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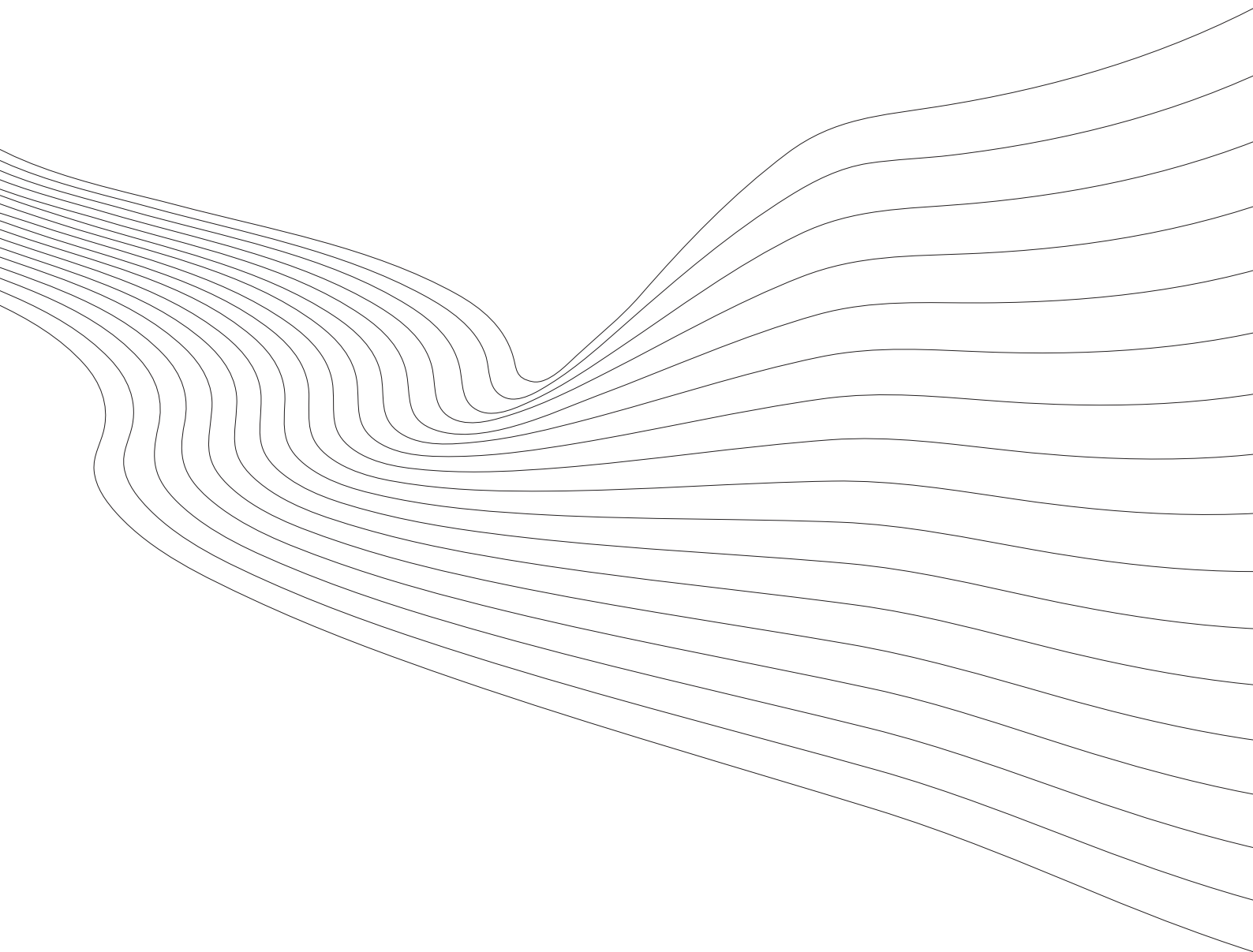
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Incentive Effects of Fiscal Rules on the Finance Minister's Behaviour : Evidence from Revenue Projections in Swiss Cantons*

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Abstract

Predicting available tax revenue accurately is a key step of fiscal policy. It has recently been shown that revenue prediction errors have a direct impact on fiscal deficits. In the current paper we explore the relationship between the ideology of the finance minister and tax revenue projection errors and assess how the stringency of fiscal rules does alter this relationship. We use a panel dataset on 26 Swiss cantons over the period 1980-2007 as well as a new dataset on 99 finance ministers at the cantonal level. We find a rather counter-intuitive positive relationship between the ideology of the finance minister and tax revenue projection errors in the sense that a more left wing finance minister produces relatively more conservative forecasts. We also find that fiscal rules reduce the effect of ideology on tax revenue projection errors. These results suggest that left wing finance ministers need to curb deficits relatively more in order to signal the same level of competence than a right wing finance minister to the voters. It also suggests that fiscal rules render the signal less informative to the voters and thereby reduce the incentive for left wing finance ministers to be more conservative in their projections.

Keywords: Ideology; Finance minister; Fiscal Rules; Tax Revenue Projections

JEL Classification Numbers: C23 · H68 · H71

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1 Introduction

In the current paper we explore the relationship between the ideology of the finance minister and tax revenue projection errors and how incentives created by fiscal rules alter this relationship. This focus is first motivated by the fact that tax revenue projection errors do matter for fiscal policy. In a recent paper, (Chatagny and Soguel, 2012) have shown that underestimating direct tax revenue by one Swiss franc per capita reduces deficits by around 0.7 Swiss franc per capita. Then, in many public jurisdictions, it appears that the finance minister plays a prominent role in producing revenue projections. For instance, in the context of Swiss cantons, the finance minister heads the department of finance which is uniquely in charge of producing revenue projections. As such the finance minister has an informational advantage about expected revenue towards spending ministers, members of the parliament and voters. Finally, the manipulation of revenue projections appears to be a very effective tool for the finance minister to influence fiscal policy. Indeed, a projection is merely a number that appears in budget proposals and that can be freely chosen within reasonable boundaries. From the perspective of the finance minister trying to manipulate revenue projections appears to be less costly than trying to change the tax law which requires a majority in the parliament or to convince spending ministers to modify their spending claims. These considerations lead us to reasonably think that the characteristics of the finance minister must affect revenue projection errors.

In addition, we argue that, among the characteristics of the finance minister, her/his ideology plays a key role in shaping his/her fiscal preferences and therefore must have a direct effect on tax revenue projection errors. Many studies have emphasized the important role played by the ideology of the government in explaining fiscal outcomes (Cameron, 1978; Tavares, 2004; Pickering and Rockey, 2010, among others). Hence it appears natural to expect the ideology of the finance minister to play a key role in explaining a fiscal aggregate which is directly into her/his hands, i.e. revenue projections.

Should such a relationship between the finance minister's ideology and tax revenue projection errors hold then we also argue that fiscal rules must have an effect on the observed relationship. By rendering fiscal deficits more costly fiscal rules have a disciplining effect on incumbent politicians, including the finance minister. Therefore it is reasonable to think that the existence and stringency of fiscal rules may alter the effect of the finance minister's ideology on revenue projections.

To test our idea we use a panel dataset of 26 Swiss cantons over the period 1980-2007. In particular, we collected new data about the projected and realized value of corporate and personal tax revenue. We also collected data about the characteristics - among which the ideology - of 99 finance ministers in the Swiss cantons. Our results show a strongly significant and positive effect of the ideology of the finance minister on tax revenue projection errors. The effect is positive in the sense that a relatively more right wing finance minister produces relatively more optimistic forecasts than a relatively more left wing finance minister. This counter-intuitive result can be explained by the necessity for a left wing finance minister to compensate for the negative perception voters have about his/her competence when it comes to curbing deficits and balancing the budget. If the incumbent finance minister seeks re-election and if voters try to select the most competent politician by looking at their past performance, then the incumbent finance minister has an incentive to underestimate tax revenue in order to curb deficits thereby signalling herself as competent to the voters. We argue that the ideology of the finance minister, measured as his party affiliation, is a signal voters can observe. Assuming that voters perceive a left wing finance minister as less competent than a right wing finance minister when it comes to reducing deficits, a left wing finance minister will have to produce relatively lower deficits in order to be perceived as competent as a right wing finance minister everything else being equal. This explains why left wing finance ministers tend to produce more conservative revenue projections.

We also find a negative interaction between an indicator of the stringency of fiscal rules in the Swiss cantons and the ideology of the finance minister. This empirical result means that the more stringent fiscal rules the weaker the average marginal effect of the ideology of

the finance minister on tax revenue projection errors. This evidence supports the idea that, under a fiscal rule, reducing deficits through revenue underestimation is not as efficient to signal competence as in the absence of a fiscal rule. In the presence of a fiscal rule, voters may consider deficits as a less important problem and/or attribute a reduction in deficits to the fiscal rule rather than to the finance minister her/himself. The finance minister will therefore have an incentive to engage in other type of signalling activities. This incentive will be stronger for left wing finance ministers since they need to compensate for the relatively negative signal sent by their ideology.

The paper is organized as follows. In the next Section we briefly review the relevant literature. In Section 3, we propose a theoretical discussion and formulate our testing hypotheses. In Section 4, we present the context of the Swiss cantons and provide some summary statistics from our dataset. Section 5 presents our empirical analysis and Section 6 concludes

2 Empirical Literature on Revenue Projections

In the current Section we propose a review of the literature on tax revenue projections. Two important momenta can be identified in this literature. First, from the mid 80's to the late 90's, an important number of empirical contributions addressing tax revenue forecasting and budgeting in the American states have been published (Auerbach, 1999; Bretschneider et al., 1989; Bretschneider and Gorr, 1992; Jones et al., 1997; Cassidy et al., 1989; Feenberg et al., 1989; Mocan and Azad, 1995; Rodgers and Joyce, 1996).¹ Then, since the late 90's until now, an important number of studies have been performed for Canada and European countries. While the studies by Campbell and Ghysels (1997) and Couture and Imbeau (2009) address the case of Canada, the case of European countries is analysed by Ohlsson and Vredin (1996) for Sweden, Paleologou (2005) for UK, Goeminne et al. (2008) for Flemish municipalities and Bischoff and Gohout (2010) for West German states. Given the purpose

¹Two contributions about American States and published after 2000 have been found : Deschamps (2004); Voorhees (2004).

of the current study, we particularly focus on the studies addressing the effect of political variables on tax revenue projections.

A first natural reason why incumbent politicians may want to influence fiscal policy through projections is to increase re-election prospects. The effect of elections has been assessed in numerous studies. While Paleologou (2005), Bischoff and Gohout (2010) and Couture and Imbeau (2009) find a positive and significant effect of elections on tax revenue budgeting errors in UK, western German states and Canadian provinces respectively, Goeminne et al. (2008) and Ohlsson and Vredin (1996) do not find any significant effect in the case of Flemish municipalities and Sweden. These mixed evidence are interesting since they tend to show that elections seems to matter at the national and state levels but not at the local level. Therefore, we may expect to observe a electoral cycle of revenue projection errors in the Swiss cantons as well, since they are equivalent to the State level in the US and play an important institutional role.

When it comes to the effect of the ideology of the government Ohlsson and Vredin (1996) find, in the case of Sweden, that right-wing governments produce more conservative forecasts. Similarly, Cassidy et al. (1989) find that revenue forecasts are more conservative in American states dominated by republicans. On the contrary, Mocan and Azad (1995) do not find any effect of ideology for the case of American states. In the case of Canadian provinces, Couture and Imbeau (2009) do not find any significant effect and conclude that budgeted tax revenue seems to be manipulated mainly for electoral reasons.² More counter-intuitively Paleologou (2005) as well as Bischoff and Gohout (2010) find a positive effect of the ideology of the government on revenue projection errors in the sense that right wing governments produce less conservative projections. While Paleologou (2005) find a significant positive effect of the right wing governments on revenue forecast errors, Bischoff and Gohout (2010) find a significant but not robust positive effect of the right wing dummy as well. These mixed results show that rigorous empirical analyses do not systematically back up the intuitive partisan argument that right wing government are expected to produce more conservative

²In a recent study, Krol (2013) also tested the effect of political variables on revenue projection errors and did not find any effect. However the study is a time series study of the state of California only. Such study fails to exploit the cross-sectional variation that characterizes US states.

revenue projections. Indeed evidence seems to vary with the institutional context in which revenue projections are being produced.

Finally, Goeminne et al. (2008) and Bischoff and Gohout (2010) assess the effect of political fragmentation on tax revenue forecasting errors. While Bischoff and Gohout (2010) do not find any significant effect of political fragmentation,³ Goeminne et al. (2008) find a negative (and non linear) significant effect of fragmentation on tax revenue projections in municipalities, i.e. the higher the number of parties in a coalition, the more tax revenue are underestimated.

The aforementioned papers have at least two important limitations that can be identified. First, they consider the government as a - more or less homogeneous - whole and do not consider the particular role of individual politicians. In particular, one may think that the finance minister who, in most institutional settings, heads the department of finance, does play a key role in the production of tax revenue projections. Some authors (Goeminne et al., 2008) mentioned this potentially important role of the finance minister but without ever testing it explicitly.⁴ Second, the role of some important fiscal institutions such as fiscal rules has also been largely disregarded by the literature on revenue projections.⁵ Indeed, fiscal rules create incentives which may shape the incumbents behaviour within the budgeting process. In the context of Swiss cantons, Luechinger and Schaltegger (2013) propose an analysis of the effect of fiscal rules on projected and realized deficits - they do not analyse tax revenue projections separately. They show that fiscal rules reduce the probability of a deficit. They also show that this effect is twice larger for projected deficits than for realized deficits. Given that projections tend to be over-pessimistic, this suggests that fiscal rules do increase the probability of accurate forecasts. Luechinger and Schaltegger (2013) interpret these empirical results as evidence that : *"fiscal rules substitute for strategic projections in budget negotiations between the finance minister and fellow cabinet members or legislatures"*.

³They test a dummy variable measuring the existence of a coalition government in German states.

⁴Some papers analyse the effect of the characteristics of the finance minister on deficits or debt but do not consider revenue projections. See for instance Moessinger (2012) or Jochimsen and Thomasius (2012).

⁵An important literature addressing the effect of fiscal rules on fiscal outcomes does exist. See, among others, Poterba (1994); Swank (2002); von Hagen (2010); Hallerberg et al. (2007); Bohn and Inman (1996); Milesi-Ferretti (2003); Feld and Kirchgaessner (2008)

However, as the authors recognize themselves, they do not provide any direct evidence on the strategic use of budget projections by finance ministers.

In the current study, we intend to fill in these gaps by looking at the effect of the finance minister's characteristics, in particular ideology, on tax revenue projection errors and at how fiscal rules may alter this relationship. We use a panel data of 26 Swiss cantons over 1980 and 2007 as well as a new dataset on the characteristics of 99 finance ministers in Swiss cantons. Before giving a more detailed description of the context of Swiss cantons and of our data, we provide a theoretical discussion and formulate the hypotheses we test.

3 Theoretical discussion and testing hypotheses

In this section we provide a theoretical discussion of the effect of ideology on tax revenue projection errors and of how fiscal rules may alter this effect. To the best of our knowledge, we are not aware of a theoretical model explicitly and formally addressing the relationship between the incumbents' ideology and tax revenue projection errors. Therefore the current discussion will remain informal. We start the discussion by formulating three assumptions consistent with the context of Swiss cantons but which we believe apply to many other countries and jurisdictions. First we assume that underestimating tax revenue tends to reduce both expenditure and deficits (Chatagny and Soguel, 2012). Then we assume that the finance minister heads the department of finance and is responsible for producing tax revenue projections. Therefore an asymmetry of information in favour of the finance minister does exist in the budgeting process. This feature does not seem to be peculiar to Swiss cantons. In the context of European countries, von Hagen (2010, p.489) mentions that :*"Among the ministers, only the minister of finance has the resources and administrative capacity to produce the economic and fiscal forecasts published by the government. The minister of finance is also typically responsible for managing the annual budget process. This gives him a considerable informational and strategic advantage over the other cabinet members, which he can use to pursue his political agenda"*. Finally, we assume that manipulating revenue projections is the less costly way for the finance minister to influence fiscal policy. This

is reasonable and realistic since changing the tax law or reducing expenditures requires to convince a majority of spending ministers, a majority of parliament members and, as is often the case in Swiss cantons, a majority of voters.

In such a context, everything else being equal, one would intuitively expect a right wing finance minister to produce relatively more conservative projections in order to achieve a relatively lower level of expenditure. This intuition can be easily rationalized by referring to a simple model of public finance in the spirit of Alesina (1988) in which politicians do not only care about their re-election but also about the particular policy which is implemented.⁶ If the electoral commitment of politicians is not binding, politicians will have an incentive to deviate from the median voter most preferred policy in order to implement a policy which is closer to her/his bliss point. Under the traditional assumption that the left-right dimension corresponds to the distribution of voters according to their income, the positive implication of this type of model is that right-wing governments choose a lower level of expenditure (Persson and Tabellini, 2000, p.100). Transposed to our problematic of revenue projections, this implies that a relatively more right wing finance minister will produce relatively more conservative projections. However, this prediction relies, among others, on the assumption of no commitment which appears not realistic in a context where incumbent politicians can - and often do - run for re-election.

In this study, we intend to go beyond the intuition by conducting a different line of argument originally based on the idea that elections may serve as a device to select the most competent politician (Persson and Tabellini, 2000, p.81). This kind of model has been developed by (Rogoff and Sibert, 1988) and (Rogoff, 1990) to analyse fiscal policy and the political business cycle. In such models voters do not have full information about the competence of politicians. This implies that voters are backward looking because past performance of incumbent politicians provides information about their competence. Consequently, incumbents also have an incentive to use policies as signals to the voters about their competence. In the context of tax revenue projections, it does not appear realistic to argue that the incumbent finance minister uses revenue projections or revenue projection errors *per se* as a

⁶See Persson and Tabellini (2000, pp.99-101) for a presentation and discussion of this model.

signal sent to the voters.⁷ However, the actual level of expenditure or deficit - partly - resulting from the revenue projections can be observed by voters and used to infer the finance minister's competence. In this paper, we define the competence of the finance minister as his ability to balance the budget by reducing deficits. This particular definition of competence comes from the fact that, within the cabinet, the finance minister is the only incumbent politician responsible for the overall budget. It is therefore natural to think that voters will evaluate the competence of the finance minister according to his ability to keep the budget balanced. Furthermore, since each spending minister is responsible for only a share of the budget, the finance minister operates in a context of a deficit bias, the so-called common-pool problem applied to the public budget (Weingast et al., 1981; Velasco, 2000; van der Ploeg, 2010). In such a context, the finance minister has an incentive to underestimate tax revenue irrespective of whether she or he is a left wing or right wing finance minister.⁸ Therefore one may wonder how could ideology play a role in such a setting. Actually, party affiliation is an information about the finance minister which is public. This is a signal about the finance minister's ideology that is sent to the voters and from which they can make inference about her or his competence. Here we argue that, everything else being equal, a left wing finance minister will be seen by the voters as less competent *a priori* - no matter whether this is true or not - than a right wing finance minister when it comes to curbing deficits and balancing the budget. Therefore, in order to signal the same level of competence as a right wing finance minister, a left wing finance minister will have to produce lower deficits and, therefore, underestimate tax revenue to a larger extent. In line with this last prediction, we formulate our first testing hypothesis :

The ideology of the finance minister has a positive effect on direct tax revenue projection errors in the sense that a relatively more right wing finance minister produces relatively less conservative forecasts.

⁷It does not appear realistic to assume that voters do look at revenue projection or projections errors in order to assess politicians' performance. Projections and projection errors do not get important media coverage and remain largely disregarded by the public.

⁸This argument is backed up by the fact that, in all Swiss cantons except Bern tax revenue are underestimated. See Table 1

Note that for instance that Tavares (2004) conduct a similar line of argument when exploring the role of the cabinet ideology in fiscal adjustments. Indeed, he shows that left wing parties gain credibility whenever they undertake adjustments that go against the preferences of their constituencies, i.e. whenever they reduce expenditures. We expect a similar - although not completely identical - mechanism when it comes to the effect of the ideology of the finance minister on revenue projections.

Assuming a positive effect of ideology on tax revenue projection errors, one may also wonder whether the implementation of fiscal rules may alter this relationship. Fiscal rules render the creation of deficits more costly by imposing automatic expenditure cuts and/or tax increases which may be electorally very costly to incumbent politicians. Therefore, depending on their degree of stringency, fiscal rules are expected to create strong incentives for the spending ministers to be more cautious in their spending claims in order to avoid high deficits. This would reduce the necessity to curb deficits and make a further reduction in deficits a less informative signal to the voters about the competence of the finance minister. Even if curbing deficits turns out to be necessary, voters may attribute a reduction in deficits to the implemented fiscal rule rather than to the competence of the finance minister. Therefore the finance minister has an incentive to engage in another type of signalling activity which, under a fiscal rule, is relatively more informative to the voters. This incentive is stronger for a relatively more left wing finance minister since she or he needs to compensate for the negative signal sent by his ideology. The stronger reaction of the left wing finance ministers imply that fiscal rules must reduce the positive effect of ideology on tax revenue projection errors. Consequently we can express our second testing hypothesis as follows :

The positive effect of the ideology of the finance minister on tax revenue projection errors decreases with the stringency of fiscal rules.

In order to test our hypotheses, we rely on a panel dataset on the 26 Swiss cantons over 1980-2007 as well as a new dataset on 99 finance ministers at the cantonal level. We present the background of the Swiss cantons and our data in more details in the next Section.

4 Empirical background and data

The context of Swiss cantons is particularly well suited to explore the role of the finance minister in the tax revenue prediction process and the influence of fiscal rules on his behaviour for at least three reasons. First, direct tax revenue projection errors in Swiss cantons exhibit substantial heterogeneity across cantons and years which can be empirically exploited. Since the finance minister does head the department of finance and is, as such, uniquely responsible for tax revenue projections, we reasonably expect that characteristics, among which ideology, of the cantonal finance ministers may explain an important part of the observed heterogeneity. Then a nice feature of the Swiss system is that the allocation of departments to the different elected politicians cannot be known *a priori* by the voters. This introduces an element of randomness in the election process of the finance minister which makes us confident in the causal interpretation of the effects found. Finally, Swiss cantons experienced a staggered introduction of fiscal rules over the considered period. This feature makes it possible to identify the effect of fiscal rules on the effect of the finance minister's ideology on revenue projection errors. In the current section, I elaborate on these different aspects of the Swiss context and present the data used in the analysis.

4.1 Tax Revenue Projection Errors in Swiss cantons

In Swiss cantons, the budgeting process starts with the production of a technical forecast of revenue made by revenue officers. This technical forecast is then forwarded, via the department of finance, to the executive branch of the government that designs a budget proposal for the subsequent fiscal year. This proposal is finally submitted to the parliament that enacts a budget law. This budget law serves as a starting point to implement fiscal policy during the subsequent fiscal year. In such a process the estimation of future revenue is a key step of fiscal policy since it sets the envelope in which expenditure should remain in order to reach fiscal balance. In order to identify whether projections are politically manipulated, it is necessary to confront projected revenues with their realization. For this reason we focus on projection errors rather than on projections throughout this study. In

the literature about tax revenue forecasting accuracy,⁹ absolute errors are often used as an indicator in order to avoid positive and negative errors offsetting each other. However, in this paper, we precisely want information about the direction in which projections are potentially manipulated. Thus, we chose the difference between the projected amount of tax revenue and the actual amount. Cantonal population has been chosen as the denominator. This allows us to make tax revenue budgeting errors comparable between cantons. Thus, our main indicator measuring tax revenue budgeting errors may be expressed as follows :

$$Error = \frac{(R_b - R_a)}{P} \quad (1)$$

,where R denotes *Direct Tax Revenue*, the subscript a stands for *actual*, the subscript b stands for *budgeted* and P denotes the cantonal population. To compute this indicator we collected budgeted and actual revenue that are reported in public accounts of Swiss cantons over 1980-2007.¹⁰ The usual summary statistics are reported in Table (1), in which cantons are ranked according to the average tax revenue budgeting error over the considered period. Table (1), shows that, except for the canton Bern (BE), all cantons have tax revenue budgeted errors below zero on average. Thus, we clearly observe a tendency to underestimate tax revenue. This pattern is consistent with the idea that the finance minister is operating in the context of a deficit bias - the fiscal common problem - and has an incentive to be conservative in her/his revenue projections independently of his/her ideology. We also observe strong heterogeneity among cantonal budgeting errors per capita. We naturally expect the preferences of the finance minister - in particular ideology - to explain an important part of the observed inter-cantonal and inter-temporal variability. Indeed, due to his position within the government cabinet, the finance minister is expected to have a particularly high influence on projected tax revenue and, therefore, on tax revenue projection errors.

⁹See for example Mocan and Azad, 1995, p.419

¹⁰Note that, over the period of interest 1980-2007, public accounts do not distinguish between personal and corporate tax revenue for every canton and/or every time span. For this reason we used what we call "direct taxes", i.e. the addition of both personal and corporate tax. Using this aggregate enables the use of a complete and homogenous dataset across both cantons and years.

Table 1: Tax revenue projection errors per capita (1980-2007)

	Mean	St. dev.	Min	Max	N
Aargau (AG)	-55.51718	112.7451	-246.1751	195.932	28
Appenzell-Innerrhoden (AI)	-122.1199	121.228	-344.7328	98.15961	28
Appenzell-Ausserrhoden (AR)	-23.40973	59.14726	-110.858	128.5307	28
Bern (BE)	36.96827	81.64759	-129.2704	201.4522	28
Baselland (BL)	-144.7217	199.0107	-839.1275	149.5214	28
Baselstadt (BS)	-193.2389	489.8768	-1237.159	556.99	28
Fribourg (FR)	-101.8898	90.83454	-383.7159	64.05879	28
Genève (GE)	-113.9392	528.3911	-1430.055	1142.728	28
Glarus (GL)	-137.1442	191.3831	-437.0659	233.31	28
Graubünden (GR)	-85.87241	57.24932	-188.2635	45.87022	28
Jura (JU)	-16.72336	61.70619	-147.9202	89.91608	28
Luzern (LU)	-41.15983	91.98276	-237.707	139.6689	28
Neuchtel (NE)	-35.27104	120.2942	-267.6661	224.1479	28
Nidwald (NW)	-65.94932	120.5269	-538.529	104.1314	28
Obwald (OW)	-54.33199	83.78898	-193.8892	179.7751	28
Sankt-Gallen (SG)	-43.58655	76.21494	-219.4491	152.3872	28
Shaffhausen (SH)	-15.59604	76.27386	-135.4608	168.287	28
Solothurn (SO)	-26.40169	132.1977	-287.9469	300.2846	28
Schwyz (SZ)	-75.87744	108.8037	-309.7535	157.1612	28
Thurgau (TG)	-35.07672	83.22178	-183.1832	145.8114	28
Ticino (TI)	-157.4365	206.4838	-571.5998	269.7093	28
Uri (UR)	-14.06001	128.6291	-293.7344	237.378	28
Vaud (VD)	-75.06823	193.6663	-552.7347	359.1893	28
Valais (VS)	-74.92986	93.28039	-259.4183	189.9564	28
Zug (ZG)	-222.5467	213.0142	-672.3793	263.3303	28
Zürich (ZH)	-23.456	137.3845	-433.2509	174.6628	28
Total	-73.78293	193.3494	-1430.055	1142.728	728

4.2 Structure of cantonal Governments and Characteristics of the Finance minister

4.2.1 Cantonal Cabinet

In spite of the fact that the electoral system is majoritarian in almost every canton,¹¹ cantonal governments are characterized by a rather high degree of political fragmentation. Indeed, in our sample, there are at least two parties in power in more than 75% of the cases.¹² The parties potentially involved in a government coalition cover a wide political scope going from the left to the far right.¹³ Furthermore, in cantonal elections, each member of the cantonal cabinet is elected individually but the allocation of the departments to the elected

¹¹The election system is majoritarian in all cantons except Zoug and Ticino.

¹²See summary statistics for the variable called "Fragmentation" in Table (9).

¹³From the left to the right, the main political parties represented in cantonal governments are : the Social Democratic Party (SP), the Green Party (GPS), the Christian Social Party (CSP), the Christian Democratic People's Party (CVP), The Liberals (FDP), the Liberal Party (PLS), the Swiss People's Party (SVP) and the Ticino League (Lega).

members of the cabinet is not known to the voters *ex ante* since it occurs after elections. Neither the allocation is monitored by explicit and binding rules nor the protocol of the sessions during which the elected politicians bargain over this allocation are made public. In fact departments may be allocated according to very different types of implicit rules or criteria such as seniority in office, electoral score, professional background, personal interests, experience, etc. This particular context allows for many possible political configurations pertaining to the ideology of the members of the cabinet, including the finance minister.

4.2.2 Cantonal Finance Ministers

Finance ministers in Swiss cantons are responsible for the budgeting process in general but they are not vested with particular powers like veto or agenda-setting power like in European countries for instance.¹⁴ In that respect, they are not expected to have a greater influence on fiscal policy decisions than spending ministers all the more so as the finance minister is, by definition, outnumbered by spending ministers. Should a disagreement emerge between the finance minister and the spending ministers about the budget proposal, the latter would impose their choice, all things being equal. In that sense, finance ministers in Swiss cantons appear to be relatively weak with respect to fiscal policy choices.

However, finance ministers do head cantonal departments of finance. As such they are responsible for the collection of public revenue and are also responsible for revenue estimations. Indeed, data collected in 21 Swiss cantons showed that finance departments are uniquely in charge of predicting tax revenue.¹⁵ Therefore, the finance minister has a monopoly on the information about expected revenue which he might use to influence budget negotiations and, subsequently, fiscal outcomes. Given the relatively weak position of the finance minister, manipulating tax revenue projections appears to be a particularly efficient tool for the finance minister to influence fiscal policy. Indeed modifying the tax law or the amount of expenditures requires to convince a majority of spending ministers, a majority of parliament members and, as is sometimes the case in Swiss cantons, a majority of voters which may be

¹⁴See e.g. von Hagen (2010) for a presentation of the budgetary institutions in the European context.

¹⁵see Chatagny and Soguel (2009)

very costly to the finance minister.

In order to test whether the ideology of the finance minister does have an impact on revenue projections, we collected personal data on the cantonal finance ministers from 1980 to 2007. Before presenting the different characteristics I first present the indicator used to measure ideology.

Table 2: Main political parties in cantonal governments and their political leaning

Party	SP	GPS	CSP	CVP	FDP	PLS	SVP	Lega
Ideology	2.6	3.2	5	5.4	6.8	7.6	7.7	8.2

First, the different parties encountered within cantonal cabinets over 1980-2007 are presented in the first row of Table (2).¹⁶ Then, a measure of the corresponding ideological position of the parties on a left-right scale is reported in the second row of Table (2). This scale ranges from 0 to 10, zero being the far left and 10 the far right. This type of left-right scale is frequently used by political scientists (Ladner, 2006) to quantify the leaning of political parties and is constructed as follows : presidents of cantonal branches of Swiss political parties are asked to assess their own party on the right-left scale. The assessments made by the presidents of cantonal branches are then averaged which gives the value for the party on the scale (Ladner, 2006).¹⁷ In order to construct a measure for the ideology of the finance minister, we attribute to him/her the value that corresponds to the position of her/his political party on the scale. In our empirical analysis, we also will control for the average ideology of the spending ministers. Since we know the political composition of each cantonal government cabinet at each period of time, we can calculate the sum of the ideologies of the cabinet members.¹⁸ We then subtract the value for the finance minister and divide by the number of spending ministers in the cabinet, which gives the average ideology

¹⁶From the left to the right, the main political parties represented in cantonal governments are : the Social Democratic Party (SP), the Green Party (GPS), the Christian Social Party (CSP), the Christian Democratic People’s Party (CVP), The Liberals (FDP), the Liberal Party (PLS), the Swiss People’s Party (SVP) and the Ticino League (Lega).

¹⁷Note that this indicator is not computed every year. This prevents us from controlling for shifts of political parties over time on the scale and forces us to assume that the ideology of the Swiss political parties is stable over time.

¹⁸Source : Année politique Suisse.

of the spending ministers. Summary statistics are reported in Table (3). We can see (row

Table 3: Ideology of Finance and Spending ministers (1980-2007)

	mean	25th perc.	median	75th perc.	sd	min	max
Finmin	5.97	5.4	5.4	6.8	1.35	2.6	7.7
Spendmin	5.46	5.05	5.41	5.75	0.555	3.8	7.1
Diff	-0.51	-1.75	-0.7	0.23	1.52	-3.63	3.78

called "Finmin") that the distribution of the ideology of finance ministers is skewed to the right. One may argue that the average ideology of the finance minister and of the spending ministers are very close and that the ideology of the finance minister is just a proxy of the ideology of the whole cabinet. Note first that actually the difference of the average ideology of finance and spending ministers is statistically significant.¹⁹ Then in our empirical analysis we will also include a measure of the ideology of the spending ministers and a measure of the ideology of the cabinet as a whole and will show that the finance minister's ideology is still significant.

In order to have a precise identification of the effect of the ideology of the finance minister on tax revenue projections, we also collected additional data on the characteristics of the finance minister. They are reported in Table 4. The variables "Age", "Gender" and "Years in office" are obvious. The variable "Power" takes into account the fact whether or not the finance minister does belong to the majority within the cabinet. It takes value one when the finance minister belongs to the majority. The variable "President" takes value one in the years for which the finance minister is also president of the cantonal government. Finally, I intend to capture career concerns of finance ministers by including a dummy variable taking value one whenever a finance minister is elected to the Federal Council, which is the highest possible political position within an executive governmental entity in Switzerland.

¹⁹The p-value of the t-test for $H_0 : \text{Diff} = 0$ against $H_A : \text{Diff} < 0$ is equal to zero.

Table 4: Finance minister characteristics : Summary statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
Age	52.237	6.558	33	69	712
Gender	0.092	0.289	0	1	728
Years in office	5.402	3.654	1	18	728
Power	0.88	0.325	0	1	728
President	0.166	0.373	0	1	728
Federal Council	0.033	0.179	0	1	728

4.2.3 Ideology and Tax Revenue Projection Errors : Summary Statistics

Of all the characteristics presented above, the ideology of the finance minister is expected to be a particularly important driver of tax revenue projection errors. To motivate this claim we report in Table 5 summary statistics for the tax revenue projection errors within each type of ideology of the finance ministers.

Table 5: Direct Tax Revenue Projection Error per Capita by Ideology

Ideology	mean	sd	min	max	range	N
SP	-177.4019	287.206	-1237.159	224.1479	1461.307	60
GP	-1146.358	401.2085	-1430.055	-862.6603	567.3945	2
Misc	-101.9834	185.0647	-344.7328	167.0657	511.7984	11
CVP	-66.61592	112.7158	-672.3793	300.2846	972.6639	275
FDP	-84.20896	181.4824	-839.1275	436.7046	1275.832	254
LP	50.68671	387.493	-1029.024	1142.728	2171.753	32
SVP	-16.68983	128.7526	-437.0659	299.5135	736.5794	94
Total	-73.78293	193.3494	-1430.055	1142.728	2572.783	728

The average projection error exhibits very important differences between types of ideologies of the finance ministers with a tendency of the left wing finance ministers - SP and GP - to produce a lower average error than the center right finance ministers - CVP and FDP - and than the right wing finance ministers SVP. These summary statistics not only motivate the idea that ideology of the finance minister does drive part of the differences observed in tax revenue projection errors but they also suggest that left wing finance ministers tend to produce more conservative forecasts.

To motivate our argument further we provide in figures 1 to 3, examples of individual

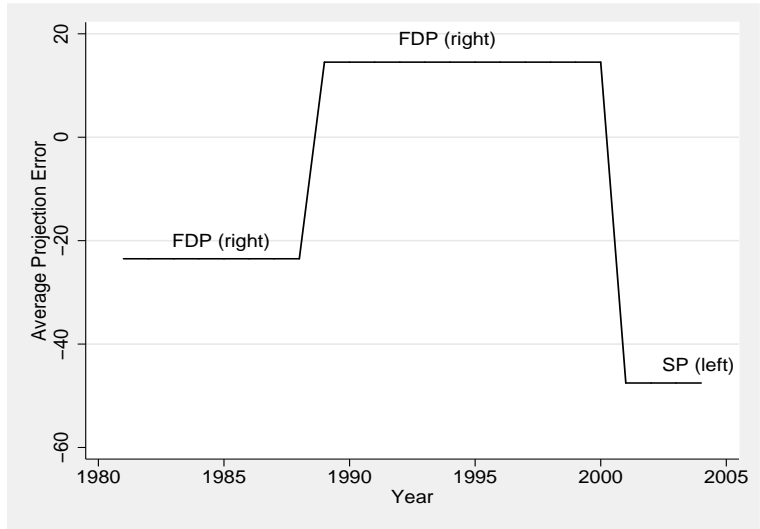


Figure 1: Shift in the Average Revenue Projection Error : Schaffhausen

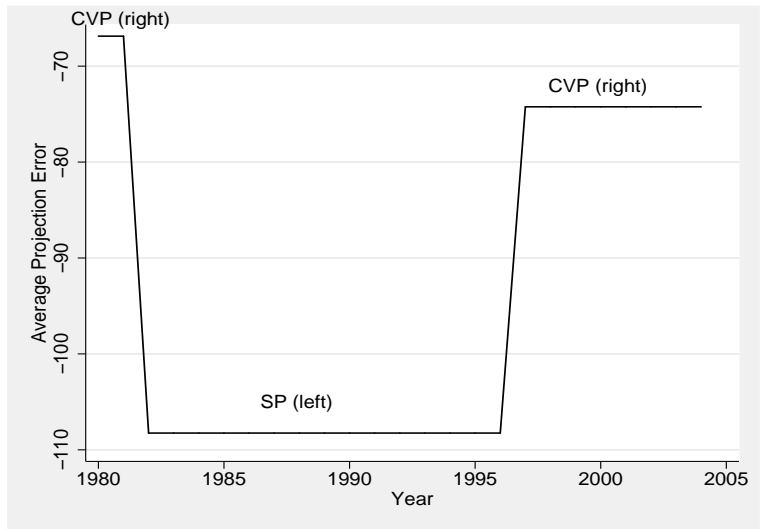


Figure 2: Shift in the Average Revenue Projection Error : Fribourg

cantons within which the average tax revenue projection error dropped whenever the ideology of the incumbent finance minister shifted from right to left.²⁰ In the three examples, we can observe a clear and sharp negative deviation of the average tax revenue projection error whenever the ideology of the finance minister shifts from right wing to left wing. What one can also notice on these figures however is that the average error also exhibits some shifts when the ideology of the finance minister does not change. This is especially obvious in figure 1. Clearly revenue projection errors may be driven by many other factors that

²⁰In figures 1 to 3 the tax revenue projection errors are averaged over the years during which the incumbent finance minister exercised power.

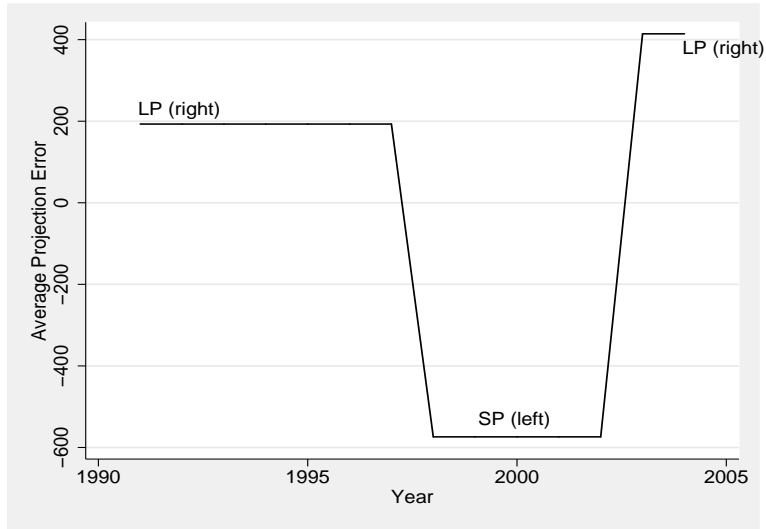


Figure 3: Shift in the Average Revenue Projection Error : Geneva

must be controlled for in order to obtain a clean estimation of the effect of the ideology of the finance minister and draw some clear-cut conclusions. Should an effect be observed, we expect fiscal rules to reduce it. In the next Sub-section we explain how we capture the existence and stringency of fiscal rules in the Swiss cantons by using the indicator suggested by Feld and Kirchgaessner (2008).

4.3 Fiscal rules in the Swiss cantons

The context of Swiss cantons is particularly appropriate to test this hypothesis since, between 1980 and 2007, several - but not all - Swiss cantons experienced the introduction of fiscal rules which was staggered over time.

Table 6: Fiscal rules index : summary statistics

	N	Mean	S.d.	Min.	Max
Fiscal rule index	728	0.452	0.943	0	3

In order to measure the stringency of fiscal rules, we rely on the index suggested by Feld and Kirchgaessner (2008).²¹ The approach developed by Feld and Kirchgaessner (2008)

²¹For detailed description of this index, see Feld et al. (2011). Luechinger and Schaltegger (2013) also provide a detailed description of the legal and constitutional requirements of Swiss cantonal fiscal rules

makes use of three criteria to assess the stringency of fiscal rules.²². The first criterion assesses whether or not budget planning is strongly connected with actual budget execution. The second criterion captures the existence or absence of strong numerical constraints. The third criterion captures the existence of effective sanctions in the form of automatic tax adjustments. Using these three criteria, an index of the stringency of fiscal rules going from zero (none of the criteria are fulfilled) to three (all of the three criteria are fulfilled) is constructed for each canton. Table 6 shows the summary statistics for the fiscal rules index. The staggered introduction of fiscal rules in Swiss cantons over the period is illustrated in Appendix 6.

4.3.1 Ideology, projections errors and fiscal rules : summary statistics

The observed differences in the use and stringency of fiscal rules across cantons and over time makes Switzerland a particularly appealing laboratory to assess how the incentives created by a fiscal rule does alter the finance minister's behaviour within the tax revenue budgeting process. In particular, as expressed in our second hypothesis, we expect more stringent fiscal rules to reduce the effect of the ideology of the finance minister on revenue projection errors. In order to provide some preliminary evidence supporting this hypothesis, we compute the same summary statistics as in Table 5 but we split the sample between the finance ministers operating in the absence of a fiscal rule and those operating in the presence of a fiscal rule.

Table 7 reports summary statistics for tax revenue projection errors for each type of ideology of the finance ministers in the absence of fiscal rules. We can see that the variation of the average tax revenue projection error across ideologies is substantially the same as in Table 5. Table 8 shows the same summary statistics under the existence of a fiscal rule. The average tax revenue projection error for left wing finance ministers - SP - is almost divided by two while the average error for center right finance ministers is also less negative compared to Table 7. In the case of right wing finance ministers - SVP - the average projection error turns out to be more negative than in the absence of a fiscal rule. The differences between Table

²²The following description is based on Feld et al. (2011)

Table 7: Direct Tax Revenue Projection Error per Cap. by Ideology without Fiscal Rule

Ideology	mean	sd	min	max	range	N
SP	-204.3408	331.3609	-1237.159	224.1479	1461.307	43
GP	-1146.358	401.2085	-1430.055	-862.6603	567.3945	2
Misc	-101.9834	185.0647	-344.7328	167.0657	511.7984	11
CVP	-70.76875	110.5331	-672.3793	300.2846	972.6639	191
FDP	-86.25381	185.1515	-839.1275	436.7046	1275.832	225
LP	50.68671	387.493	-1029.024	1142.728	2171.753	32
SVP	-13.78528	136.7302	-437.0659	299.5135	736.5794	68
Total	-77.69327	208.5463	-1430.055	1142.728	2572.783	572

7 and Table 8 suggests that, under a fiscal rule, the average tax revenue projection error exhibits less variation across types of ideology which clearly supports the idea that fiscal rules reduce the effect of ideology on tax revenue projection errors thereby supporting our second hypothesis. Before presenting our empirical analysis into details, we briefly present the additional control variables at the level of cantons used in the empirical model.

Table 8: Direct Tax Revenue Projection Error per Cap. by Ideology with Fiscal Rules

Ideology	mean	sd	min	max	range	N
SP	-109.2624	95.20077	-267.6661	101.3517	369.0178	17
CVP	-57.17319	117.6584	-538.529	206.5458	745.0748	84
FDP	-68.34375	151.8417	-552.7347	130.3401	683.0748	29
SVP	-24.28635	107.1512	-188.2635	174.6628	362.9263	26
Total	-59.44502	121.9117	-552.7347	206.5458	759.2805	156

4.4 Cantonal controls

As additional control variables, we use variables capturing the cantonal environment in which the finance minister does exercise power. We included variables that are usually encountered in the literature. They are summarized in Table 9.

The effect of elections on budget deficits, the so-called political budget cycle, is captured by a dummy variable equal to 1 for the years when elections are held and zero otherwise. We also include a variable controlling for the degree of fragmentation within the government cabinet. Following Goeminne et al. (2008), we measure fragmentation by the number of

Table 9: Cantonal controls : Summary statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
Election year	0.249	0.433	0	1	728
Fragmentation	3.371	0.916	1	5	728
Concordance	85.766	10.398	53.333	100	723
Departments	7.390	2.277	4	13	728
Right	76.534	15.182	40	100	728
Size	267.865	280.28	12.965	1322.842	728
Postnumerando	0.276	0.447	0	1	728
Grant	0.718	0.66	0.074	5.915	726
Deficit(-1)	-0.091	0.506	-3.027	2.832	702
Growth	0.016	0.042	-0.178	0.408	702
Unemployment(D)	0.083	0.705	-2.7	2.9	702

parties in the government. Then political concordance is measured by the percentage of the seats in the legislature that are occupied by members of parties represented in the executive. With at least three parties in the government on average coalition governments seem to be the rule in Swiss cantons. Indeed, over all observation, there were at least two parties in power in more than 75% of the cases. We also control for the number of departments. This variable also measures the number of member in the cabinet since, in Swiss cantons, each member of a cantonal government does head a department. The ideology of the executive as a whole is controlled for by the variable "Right" which is measured by the proportion of right-wing members in cantonal executives. "Postnumerando" is a dummy variable taking value one when a canton uses the postnumerando taxation system and zero when a praenumerando system is in use.²³ Grant measures the degree of tax autonomy using federal transfers as a share of actual direct tax revenue.²⁴ Deficit(-1) is the lagged cantonal fiscal balance computed as the total cantonal revenue minus total cantonal expenditure and measure the fiscal position of the canton when the tax revenue forecasts are made. Finally, to capture a change in economic conditions I include the growth rate in cantonal income (variable "Growth") and the annual change in the unemployment rate ("Unemployment(D)").

²³Luechinger and Schaltegger (2013) also control for the taxation system.

²⁴This indicator is expressed in real terms and does not include cantonal shares to federal tax.

5 Empirical Analysis

5.1 Econometric model

In the current section I present the methodology used to perform the analysis. The estimated model is formalized by equation 2 below.

$$Error_{ijt} = \alpha + \beta Ideology_{ijt} + \lambda Rule_{jt} + \mu(Ideology_{ijt} * Rule_{jt}) + \delta X_{ijt} + \gamma W_{jt} + \theta_j + \tau_t + \epsilon_{ijt} \quad (2)$$

, where $i = 1, \dots, 99$ identifies finance ministers, $j = 1, \dots, 26$ identifies cantons and $t = 1980, \dots, 2007$ identifies years. *Error* is our measure of tax revenue projection error. α is an intercept. $\beta Ideology_{ijt}$ is the ideology of the finance minister measured by his party affiliation as explained above and β the associated coefficient measuring the effect on revenue forecast errors. $Rule_{jt}$ is the index measuring measuring the stringency of fiscal rules. $\mu(Ideology * Rule)$ is an interaction term measuring the effect of a fiscal rule on the effect of the finance minister's ideology on projections. X_{ijt} is a matrix of controls constituted by the personal characteristics of the finance minister as presented in Table 4 and δ is the associate vector of parameters. W_{jt} is a matrix of controls at the cantonal level reflecting the economic, political and institutional environment in which the finance minister is exercising power as presented in Table 9 and γ is the associated vector of parameters. Note that W_{jt} includes the ideology of the spending ministers as well as three dummy variables for the pre-, post- and electoral year. θ_j and τ_t are canton and time fixed effects respectively and ϵ_{ijt} is the error term.

To have a clearer picture of how do fiscal rules influence the effect of the finance minister's ideology on tax revenue projection errors, it will be of interest to compute the marginal effect of ideology. We can derive it from equation (2):

$$\frac{\partial Error_{ijt}}{\partial Ideology_{ijt}} = \beta + \mu * Rule_{jt} \quad (3)$$

According to our hypotheses, β and μ are expected to be significantly positive and

negative respectively. A positive β would mean that a more right wing finance minister does produce relatively less conservative forecasts than a left wing finance minister. A negative μ would mean that the stringency of fiscal rules does reduce the effect of ideology on tax revenue projection errors.

5.1.1 Estimators

The data and, therefore, standard errors are potentially identified over three dimensions : finance minister, canton and year. Standard errors may thus be correlated within the clusters existing in these three dimensions thereby possibly leading to inference problems. Furthermore, while clusters related to finance ministers and cantons are nested, this is not the case for years and finance ministers or years and cantons. Therefore, in order to estimate equation 2, I follow the methodology suggested by Cameron et al. (2011) for multiway nonnested clustering. The parameters of interests will be estimated through OLS with cluster-robust standard errors with clustering occurring at the finance minister level and at the year level. Alternative estimators will be used to check for the robustness of the results. System GMM will be used to estimate a dynamic version of the model and a GLS estimator with panel corrected standard errors will also be used in order to better account for the panel specific autoregressive structure of the error term.

5.1.2 Endogeneity

As usual in any study of the impact of political variables and/or fiscal rules on fiscal variables one can question whether the estimation is not plagued with endogeneity problems. One could argue that all three variables of interest, revenue projection errors, finance minister's ideology and fiscal rules are determined by general fiscal conditions and/or citizens preferences. Here we argue that our estimation strategy is not affected by these issues for at least two reasons. First, it does not appear credible to argue that tax revenue forecast errors may have a reverse causal effect on the citizens preference and voting behaviour and eventually on the ideology of the finance minister. Very often budgeting errors are not re-

ported in public account and/or not commented and focused on by incumbents. Even when they are published, projection errors do not receive an important coverage by the media unless they are really extreme. Indeed the last realized values of expenditure, revenue and taxation, deficit and debt are the indicators which are the most focused on. Second, the context of Swiss cantons offers a quasi-experimental setting since voters do not know *ex ante* which department is going to be allocated to which politician. Once elected, members of cantonal cabinet allocate the departments according to implicit rules (seniority, age, former profession...). Therefore, from the point of view of the voters the allocation of a politician with a certain ideology to the department of finance is random. Since, in addition, we focus on this smaller share of total revenue which is fully under the control of the finance minister (at least when it comes to projections), we can be confident that the effect of the finance minister's ideology on tax revenue forecast errors can be interpreted in a causal way.

5.2 Results

The main regression results are reported in Table 10. The dependent variable is the direct tax revenue error per capita as defined by expression 4.1. The first column reports results for the full specification of our model as formalized in equation (2). The other columns check for the robustness of the results to the exclusion of certain groups of controls. The coefficient for "Ideology" is positive and strongly significant which indicates that the more to the right the finance minister, the less conservative the revenue projections. Furthermore, this relationship seems to be very robust to changes in the specification of the model. This result tends to support our theoretical argument that a left wing finance minister needs to curb deficits relatively more and thereby produce more conservative forecasts than a right wing finance minister in order to compensate for the negative signal sent by her/his ideology to the voters and be considered at least as competent by the voters, everything else being equal.

The direct effect of fiscal rules - row "Rule" in Table 10 - on projection errors is not significant but the parameter associated with the interaction term between fiscal rules and

Table 10: Main regression results

	(1)	(2)	(3)	(4)	(5)
Ideology	72.24*** (10.59)	70.39*** (8.975)	38.46*** (11.80)	63.38*** (9.360)	69.09*** (6.053)
Rule	61.22 (43.10)	57.32 (37.90)	25.23 (20.65)	67.64** (33.56)	79.08** (40.04)
Ideology x Rule	-10.84* (5.835)	-10.44* (5.745)	-0.742 (4.143)	-11.42** (4.536)	-13.46** (5.493)
Pre-election year	-31.02** (12.85)	-28.79*** (9.246)	-34.56** (14.61)		-30.40** (13.02)
Election year	-4.843 (12.58)	-4.625 (12.79)	-5.849 (14.16)		-3.602 (14.93)
Post-election year	-17.66* (9.318)	-14.33* (8.483)	-21.73* (11.69)		-15.76 (9.620)
Minister controls	Yes	Yes	Yes	Yes	No
Canton controls	Yes	Yes	Yes	No	Yes
Canton FE	Yes	Yes	No	Yes	Yes
Time FE	Yes	No	Yes	Yes	Yes
Observations	653	653	653	709	669

Standard errors in parentheses

* $p < .10$, ** $p < .05$, *** $p < .01$

Standard errors clustered at the finance minister and year levels

the finance minister's ideology turns out to be significant and negative. This result is robust except in the case where canton fixed effects are dropped (column (3)). However a joint test of significance shows that fixed effects should be included in the model.²⁵ Note that the interaction term is actually significant in spite of the fact that our explanatory variables are highly correlated. Therefore the provided evidence is stronger than what the p-value for the interaction term suggests.

To illustrate more precisely how the stringency of fiscal rules alters the effect of ideology on tax revenue projection errors we have computed and plotted the marginal effect of the Finance minister's ideology as formulated in expression (3). The marginal effect of Ideology turns out to be significant at any value of the fiscal rule indicator. As shown in Figure (4), the marginal effect unambiguously decreases when fiscal rules become more stringent. This result is in line with our theoretical argument thereby suggesting that fiscal rules tend to

²⁵The value of the Chi2 of the test for joint significance of the fixed effects is 3167.33 with 25 degrees of freedom. P value is 0.0000.

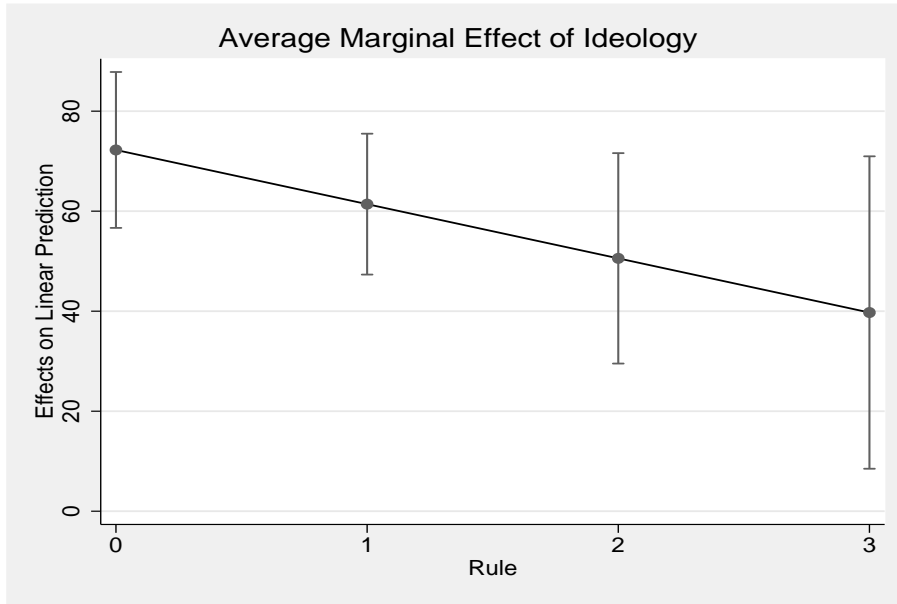


Figure 4: Average Marginal Effect of Ideology on Revenue Projections

render the signal sent by a reduction in deficits less informative to the voters and create incentives for the finance minister to engage in other types of signalling activities. This incentive is stronger for left wing finance minister since they have to compensate for the negative signal sent by their ideology to the voters.

5.3 Robustness Checks

In order to assess the robustness of our results and also to better understand what drives them, we performed different robustness checks. Table 10 already provides information about the robustness of our results to the exclusion of certain controls and fixed effects which we already discussed. Then a natural battery of robustness checks to perform pertains to the exclusion of individual cantons and finance ministers. Qualitatively our results are very robust since the sign of the parameter associated with the ideology of the finance minister and the sign of the parameter of the interaction term *never* change. The parameter for ideology is always very significant and is insensitive to the exclusion of individual finance ministers or cantons. Although the parameter associated with the interaction term is always negative, its significance and magnitude turn out to be sensitive to the exclusion of individual cantons or finance ministers. Interestingly, the significance drops only when left wing - i.e. from the

socialist or the green party - finance ministers or cantons where left wing finance ministers exercised power are excluded from the sample. This shows that the interaction effect is particularly driven by left wing finance ministers and provides support to our theoretical argument.²⁶

Then we also used alternative estimators to estimate our model. More precisely we estimated a dynamic version of the model that includes the lagged tax revenue projection error and the twice lagged tax revenue projection error. We estimated this dynamic version of the model alternatively with the system GMM estimator (Arellano and Bover, 1995; Blundell and Bond, 1998) and with the GLS estimator with panel corrected standard errors suggested by Beck and Katz (1995). Results are reported in Table 11 in the appendix and show that our results are robust to this alternative specification and estimation strategy.

Finally, one may argue that the direction and the size of the effect of the ideology of the finance minister does not depend on the finance minister's absolute position on the left-right scale but depends on its position relative to the spending ministers. To check for the robustness of our results to this hypothesis we included the difference between the ideology of the finance minister and the average ideology of the spending ministers in the model and estimated it. The results are reported in Table 12 and show that the ideological gap between the finance minister and the spending ministers is strongly significant. Nonetheless our results remain unaltered by the inclusion of the ideological gap between the finance minister and the spending ministers.

6 Conclusion

This paper analyses the effect of the ideology of the finance minister on tax revenue projection errors. It also explores how fiscal rules alter the aforementioned effect. Using a panel dataset on 26 Swiss cantons over the period 1980-2007 as well as a new dataset on 99 finance ministers at the cantonal level, we find a positive relationship between the ideology

²⁶Due to the high number of regressions (125) these robustness checks represent, the results are not reported in the current paper. However, they are available upon request.

of the finance minister and tax revenue projection errors in the sense that a more left wing finance minister produces more conservative forecasts. We also find that fiscal rules tend to reduce this positive effect. These empirical findings tend to support the idea that left wing finance ministers need to compensate for the negative signal sent by their - publicly known - ideology when it comes to their ability to curb deficits. Therefore, everything else being equal, left wing finance ministers need to curb deficits more and therefore be more conservative in their projections than right wing finance ministers in order to signal the same level of competence to the voters. Our findings also support the idea that fiscal rules render the reduction of deficits by finance ministers less informative about their competence and create incentives to engage in other type of signalling actions. This incentive effect is stronger for left wing finance minister since they need to compensate for the negative signal sent by their ideology.

More generally, our evidence suggests that asymmetric information about expected tax revenue creates opportunities for the finance minister to manipulate revenue projections and influence fiscal policy. It also provide some evidence that fiscal rules seem to reduce these manipulations. This result is in line with those found by Luechinger and Schaltegger (2013) who show that fiscal rules tend to increase the probability of accurate deficit projections. Another way to reduce manipulation one could advocate is by reducing the degree of asymmetric information. Having a higher number of competing and independently produced tax revenue forecasts could contribute to reduce the asymmetry of information between the finance minister and the spending ministers or the members of the parliament thereby reducing the possibilities of manipulation.

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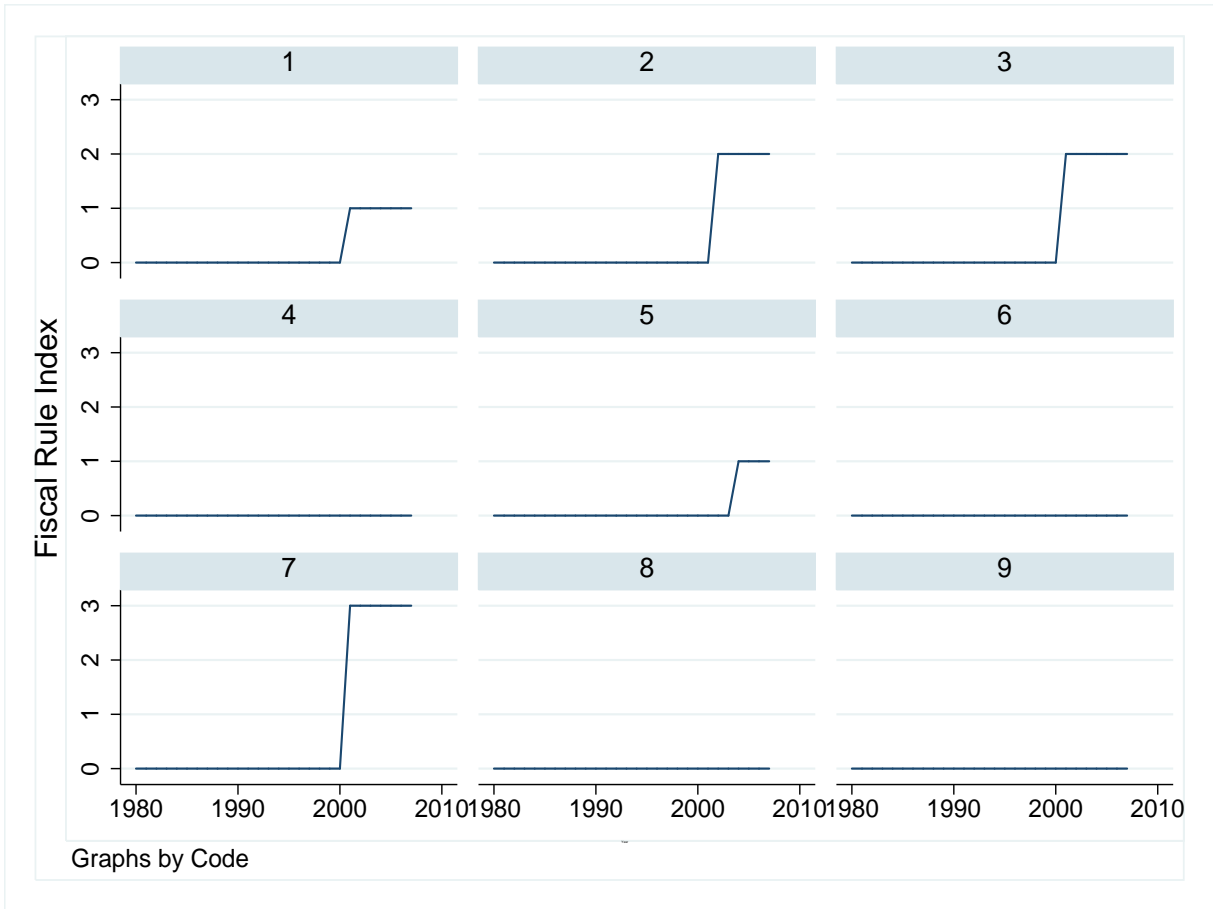
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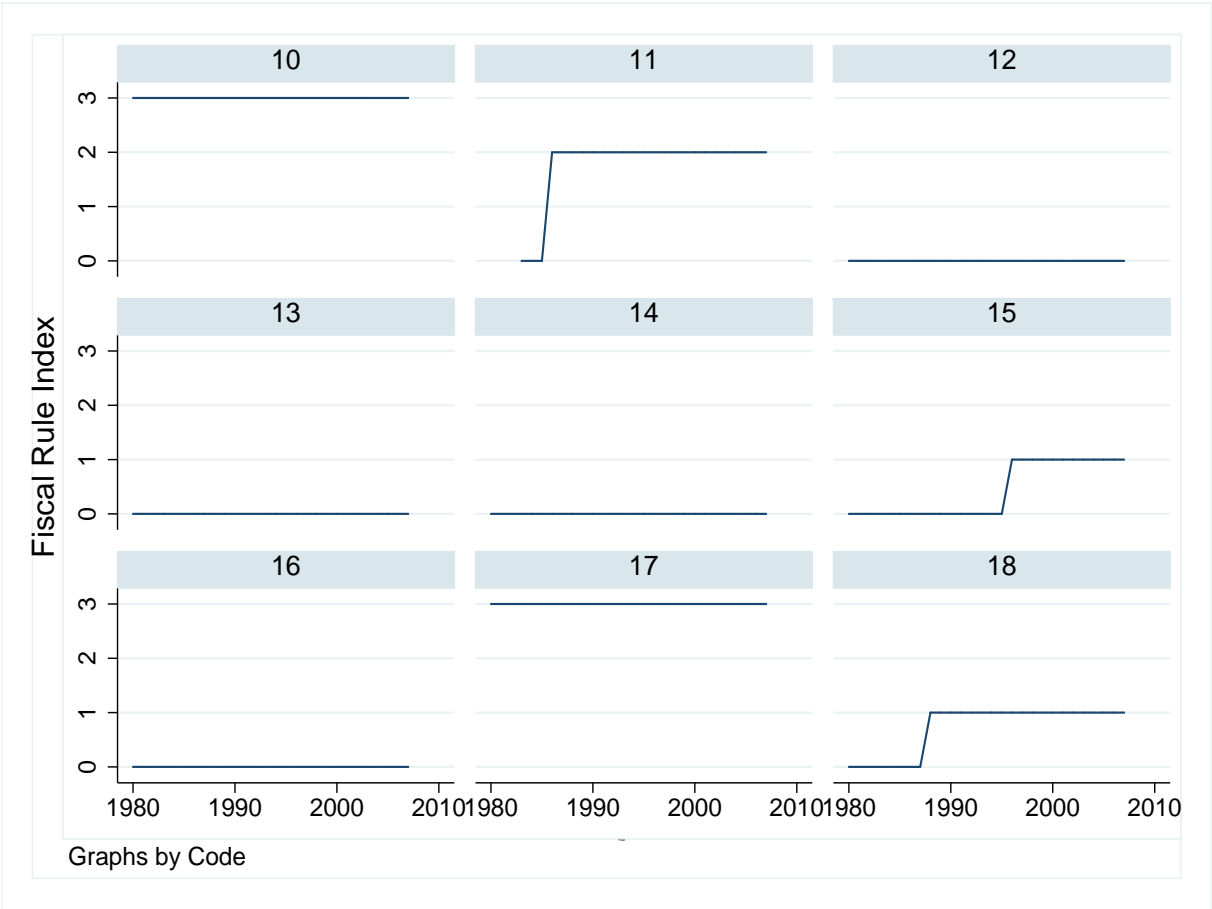
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Appendix

Stringency of Fiscal Rules in Swiss cantons (1980-2007)





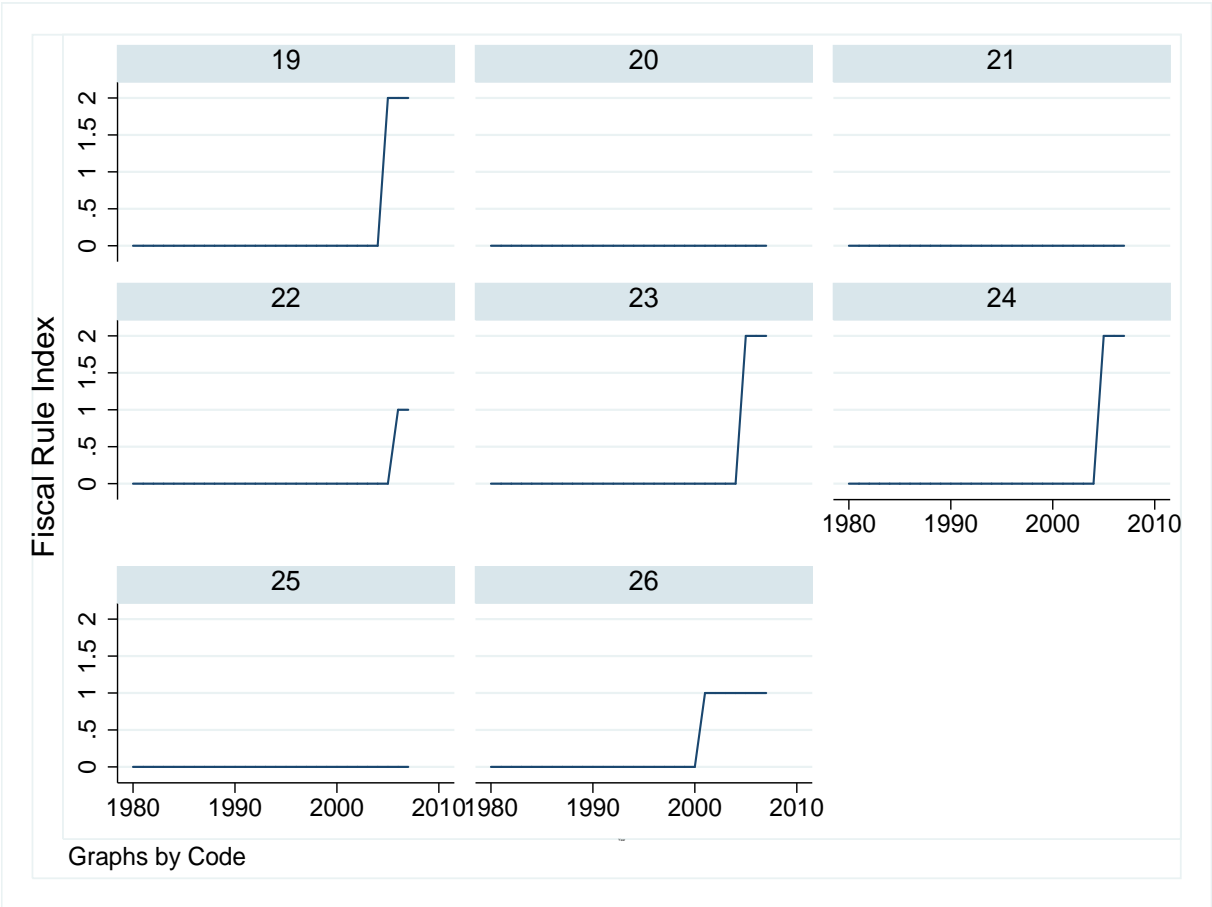


Table 11: Dynamic specification of the model

	(1)	(2)	(3)	(4)
Ideology	64.91*** (9.887)	69.01*** (10.27)	74.12*** (21.46)	69.82*** (16.36)
Rule	57.37 (36.17)	58.25 (37.26)	57.90 (43.49)	51.25 (34.94)
Ideology x Rule	-10.95* (6.239)	-11.07* (6.396)	-10.75* (5.819)	-11.00** (5.017)
Pre-election year	-60.00*** (16.41)	-54.54*** (16.69)	-23.65* (13.60)	-37.59*** (14.43)
Election year	-5.329 (16.38)	-4.249 (16.57)	-1.865 (16.97)	-2.203 (16.71)
Post-election year	-30.87* (16.68)	-30.89* (16.89)	-14.68 (14.08)	-24.46* (14.78)
Minister controls	Yes	Yes	Yes	Yes
Canton FE	No	No	Yes	Yes
Canton controls	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Observations	603	603	653	629

Standard errors in parentheses

* $p < .10$, ** $p < .05$, *** $p < .01$

(1) and (2) are estimated through system GMM. (3) and (4) estimated using GLS with panel corrected standard errors.

Table 12: Model including the ideological gap

	(1)	(2)	(3)	(4)	(5)
Ideology	197.3*** (28.14)	171.2*** (27.91)	112.8*** (23.14)	137.5*** (24.69)	196.6*** (24.22)
Rule	61.22 (43.23)	57.32 (38.29)	25.23 (20.67)	75.69** (35.40)	79.08** (40.19)
Ideology x Rule	-10.84* (5.857)	-10.44* (5.830)	-0.742 (4.158)	-12.18*** (4.371)	-13.46** (5.516)
Gap	125.0*** (23.36)	100.8*** (21.57)	74.39*** (27.55)	60.79*** (16.82)	127.5*** (20.02)
Minister controls	Yes	Yes	Yes	Yes	No
Canton controls	Yes	Yes	Yes	No	Yes
Canton FE	Yes	Yes	No	Yes	Yes
Time FE	Yes	No	Yes	Yes	Yes
Observations	653	653	653	709	669

Standard errors in parentheses

* $p < .10$, ** $p < .05$, *** $p < .01$

The variable called "Gap" measures the difference between the ideology of the finance minister and the average ideology of the spending ministers.