.015	0.074	0.001	0.001	0.026	0.000
Sargan statistic	0.102	0.003	0.008	0.008				
(*p*-value)	0.75	0.95	0.93	0.93				
# of observations	447	447	447	447	546	546	546	546

Notes: *t*-statistics in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively. Instruments: [a] Weather index 1 and serious crimes as instruments. [b] Weather index 2 and convictions of serious offences as instruments. [c] Political culture as an instrument. [d] Women's political participation rights as an index.

Table 4

First stage regressions

Dependent variable: Government Accountability				
First Stage Regressions				
FE	1a + 1b	2a + 2b	3a + 3b	4a + 4b
Weather index 1	0.006**			
	(2.43)			
Weather index 2		430.437**		
		(2.22)		
Convictions of serious offences	0.003**	0.003**		
	(2.29)	(2.26)		
Political culture			0.071***	
			(2.68)	
Women's political participation				-0.164**
				(-2.21)
GDP	14.590	14.147	1.544	13.501*
	(1.46)	(1.42)	(0.59)	(1.95)
Labour force	24.322**	24.186**	67.617***	-4.511
	(2.01)	(2.00)	(9.43)	(-0.64)
Higher schooling	11.351	10.276	22.852***	5.814
	(1.06)	(0.96)	(3.56)	(0.67)
Unemployment rate	-0.145	-0.110	-0.653***	0.102
	(-0.53)	(-0.40)	(-2.98)	(0.94)
Urban	-12.344	-12.825	-7.709***	-7.916
	(-1.27)	(-1.32)	(-6.68)	(-1.23)
Population	8.391	10.210	0.633	18.218
	(0.47)	(0.57)	(1.26)	(1.39)
Population >65	13.252	19.407	36.779***	-10.488
	(0.41)	(0.60)	(3.48)	(-0.43)
Population <15	24.632	31.968	-2.352	-14.746
	(0.70)	(0.91)	(-0.13)	(-0.76)
German language	13.112	12.971	3.143***	9.343
	(0.85)	(0.84)	(3.76)	(0.82)
State (canton) effects	Yes	Yes	No	Yes
Year effects	Yes	Yes	Yes	No
Test of excluded instruments	5.43***	4.93***	7.18***	4.90**
Prob>F	0.005	0.008	0.008	0.027

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

Table 5

Granger causality test

	Coeff.	*t*-value
Did accountability come first?		
H0: Government accountability does not Granger cause public debt Dependent variable: debt p.c.		
Independent variables		
Lagged government accountability	-0.011***	-2.73
Lagged debt p. c.	0.884***	12.67
Did public debt come first?		
H0: Public debt does not Granger cause trust		
Dependent variable: accountability		
Independent variables		
Lagged accountability	0.401***	3.12
Lagged public debt	3.374	1.57
Did accountability come first? Dependent variable: debt p. GDP		
Independent variables		
Lagged accountability	-0.013*	-1.68
Lagged debt p. c.	-0.436***	-3.65
Did public debt come first? Dependent variable: accountability		
Independent variables		
Lagged accountability	0.424***	3.18
Lagged public debt	2.110	1.03

Granger causality test using one lag and working with five-year averages to reduce the possible business cycle effects of a fixed effect model. *, ** and *** denote statistical significance at the 10%, 5% and 1% level, respectively.

Table 6

Robustness test including direct democratic participation rights

Dependent variable:	Debt p.c.	Debt p.c.	Debt p.c.	Debt p.GDP	Debt p.GDP	Debt p.GDP
Explanatory variables	OLS	RE	FE	OLS	RE	FE
Government	-0.059**	-0.003**	-0.003*	-0.062**	-0.001	-0.001
Accountability	(-2.35)	(-2.01)	(-1.79)	(-2.28)	(-1.61)	(-1.34)
Democratic participation	-0.650***	-0.080***	-0.106***	-0.643***	-0.016***	-0.026***
Rights	(-6.09)	(-3.89)	(-4.89)	(-4.70)	(-2.65)	(-4.12)
GDP	-0.086	0.019	-0.863***	-0.543***	-0.277***	-0.495***
	(-0.94)	(0.09)	(-3.17)	(-5.29)	-4.51	-6.25
Labour force	-0.010	0.222	0.341	-0.019	-0.016	-0.025
	(-0.34)	(0.61)	(0.94)	(-0.59)	(-0.15)	(-0.24)
Higher schooling	0.340***	0.980***	0.332	0.412***	0.327***	0.101
	(4.72)	(3.41)	(1.11)	(5.17)	(3.85)	(1.17)
Unemployment rate	0.062**	0.023***	0.004	0.043	0.009***	0.002
	(2.01)	(3.05)	(0.51)	(1.14)	(4.30)	(1.01)
Urban	0.217	0.548***	0.436**	0.367*	0.207***	0.175***
	(1.21)	(4.01)	(1.97)	(1.68)	(5.14)	(2.72)
Population	0.476	-0.079	-1.431***	2.664***	-0.016	-0.193
	(0.60)	(-1.00)	(-3.05)	(2.79)	(-0.68)	(-1.42)
Population >65	0.279***	2.408***	2.197**	0.426***	0.765***	0.866***
	(4.09)	(2.94)	(2.44)	(4.99)	(3.16)	(3.31)
Population <15	0.586***	5.513***	5.654***	0.917***	2.032***	2.168***
	(5.90)	(6.68)	(6.47)	(7.38)	(8.34)	(8.53)
German language	-1.947***	0.069	-1.986***	-3.868***	-0.009	-0.851***
	(-4.16)	(0.61)	(-4.46)	(-6.95)	(-0.27)	(-6.57)
Test joint sign. instit. (F-stat./χ2-stat)	29.86***	23.00***	15.80***	17.94***	11.69***	10.84***
State (canton) effects	Yes	No	Yes	Yes	No	Yes
Year effects	No	Yes	Yes	No	Yes	Yes
R^2	0.826	0.369	0.830	0.776	0.269	0.774
# of observations	546	546	546	546	546	546

t-statistics in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively. OLS estimations: robust standard errors and beta coefficients. RE: random effect, FE: fixed effect.

Table 7

Sensitivity analysis on the impact of accountability on public debt: 26 Swiss cantons, 1981–2000

Explanatory variables	Debt p.c.♣	Debt p.c.♥	Debt p.c	Debt p.c.	Debt p.c.	Debt p.GDP♣	Debt p.GDP♥	Debt p.GDP	Debt p.GDP	Debt p.GDP
Government	-0.004***	-0.002**	-0.004**	-0.004**	-0.004**	-0.001***	-0.001***	-0.001**	-0.001*	-0.001*
Accountability	(-2.65)	(-2.21)	(-2.58)	(-2.57)	(-2.54)	(-2.66)	(-2.73)	(-1.97)	(-1.96)	(-1.93)
Government			1.184***	1.179***	1.142***			0.354***	0.351***	0.341***
centralization			(6.22)	(6.19)	(6.08)			(6.45)	(6.41)	(6.32)
Share of registered house				-0.492					-0.227	
proprietors				(-0.91)					(-1.46)	
Share of Protestants					-0.447					-0.1978*
					(-1.11)					(-1.71)
Share of Catholics					1.100***					0.288**
					(2.66)					(2.43)
GDP	-1.013***	-0.450**	-1.141***	-1.089***	-1.263***	-0.491***	-0.400***	-0.581***	-0.557***	-0.619***
	(-3.13)	(-2.31)	(-4.17)	(-3.90)	(-4.66)	(-5.84)	(-6.67)	(-7.38)	(-6.93)	(-7.96)
Labour force	0.221	0.049	0.557	0.643*	0.301	-0.011	0.017	0.028	0.067	-0.033
	(0.50)	(0.19)	(1.57)	(1.75)	(0.81)	(-0.10)	(0.21)	(0.27)	(0.64)	(-0.31)
Higher schooling	-0.097	0.387*	0.160	0.186	0.139	-0.004	0.157**	0.055	0.067	0.052
	(-0.25)	(1.81)	(0.54)	(0.63)	(0.48)	(-0.04)	(2.39)	(0.65)	(0.79)	(0.62)
Unemployment rate	0.008	0.025***	0.002	0.003	-0.003	0.002	0.007***	0.002	0.002	0.0002
	(0.88)	(4.43)	(0.21)	(0.42)	(-0.34)	(0.61)	(4.11)	(0.71)	(1.04)	(0.08)
Urban	0.967***	0.149	0.734***	0.716***	0.922***	0.276***	0.098**	0.257***	0.249***	0.312***
	(4.29)	(0.94)	(3.37)	(3.27)	(4.19)	(4.46)	(2.02)	(4.09)	(3.95)	(4.95)
Population	-2.678***	-1.380***	-1.986***	-2.049***	-1.104**	-0.545***	-0.567***	-0.352***	-0.381***	-0.073
	(-3.95)	(-4.11)	(-4.26)	(-4.34)	(-2.17)	(-2.86)	(-5.49)	(-2.62)	(-2.81)	(-0.50)
Population >65	3.050***	-0.204	2.681***	2.904***	3.061***	0.893***	0.149	1.003***	1.106***	1.084***
	(2.85)	(-0.32)	(3.01)	(3.15)	(3.36)	(2.96)	(0.75)	(3.92)	(4.17)	(4.14)
Population <15	7.265***	1.642***	6.655***	6.930***	5.230***	2.289***	0.454***	2.460***	2.587***	1.931***
	(5.54)	(2.62)	(7.63)	(7.50)	(4.77)	(5.72)	(2.36)	(9.79)	(9.75)	(6.13)
German language	-2.258***	-1.850***	-1.792***	-1.732***	-2.224***	-0.804***	-0.948***	-0.800***	-0.772***	-0.929***
	(-4.78)	(-5.80)	(-4.09)	(-3.91)	(-5.00)	(-6.26)	(-9.67)	(-6.34)	(-6.06)	(-7.27)
State and year effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.659		0.835	0.835	0.840	0.680		0.784	0.785	0.792
# of observations	504	546	546	546	546	504	546	546	546	546

t-statistics in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively. ♣ excluding the values of cantons Basel-Stadt (BS) and Geneva (GE), which are considered outliers (see Appendix D). ♥ iteratively re-weighted least squares with Huber and bi-weight functions tuned for 95% Gaussian efficiency.

FIGURES

Figure 1: Government accountability measured as government support (acceptance X validation) for 26 Swiss cantons, average values for the 1981-2001 period

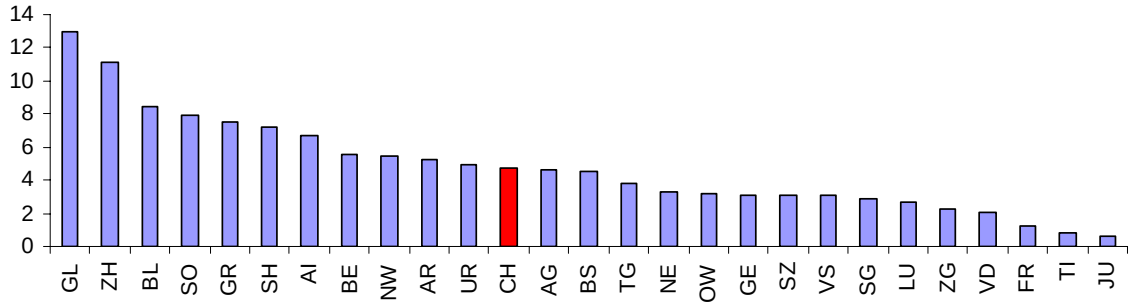


Figure 2: Government accountability measured as government support (acceptance X validation) from 1981 to 2001, average values for the 26 cantons

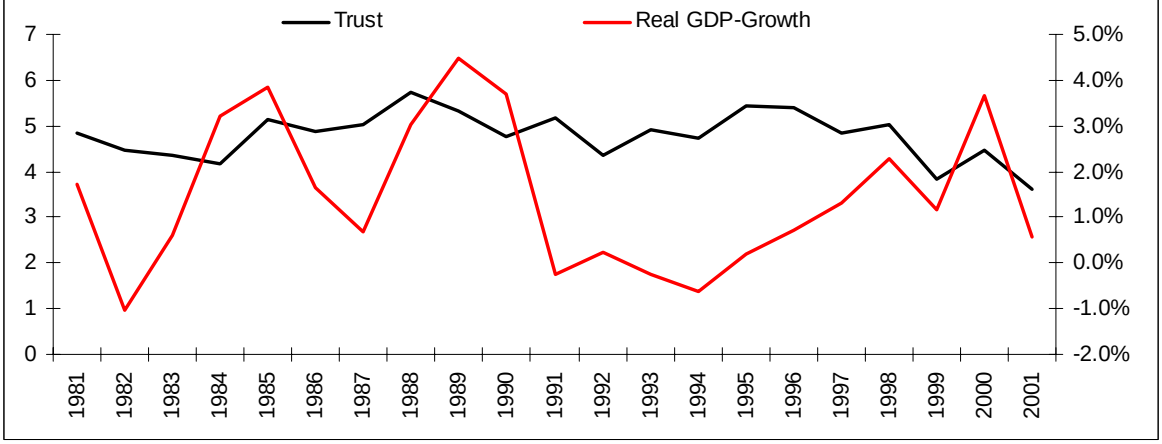
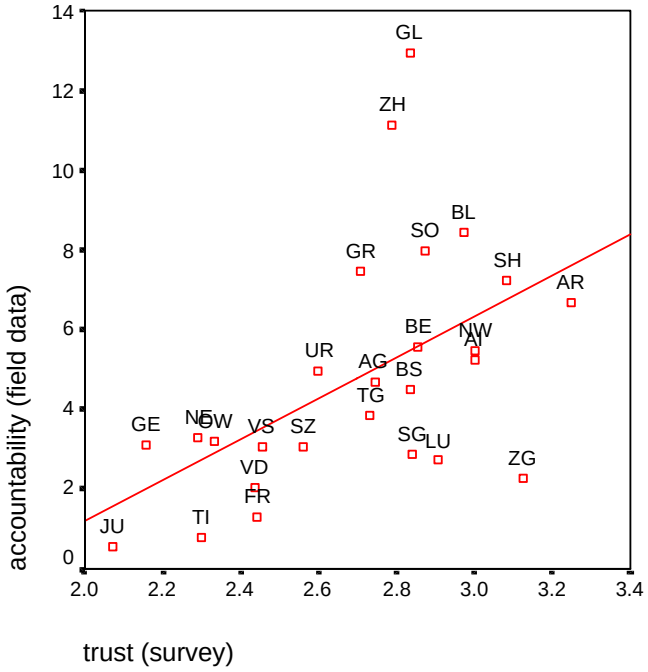


Figure 3: Accountability and Trust (Field and Survey Data)



Appendix A

Aspects of direct democracy in Swiss cantons

Quantifying the extent of direct legislation in a jurisdiction is not an easy task. Basically, there is a debate as to whether the relevant measure is the mere existence of direct popular rights via several instruments or the use of direct legislation by the voters. Rothstein (1996) distinguished between "rules in form" and "rules in use" (p. 146). On the one hand, it is argued that the effective use of direct democracy causes changes in politics. That is, the way political conflicts are resolved in a jurisdiction reflects the specific political culture, which eventually forces politicians to become active in several policy fields (Freitag and Vatter, 2000)[13]. On the other hand, it is argued that the mere possibility of making use of direct legislation forces politicians to adapt their behaviour and decisions. It is not necessary that these instruments actually be used, but rather that they could possibly be used. For example, governments often propose projects below the existing financial threshold that qualifies for a fiscal referendum (Feld and Matsusaka, 2003). Obviously, the mere existence of direct democracy has already had an impact on the politicians' behaviour. The same can be said for voter initiatives. If a powerful interest group threatens a voter initiative, a government proposal is frequently changed according to the group's claims so as to circumvent the initiative. Thus, governments must take direct popular rights into account when proposing a certain law or spending project.

The easier the use of direct democracy, the more likely that politics will differ compared to a purely representative democracy (Stutzer and Frey, 2000, p. 4). According to Trechsel and Serdült (1999), direct legislation in Swiss cantons can be divided into several different instruments. For the sake of comparability, Stutzer and Frey (2000) categorized these instruments into four different aspects: (1) the constitutional initiative, (2) the legislative initiative, (3) the legislative referendum and (4) the fiscal referendum. The weights for these different instruments of direct democracy are given according to the signature requirement to qualify for ballot. In the case of the fiscal referendum, the weights comprise the financial threshold for the spending project that qualifies for ballot.

The constitutional and the legislative initiative enable voters to put new proposals on the political agenda that have so far been neglected by the representative system. Thus, if the signature requirement is fulfilled within a prescribed time span, it is possible to launch a popular initiative for either a total revision or a partial revision of the constitution. The signature requirements, as well as the maximum time span to collect signatures, vary strongly among the 26 Swiss cantons; for example, in Canton Uri (UR) the requirement ranges from 300 signatures in the canton Uri (UR) to 15,000 signatures for a partial revision of the constitution, while a total revision of the constitution in Canton Bern (BE) requires 30,000 signatures. As regards the time span, some cantons have no time constraint for signature collection, while the shortest time span of three months occurs only in Canton Vaud (VD) (for a detailed survey, see Trechsel and Serdült, 1999, pp. 67 and 71).

The legislative referendum is possible in all Swiss cantons even though in different forms. Some cantons use the mandatory referendum, in which all new laws must be put directly to popular vote (no signature requirements); others use the optional referendum for which the signature requirements, as well as the collection time, vary considerably. The extreme values are 300 signatures within 90 days (Canton Uri, UR) and 12,000 signatures in 40 days (Canton Vaud, VD). Recently, there has been a distinctive trend to switch from the mandatory referendum to the optional referendum. (For a detailed survey, see Trechsel and Serdült, 1999, pp. 17 and 19).

In the case of the fiscal referendum, depending on the canton, spending projects that reach a defined financial threshold qualify for either the mandatory or optional fiscal referendum. The fiscal referendum in Swiss cantons distinguishes between non-recurring and recurring spending. Additionally, some cantons entitle not only spending to imputation on the fiscal referendum but also bonds, taxes, holdings on corporations and transactions for real estate. The following table provides an overview.

[13] Trechsel (2000) gave a detailed survey on all votes held in Swiss cantons and on the federal level from 1970 to 1996.

Table A1

The spending thresholds for fiscal referendums in Swiss cantons

Canton	Non-recurring expenditures[b]		Recurring expenditures[b]		Frey-Stutzer Index[a]
	Optional	Mandatory	Optional	Mandatory	
ZH[c]	Feb 20	20	0.2-2	2	4
BE	2	–	0.4	–	5
LU	Mar 25	25	Specific stipulations[d]		4.25
UR	0.5	1	0.05	0.1	5
SZ	–	0.25	–	0.05	4.38
OW	0.5	1	0.1	0.2	5
NW	0.25	5	0.05	0.5	5
GL	–	0.5	–	0.1	4
ZG	–	0.5	–	0.05	4
FR	0.25%	1%	0.25%	1%	2
SO	Feb 1	2	0.1-0.2	0.2	5
BS	1	–	0.2	–	4.25
BL	0.5	–	0.05	–	4.75
SH	0.3-1	0.3	0.05-0.1	0.05	4.5
AR	–	5%	–	1%	4
AI	0.25	0.5	0.05	0.1	3
SG	3.15	15	0.3-1.5	1.5	3.25
GR	May 1	5	0.3-0.5	0.5	4
AG	3	–	0.3	–	4.5
TG	1	3	0.2	0.6	4.5
TI	0.2	–	0.05	–	2.75
VD	–	–	–	–	3
VS	0.75%	–	0.25%	–	1
NE	–	1.50%	–	1.50%	1.5
GE	0.125	–	0.06	–	1
JU	0.50%	5%	0.05%	0.50%	2.5

Source: Lutz and Strohmann (1998); Stutzer and Frey (2000). [a] The index is constructed using the signature requirement, expressed as the number of signatures relative to the number of voters, the legal time limit, expressed as the days within which the signatures must be collected, and the financial threshold, expressed as the per capita spending limit allowed for referendum (the values correspond to the year 1992). [b]In 1,000,000 Swiss Francs. [c] The identification codes stand for the following cantons: Aargau (AG), Appenzell-Innerrhoden (AI), Appenzell-Ausserrhoden (AR), Bern (BE), Basel-Landschaft (BL), Basel-Stadt (BS), Fribourg (FR), Genève (GE), Glarus (GL), Graubünden (GR), Jura (JU), Luzern (LU), Neuchâtel (NE), Nidwalden (NW), Obwalden (OW), Schaffhausen (SH), Schwyz (SZ), St.Gallen (SG), Solothurn (SO), Thurgau (TG), Ticino (TI), Uri (UR), Vaud (VD), Valais (VS), Zug (ZG), Zürich (ZH). [d]In the case of recurring expenditures, the total amount over all budget periods involved is decisive.

Appendix B

Data description

Variable name	Description	Source
Government Accountability	Electoral support of government proposals multiplied by number of ballots (support X validation)	Own investigations on the basis of the C2D-Database, Amtsblätter of Obwalden and Appenzell a. Rh. and protocols of town meetings in Glarus, Appenzell i.Rh and Nidwalden.
Debt p. c.	Cantonal debt per capita deflated to the year 1980 in CHF (logarithmized in the estimations)	Swiss Federal Finance Administration
Debt p. GDP	Nominal cantonal debt per nominal GDP	Swiss Federal Finance Administration
Share of registered house proprietors	Share of registered cantonal house proprietors on the cantonal population	Swiss Federal Statistical Office
Share of Protestants	Share of Protestant population on the total cantonal population	Swiss Federal Statistical Office
Share of Catholics	Share of Catholic population on the total cantonal population	Swiss Federal Statistical Office
Government centralization	Share of cantonal public spending on cantonal and local spending	Swiss Federal Finance Administration
GDP	Real cantonal GDP per capita (logarithmized in the estimations)	BAK Basel Economics
Labour force	Share of employment on the cantonal population	Swiss Federal Statistical Office
Higher schooling	Share of population with secondary education on the cantonal population	Swiss Federal Statistical Office
Unemployment rate	Share of unemployment on the cantonal population	Own calculations on the basis of Swiss Federal Statistical Office
Agglomeration	Proportion of local communities having more than 10,000 inhabitants.	Swiss Federal Statistical Office
Population	Cantonal population (logarithmized in the estimations)	Swiss Federal Statistical Office
Population >65	Share of cantonal population over age 65 on total cantonal population	Swiss Federal Statistical Office
Population <15	Share of cantonal population under age 15 on total cantonal population	Swiss Federal Statistical Office
German language	Share of German-speaking population	Swiss Federal Statistical Office
Weather index 1	Yearly cantonal precipitation (in millimetres) * cloudiness (in percentage).	Own calculations on the basis of the Swiss Office of Meteorology and Climatology MeteoSwiss database
Weather index 2	(cantonal precipitation * cloudiness)/sunshine duration (in minutes)	Own calculations on the basis of the Swiss Office of Meteorology and Climatology MeteoSwiss database
Convictions of serious offences	Number of convictions (homicide, rape, drug dealing, thievery, fraud, 1984 to 2001).	Swiss Federal Statistical Office
Political culture	Level of political participation (voter turnout, ballots at the federal level)	Swiss Federal Statistical Office
Women's political participation	Number of years since women's voting rights were introduced	Own investigations on the basis of the Swiss Federal statistical Office

Appendix C1

Descriptive statistics

Variable	*Mean*	*Std. Dev.*	*Minimum*	*Maximum*
Government Accountability	4.785	4.103	0	25
Debt per capita	3850	2865	795	20453
log (debt per capita)	3.513	0.229	2.900	0.018
Debt per GDP	0.129	0.059	0.019	0.458
Share of registered house proprietors	0.410	0.113	0.125	0.628
Share of protestants	0.310	0.199	0.051	0.783
Share of catholics	0.562	0.231	0.161	0.931
Government Centralization	0.673	0.106	0.510	0.99
GDP	41590	13064	26324	117228
Labor Force	0.480	0.032	0.396	0.564
Higher Schooling	0.137	0.059	0.023	0.334
Unemployment Rate	0.018	0.018	0	0.078
Agglomeration	0.324	0.249	0	0.995
Population	261938	272497	12781	1228628
Population > 65	0.146	0.021	0.103	0.210
Population < 15	0.186	0.024	0.113	0.241
German Language	0.714	0.353	0.050	0.980

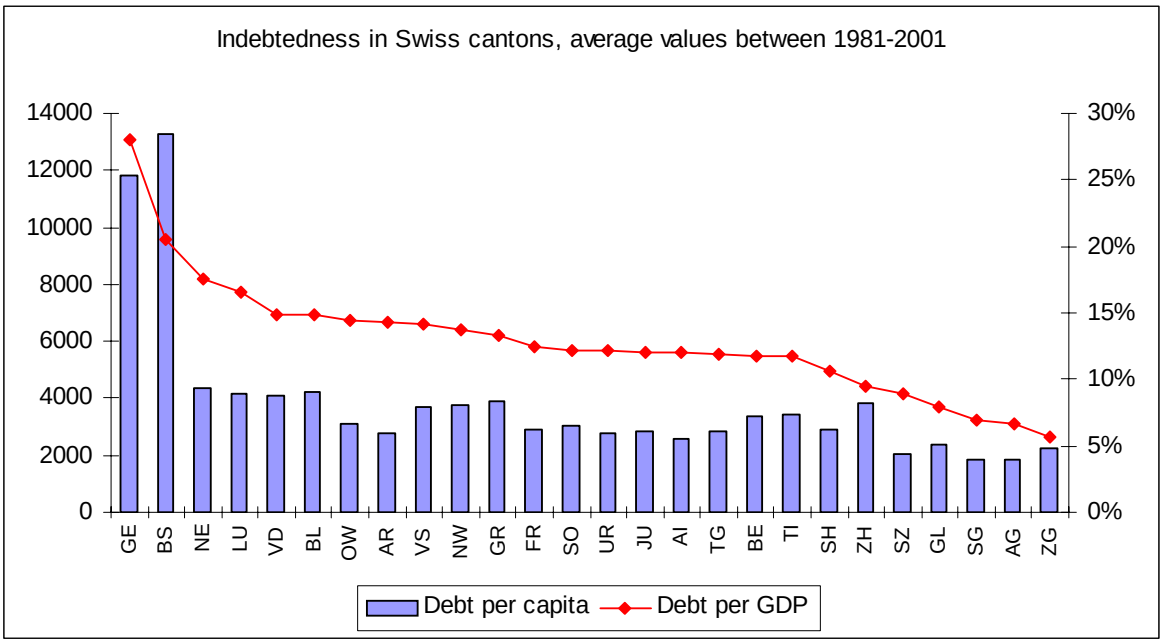
For a detailed description of the variables see Appendix B. All statistics are computed for 546 observations.

Appendix C2

Descriptive statistics: Government Accountability

Canton	Mean	Std. Dev.	Min	Max
ZH	11.143	4.651	2	19
BE	5.571	4.154	0	14
LU	2.714	1.927	0	7
UR	4.952	2.418	0	10
SZ	3.048	1.830	1	6
OW	3.190	2.421	0	10
NW	5.476	3.628	0	14
GL	12.952	4.141	7	25
ZG	2.286	2.432	0	11
FR	1.286	1.189	0	3
SO	7.976	2.926	3	13
BS	4.500	2.174	0	9
BL	8.429	4.643	3	21
SH	7.238	2.448	3	12
AI	6.667	3.168	2	14
AR	5.238	2.567	1	10
SG	2.857	2.372	0	9
GR	7.476	4.355	3	23
AG	4.667	2.799	1	11
TG	3.857	3.021	0	12
TI	0.810	1.167	0	5
VD	2.048	1.322	0	5
VS	3.048	2.674	0	9
NE	3.286	2.610	0	9
GE	3.119	2.156	0	7
JU	0.571	0.676	0	2

Appendix D


Indebtedness in Swiss cantons, average values between 1981-2001
14000
12000
10000
8000
6000
4000
2000
0
30%
25%
20%
15%
10%
5%
0%
GE
BS
NE
LU
VD
BL
OW
AR
VS
NW
GR
FR
SO
UR
JU
AI
TG
BE
TI
SH
ZH
SZ
GL
SG
AG
ZG
Debt per capita
Debt per GDP