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Minority government and fiscal policy outcomes:

New evidence

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1 Introduction.....	3
2 Previous research.....	4
3 Theory.....	7
3.1.1 The nature of minority government.....	7
3.1.2 Government primary balance, revenue and expenditure.....	8
3.1.3 Defining an interaction variable.....	8
4. Data.....	9
4.1.1 Government finance variables.....	9
4.1.2 Political variables.....	10
4.1.3 Economic variables.....	11
5 Method.....	11
6 Results from benchmark regression.....	12
7 Controlling for robustness.....	16
7.1.1 Controlling for decades.....	16
7.1.2 Controlling for outliers.....	18
7.1.3 Controlling for the dependent variable.....	21
7.1.4 Controlling for type of government.....	23
7.1.5 Controlling for difficult times.....	25
8 Conclusion.....	26
9 References.....	27

Abstract. Using a panel of 18 European OECD countries over the period 1979-2011, this paper re-examines and extends previous empirical evidence on the effects of minority government on fiscal policy outcomes. First government primary balance is separated into revenues and expenditure according to Kontopoulos and Perotti (1999). Second minority governments are categorized into dummy variables according to Edin and Ohlsson (1991). Evidence show that political fragmentation appears to be more significant in times of economic crises, and that minority government affect government primary balance, revenues and expenditure negatively. Surplus coalition government affect the government primary negatively in the 2000s, as opposed to single minority government. These results suggest that due to the complex and ambiguous nature of minority government, it cannot be directly translated into number of parties in ruling coalition.

Keywords: minority government, government primary balance, expenditure, revenue, political fragmentation.

1. Introduction

Many OECD countries have accumulated large debts and budget deficits in the last 40 years. Since then the economic politics discipline has attempted to explain the reason behind government spending choices.

According to the European Commission, 11 countries broke the Maastricht Treaty criteria of a general government deficit exceeding 3 % of GDP and 16 countries broke the criteria of a gross general debt exceeding 60 % of GDP in 2013. At the same time debt and deficit levels vary substantially between these countries. The general consensus is that the variation cannot be explained only by economic variables, but that the differences lie in the structure of government institutions. Researchers have found evidence that political fragmentation may lead to larger budget deficits and that the relationship is especially significant in times of economic stress. Given the last decade's severe global economic crises and the high number of indebted countries in the world today, this is a very important and current issue that calls for more attention and more research.

The purpose of this paper is to deepen and extend previous literature on the relationship between political fragmentation and fiscal policy outcomes. More precisely the purpose is to examine the relationship between minority government and government primary budget, revenues and expenditure. The relationship is examined in two main ways: by examining new data from the last decade and by using a new combination of economic and political variables. The analysis consists of a regression on panel data for 18 European OECD countries over the period 1979-2011. The dependent variable is separated into government primary balance, expenditure and revenues in the manner of Kontopoulos and Perotti (1999). The political variable is chosen in the manner of Edin and Ohlsson (1991) where the type of government is categorized into dummy variables. The goal with this combination of variables is to get as quantitative and objective results as possible.

The next section presents previous research. Section 3 describes the theoretical underpinning of the regression model. Section 4 examines the data set. Section 5 describes the estimated empirical regression and the expected outcome. Section 6 presents the basic results and section 7 describes several robustness tests on the basic result regression. Section 8 concludes the results.

2. Previous research

This section presents previous research on the subject. First differences and similarities between the studies are described. Then the present study is demonstrated and compared to previous studies.

Table 1 presents previous research with time- and country samples, dependent and political variable. Roubini and Sachs (1989) were one of the first to define the political and economic determinants of budget deficit. They discovered that many parties in ruling coalition as well as short average tenure of government tend to lead to larger budget deficit. Edin and Ohlsson replicated this research in 1991 and found that minority governments rather than majority coalition governments appear to run large budget deficits. However, De Haan and Sturm (1994) did not find any relationship between the form of government and budget deficit. Borelli and Royed (1995) argued that the impact of structural differences on budget deficit is more significant in times of economic stress. Depending on the type of economic shock, coalition size and cabinet size have different impact on expenditure and budget deficit according to Kontopoulos and Perotti (1999). Hallerberg and von Hagen (1999) found that one-party majority government and multi party governments must rely on different budgetary institutions in order to reduce budget deficits.

All previous researchers run regression models on panel data where the economic and political variables are separated for. The economic variables are in general always including the deficit/debt/expenditure, percent of real GDP as the dependent variable, and the real GDP growth rate and the change in the unemployment rate as independent variables. The main difference lies in the use and choice of political variables. Naturally many problems arise when political variables are tested for empirically since they are subject to a country's political, cultural and institutional history among others. Previous researchers have chosen as their political variables everything from size fragmentation, effective number of parties in parliament, political complexion of government, indexes of political cohesion, right wing-left wing dominance in parliament to political elections among others. Thus there are many different ways to measure political variables and often not easy to do so in an objective manner.

This paper follows the investigation of Kontopoulos and Perotti (1999). However it extends their study in some profound ways. First, this study examines 16 years of new data. Second, by examining the actual classification of government, i.e. *the type of government*, political fragmentation is measured in a more precise and appropriate manner. It is difficult to relate results to the institutional structure of government when just talking about number of parties in ruling coalition. Third, in contrast to Kontopoulos and Perotti (1999) the type of

government is categorized into dummy variables which remove eventual bias due to subjective opinions about government weakness or strength.

Table 1 Previous research

Author	Period examined	Countries examined	Dependent variable	Political variable
Roubini and Sachs	1960-1986	*Canada, Denmark, Japan, Norway, United States	Change in debt/GDP ratio	Index of political cohesion.
Edin and Ohlsson	1960-1986	*Canada, Denmark, Japan, Norway, United States	Change in debt/GDP ratio	Dummy variables for type of government.
de Haan and Sturm	1982-1992	*Australia, Canada, Denmark, Greece, Japan, Norway, Portugal, Spain, Switzerland, United States	Change in debt/GDB ratio	Dummy variables for type of coalition government.
Borelli and Royed	1959-1990	*Australia, Canada, Japan, Norway, Switzerland, United States	Change in log real deficit	Ideological index score, number of parties in government previous year, number of different governments previous year and dummy variable for political election.
Kontopoulos and Perotti	1960-1995	*Australia, Canada, Denmark, Greece, Japan, Norway, Portugal, Spain, Switzerland, United States	Annual deficit, expenditure and revenues	Number of parties in ruling coalition and number of spending ministers.
Hallerberg and von Hagen	1981-1994	*Denmark, Greece, Luxembourg, Portugal, Spain, Switzerland	Change in debt/GDP ratio	Dummy variables for type of government, dummy variable for strong finance minister, and percentage of cabinet seats held by left-wing parties.

Note: * = Austria, Belgium, Finland, France, Germany, Ireland, Italy, Netherlands, Sweden, United Kingdom

3. Theory

This section describes the underlying theory of how political fragmentation may lead to larger budget deficits. First the definition and nature of minority government is presented. Second the theory behind analysing for government primary balance, revenue and expenditure, is explained. Finally the theoretical background for including an interaction variable and a second political variable is described.

The theory of how political fragmentation may lead to larger budget deficits is well established and used in practically all texts concerning the subject. On a very general level it says that the larger the number of political parties in a ruling coalition, the harder it is to reach budget decisions, since each party will conduct lobbying on its own interest¹. The purpose of this study is to examine minority governments, therefore the number of parties in ruling coalition is not given any attention. Due to the same reason the relationship between electoral systems and budget deficit is not treated².

3.1.1 The nature of minority government

The reason for examining minority governments is that it may reflect political fragmentation in another way than the number of parties in ruling coalition according to Kontopoulos and Perotti (1999). The definition of a minority government is that the governing parties does not possess majority of overall seats in parliament. A minority government is therefore forced to seek support among other parties in parliament which are not in government. This might lead to extensive inconsistency in government policy since a minority government may have to accommodate with one party on one concern and another party on a different concern. Each party who participate in the majority then demands a share in the budget. As a result expenditure and budget deficit increase.

Note however that minority governments may have different effects on government primary balance, revenue and expenditure depending on the number of parties in the minority coalition and how far from a majority they are. As mentioned, single minority governments depend on the support of other parties. Most of the time they are however multi-party governments. The difference between multi-party coalition governments and minority governments is therefore rarely clear cut (Edin and Olsson, 199). Indirect this also says that a minority government, which has extensive support from parties outside government, is in reality less fragmented than it appears to be. Additionally the definition of minority government says nothing about the extent or the degree of minority that exist in parliament. If for example, minority government affect budget deficit when the governing party (ies) has only 25% of the seats, all of the governing party (ies) that has between 26-49% of the seats are not significant in the regression and does not affect budget deficit. With this in mind, we know that the minority

¹ See Roubini and Sachs (1989) de Haan and Sturm (1994), Kontopoulos and Perotti (1999), Hallerberg and von Hagen (1999), for a survey of this theory.

² The general consensus is that proportional representation systems lead to multi-party systems and coalition governments, Hallerberg and von Hagen (1999), Persson and Svensson (1989), Roubini and Sachs (1989), Tabellini and Alesina (1990), Alesina and Perotti,(1995) Davidsson (2007) among others.

dummy is not necessarily directly translated into more political fragmentation in the manner of more number of parties in ruling coalition like Kontopoulos and Perotti (1999).

3.1.2 Government primary balance, revenues and expenditure

As for the dependent variable, the government primary balance is divided into expenditures and revenues. Kontopoulos and Perotti (1999) are alone in emphasizing the importance of looking at expenditure rather than the deficit. The theory says that as the number of decision makers increase, the marginal cost of expenditure to each decision maker falls. At the same time, every decision maker will demand a higher expenditure as each decision maker has its own interests to bear in mind. As a result, expenditure will increase. Kontopoulos and Perotti (1999) highlight the importance of looking at expenditure as opposed to deficit since they argue that political fragmentation might not be captured in the deficit alone. By definition, expenditure that exceeds revenues leads to budget deficit. Furthermore it is the budget deficit that is of interest in current economic politics and one might argue that the most common and direct way to examine the fiscal policy environment is to look at the deficit. However the findings of Kontopoulos and Perotti (1999) stress the importance of examining the exogenous forces behind budget outcomes.

3.1.3 Defining an interaction variable

Previous studies have found evidence that political fragmentation is especially bad for fiscal policy outcomes in times of economic stress³. Roubini and Sachs (1989) argue that coalition governments may prolong budget deficits in times of adverse shocks which require spending cuts. This is because coalition members have specific spending choices and veto powers against change over the budget⁴. To test this theory an interactive term between real GDP growth rate and the minority dummy is included in the regression model. This will change the interpretation of real GDP growth rate and the minority dummy when they are separated. If the interaction term did not exist, the coefficient of the minority dummy would be interpreted as the effect of minority government on the dependent variable. However the interaction term indicate that the effect of minority government on the dependent variable is different for different values of the real GDP growth rate. Therefore the unique effect of minority government is not limited to the coefficient of real GDP growth rate, but also depends on the values of the coefficient of the interaction term and real GDP growth rate. Now the coefficient the minority dummy is the unique effect of minority government, only when real GDP growth equals zero.

Finally there is evidence that expenditure tend to increase in times before political elections. Theory of the Political Budget Cycle theory says that pre-electoral manipulation among politicians in government increases their chance of being re-elected (Drazen and Eslava, 2005, Palda and Palda, 1998, Akhmedov and Zhuravskaya, 2004). Therefore an additional political variable is added for political elections.

³ See Roubini and Sachs (1989), Borelli and Royed (1995), Kontopoulos and Perotti (1999) among others.

⁴ See Roubini and Sachs (1989).

4. Data

In this section the data is presented and discussed. Initially the sample of countries and the sample period is explained. Second the dependent variable is described, followed by the political variables and finally the macroeconomic variables.

The data comprise 18 European countries over the period 1979-2011⁵. The goal with the choice of data is to have a lot of variation in the dependent variable and the minority government dummy variable, and little variation in the other independent variables. To achieve this, the analysis only includes countries within the OECD-Europe group defined by the OECD Economic Outlook. The background variables are expected to work at the same level for all observations with this choice of countries. The OECD-countries in Europe not included are the following countries formally controlled by the Soviet Union: Estonia, Czech Republic, Hungary, Poland and Slovenia. The reason for the exclusion is that these countries were strongly influenced by communistic economic politics until the 1990s. Turkey is also excluded due to its transcontinental nature. As mentioned earlier, this study extends the results of Kontopoulos and Perotti (1999) by examining new data from the time period of 1996 to 2011. This study examines the three last decades which have experienced a lot of fiscal action and economic stress to test the theory of the importance of political fragmentation in times of economic stress.

Like most previous research, this analysis separates macroeconomic and political variables. All data come from the OECD Economic Outlook and the Comparative Political Data Set I (Armingeon et.al. 2013), which contained the least amount of gaps compared to all other databases. Furthermore, the data was cross-checked (for the years available) with the EUROSTAT's National Income Accounts, the UNdata Set and the International Financial Statistics, to gain as much comparability as possible of the data.

4.1.1 Government finance variables

The first variable defined is the government primary balance, measured as a percentage of GDP. The government primary balance excludes interest payments on public debt⁶ and is the closing entry in either the capital or financial accounts according to OECD (2014). By definition it shows whether a country is a net borrower or a net lender. As stated earlier, this study separates for government primary balance, expenditure and revenue. General government revenue includes taxes on production, the net value of capital transfers and the net value of purchases of non-financial assets. General government expenditure includes all general government expenditure⁷.

Here there is a gap in data which concerns Switzerland and Luxembourg from 1979 to 1989. The definition of government primary balance forms one of the two Maastricht excessive

⁵ The countries are Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

⁶ A budget in balance has expenditure equal to revenue, but has a deficit due to interest payments on debts in the past.

⁷ According to OECD National Accounts (2014) it includes all public and individual consumption, excluding consumption part of the gross fixed capital formation.

deficit criteria which are used by the European Commission. The comparability of the data is especially good for EU countries. Since different types of institutions are included in each country's respective institutional sectors, there is however always a problem concerning the comparability with cross country data (OECD National Accounts, 2014). Government primary balance, revenue and expenditure are named together named Y in the regression model.

Furthermore one can criticize the measurement of the government primary balance variable. Borrelli and Royed (1995) as well as Kontopoulos and Perotti (1999) argue that the estimated impact of GDP change on deficit change might be distorted when using some form of GDP on both sides of an equation, since GDP growth in itself is able to decrease deficit measured as percentage of GDP even if the deficit remains the same. A solution to this problem is to use percentage *change* in the government primary balance variable as supposed to just percentage of GDP. This will be controlled for further on in the sensitivity analysis.

4.1.2 Political variables

The data used for the political variables is brought from the Comparative Political Data Set I (Armingeon et.al. 2013) and was double checked with its original source from the Party Government Data Sets (Woldendorp et.al. 2013). The data was also compared to the European Journal of Political Research and the annual volumes of the Europa Yearbook. A type of government classification, or index, is available in this data set which defines six different types of governments. These are; "1 = Single Party Government: one party takes all government seats; 2 = Minimal Winning Coalition: all participating parties are necessary to form the government; 3 = Surplus Coalition: this comprises those coalition governments, which exceed the minimal-winning criterion; 4 = Single Party Minority Government: the party in government does not possess a majority in Parliament; 5 = Multi Party Minority Government: the parties in government do not possess a majority in Parliament; 6 = Caretaker Government: the government formed is not intended to undertake any kind of serious policy-making, but is only minding the shop temporarily", (Armingeon et.al.2013). Since this analysis has a straightforward measurement of political fragmentation, i.e. minority government, a political dummy variable was created which equals one for single party minority government and multi party minority government, and zero otherwise. A dummy variable was also created for year of election which equal one if election was (were held) the previous year and zero otherwise. This categorization can control for fragmentation without the problems of subjective opinions about the strength or weakness of a typical type of government⁸. The minority dummy is from now on called MIN.

Data for an election held the previous year is also collected from the Comparative Political Data Set I (Armingeon et.al. 2013) and a dummy was created which equal one if an election was held the previous year, zero otherwise. This dummy is called ELEC.

⁸ In contrast to Roubini and Sachs whom value the budget effect of a minority government as three times as large as a two party majority coalition (Edin and Olsson, 1991)

4.1.2 Economic variables

Finally three macroeconomic variables are defined. First is the rate of growth of real GDP, named DY, which is a straightforward measurement of the relative change in real GDP from the previous year divided with the value of GDP from the previous year. Second is the inflation rate, which is named INFL. It is measured as the growth of consumer price index (CPI), percent change from previous year. Third is the unemployment rate as the percentage change of the civilian labour force⁹. In contrast to the unemployment level which is the number of people who are not working but are actively looking for work, the rate of unemployment is measured as a percentage of civilian labour force. This variable is now named DU.

All variables are cyclically unadjusted (Kontopoulos and Perotti, 1999). One could argue that cyclically adjusted variables are desired when testing the effects of political factors, considering how previous studies have shown that political fragmentation is of statistical significance in times of economic stress. Furthermore general government data is used as in Kontopoulos and Perotti (1999). Volkerink and de Haan (2001) and Borelli and Royed (1995) argue that central government data is preferred over general government data because proportions of the total government taxing and spending policies are controlled by subnational authorities. However since this is a replication study of Kontopoulos and Perotti (1999) which aims at re-examining and extending previous results, cyclically unadjusted variables are used for a direct comparison and general government data is used for as much comparability and consistency in data as possible.

5. Method

This section will present the method for estimating the above described model. The following panel fixed-effects regression is specified in the same manner as Kontopoulos and Perotti (1999):

$$Y_{ti} = \alpha_0 + \alpha_1 DY_{ti} + \alpha_2 MIN_{ti} + \alpha_3 DY_t * MIN_{ti} + \alpha_4 INFL_{ti} + \alpha_5 DU_{ti} + \alpha_6 ELEC_{ti} + Z_i + \varepsilon$$

Where Y_{ti} is the dependent variable that in different specifications are either the government primary balance or the revenue or expenditure; DY_{ti} is the rate of growth of real GDP; MIN_{ti} is a dummy variable equal to one for minority governments, zero otherwise; $MIN * DY_{ti}$ is an interaction of minority governments with the rate of growth of real GDP; $INFL_{ti}$ is the growth of CPI, percent change from previous year; DU_{ti} is the unemployment rate as a percentage of civilian labour force, $ELEC_{ti}$ is a dummy variable equal to one if election(s) was (were) held the previous year, zero otherwise and Z_i is a vector of fixed effect variables.

The null hypothesis for this analysis tests that $\alpha_2 < 0$, $\alpha_3 > 0$ when the dependent variable is government primary balance or the revenue. The analysis thus test that minority government affect the government primary balance negatively and that minority government is typically bad in times of economic stress. Considering the theory described earlier we know that the

⁹ The unemployment as a percentage of civilian labour force is converted into percentage change for more consistency in data.

minority dummy is not necessarily directly translated into more political fragmentation. However we expect the null hypothesis for expenditure to be the opposite of that for government primary balance and revenue. The null hypothesis for expenditure thus tests that $\alpha_2 > 0$, $\alpha_3 < 0$.

According to section 3, an election held the previous year affects the government primary balance and revenues negatively. Therefore the null hypothesis tests that $\alpha_6 < 0$ when the dependent variable is the government primary balance or the revenue, and the opposite when the dependent variable is expenditure.

As for the macro economic variables, the null hypothesis tests that $\alpha_1 > 0$, $\alpha_4 < 0$ and $\alpha_5 < 0$ when the dependent variable is government primary balance or revenue, and $\alpha_1 < 0$, $\alpha_4 > 0$ and $\alpha_5 > 0$ when the dependent variable is expenditure. The signs of the coefficients are quite natural and the reason for including them is that they reflect the economic environment on government primary balance and expenditure (Kontopoulos and Perotti, 1999). Real GDP growth increases the property income of households which in turns increase tax revenues. By definition inflation reduces the real value of accumulated debt and deficit. Finally high unemployment leads to high expenditure through unemployment compensation, insurance and subsidies.

6. Results from benchmark regression

This section will describe the results from the total time period with the pooled regression model and the fixed effect-model¹⁰. First, I will focus on how to interpret the effects of minority governments in the presence of an interaction term. Second, I present the results from the pooled regression model. Third, I present the results from the fixed effects model with country and time fixed effects, respectively, and finally with both country and time fixed effects together. For each model, there are three regressions, one with primary government balance as dependent variable, one with government expenditure as dependent variable and one with government revenue as dependent variable. The results are presented in the same manners as Kontopoulos and Perotti (1999).

Initially, the interaction term requires some interpretation. If there were no interaction term, α_2 would be interpreted as the effect of minority government on the dependent variable. However the interaction term indicates that the effect of minority government on the dependent variable is different for different values of the real GDP growth rate. At a zero real GDP growth rate, the results in column 1 in table 6.2 suggest that a country with a minority government decreases expenditure with approximately 1.41 percentage points. The interaction term suggests though, that this effect increases with 0.56 percentage points of GDP if real GDP growth rate is negative with one percentage point. The results support previous evidence

¹⁰ The redundant fixed effects test rejects the null hypothesis of both redundant time-and country fixed effects. Furthermore a dummy variable for each country was created in the least squares dummy variables (LSDV) regression, where one obtain the same coefficients for all variables specified in equation (1) as with the fixed effect model. Additionally, a Wald test rejects the null hypothesis of all country dummies being equal to zero. Thus, the alternative hypothesis of fixed effect is appropriate

that political fragmentation in the form of minority government is more important in bad than in good times.

Table 6.1 presents the pooled regression which estimates the model without concern of cross section and time series nature of data. The individual effect that exists between the various countries and over time is therefore neglected. Note that this model is being included for comparison with the main fixed effects model. Just as Kontopoulos and Perotti (1999) demonstrated, it is of importance to separate between government primary balance, revenue and expenditure. As shown in table 6.1, MIN_{it} is clearly significant and of the unexpected sign (according to the null hypothesis) for the revenue and expenditure regression. Furthermore $DY*MIN_{it}$ is of the unexpected sign and significant in the expenditure regression. The macroeconomic variables are of the expected signs and significant with a few exceptions. $ELEC_{it}$ is of the expected sign although far from being significant.

Since this is a panel data model which is estimated without accounting for the individual effects that exists between countries, the results are not of much significance. For example it is possible that there have been a greater amount of minority governments in countries with low expenditures than in countries with high expenditures.

Table 6.2 presents the results with fixed effects. One could argue that it seems natural to use country- fixed effect, since it allows for individuality and for different relationships between the dependent and independent variables for different countries. This is because the regression comprises political variables (Kontopoulos and Perotti, 1999), which are clearly difficult to observe, since they are characterized by culture, tradition, social and political institutions among other things. Column one to three presents the results with country fixed effect. Now MIN_{it} is of the expected sign and significant in the government primary balance –and revenue regression. $DY*MIN_{it}$ is of the expected (unexpected) sign and significant in the government primary balance (expenditure) regression. Furthermore the economic variables are of statistical significance and working as one would expect.

In columns four to six the results from the time fixed effect model is presented. Kontopoulos and Perotti (1999) argue that the reason behind the importance of time fixed effect is the probability of strong correlation between macroeconomic shocks and fiscal outcomes. This seems realistic since macroeconomic shocks are reflected in the economic variables DY_{it} , $INFL_{it}$, and DU_{it} which are included in the model. MIN_{it} is significant in the revenue –and expenditure model, and still of the unexpected signs. $DY*MIN_{it}$ is of the unexpected sign and significant in the expenditure regression. The economic variables are significant and of the expected signs. Important is that this model does not account for the individual effects that occur across countries. The results are therefore not of much importance.

Table 6.1 Total time period, unbalanced data

	Δ PRIM 1979-2011 (1)	Δ REV 1979-2011 (2)	Δ EXP 1979-2011 (3)
DY	0.44*** (6.75)	0.48*** (6.15)	-0.02 (-0.47)
MIN	0.54 (1.06)	2.05*** (3.46)	-1.75*** (-4.99)
DY*MIN	0.19 (1.32)	-0.07 (-0.43)	0.24** (2.37)
INFL	-0.11*** (-5.18)	-0.09*** (-3.63)	0.01 (0.33)
DU	-0.27*** (-7.55)	-0.59*** (-13.94)	0.32*** (12.90)
ELEC	-0.09 (-0.29)	-0.38 (-0.85)	0.18 (0.75)
R^2	0.23	0.35	0.27
N	570	530	530

Note: DY: real GDP growth rate; MIN: minority government; DY*MIN: interaction effect of real GDP growth rate and minority government; INFL: rate of change of CPI; DU: change in unemployment; ELEC: election held previous year; PRIM: government primary balance (see text for exact definition); EXP: expenditure; REV: revenue. All fiscal variables are first differences of their shares in GDP. ***=significance at 1 percent level, **=significance at 5 percent level, *=significance at 10 percent level. Column 1-3: unbalanced data.

Table 6.2 Total time period, fixed effect model

	$\Delta PRIM$ 1979-2011 (1)	ΔREV 1979-2011 (2)	ΔEXP 1979-2011 (3)	$\Delta PRIM$ 1979-2011 (4)	ΔREV 1979-2011 (5)	ΔEXP 1979-2011 (6)	$\Delta PRIM$ 1979-2011 (7)	ΔREV 1979-2011 (8)	ΔEXP 1979-2011 (9)
DY	0.76*** (7.41)	0.39*** (6.42)	0.08*** (3.18)	0.23*** (2.78)	0.42*** (4.20)	-0.18*** (-2.87)	0.25*** (3.28)	0.27*** (3.51)	0.02 (0.59)
MIN	-1.41** (-2.23)	-1.26** (-2.02)	-0.27 (-1.10)	0.60 (0.22)	2.39*** (4.05)	-2.01*** (-5.65)	-1.48*** (-2.47)	-1.10** (-1.91)	-0.51** (-2.22)
DY*MIN	0.56*** (2.56)	0.19 (1.41)	0.13** (2.33)	0.17 (1.21)	-0.12 (-0.73)	0.25*** (2.56)	0.30** (2.31)	0.13 (1.10)	0.12*** (2.45)
INFL	-0.08*** (-3.85)	-0.07*** (-3.28)	-0.05** (-2.13)	-0.05** (-2.16)	-0.03 (-1.05)	0.00 (0.09)	0.03 (1.27)	-0.06** (-2.02)	-0.02** (2.03)
DU	-0.34*** (-6.41)	-0.67*** (-12.23)	0.28*** (13.01)	-0.22*** (-6.34)	-0.53*** (-12.12)	0.31*** (11.72)	-0.24*** (-4.27)	-0.46*** (-8.01)	0.21*** (8.99)
ELEC	-0.07 (-0.25)	-0.22 (-0.75)	0.02 (0.21)	-0.16 (-0.50)	-0.43 (-1.08)	0.17 (0.71)	-0.13 (-0.44)	-0.25 (-0.85)	0.02 (0.23)
R^2	0.38	0.63	0.81	0.34	0.42	0.33	0.50	0.72	0.86
N	570	530	530	570	530	530	570	530	530

Note: Column 1-3: only country dummies; column 4-6: only year dummies; column 7-9: both country and year dummies. See table 6.

The last three columns present the results with both country and time fixed effect. MIN_{ti} is everywhere significant and of the expected (unexpected) sign in the government primary balance –and revenue (expenditure) regression. $DY*MIN_{ti}$ is of the expected (unexpected) sign in the government primary balance (expenditure) regression. Except for the $INFL_{ti}$ (DY_{ti}) in the government primary balance (expenditure) regression with point estimate close to zero, all the economic variables are significant and working according to the null hypothesis. The $ELEC_{ti}$ is of the expected sign throughout the benchmark regression although never significant.

These are the basic results from the benchmark regression. In general the macroeconomic variables are working as expected. MIN_{ti} and $DY*MIN_{ti}$ are also as expected in the government primary balance –and revenue regression, but not in the expenditure regression.

Still, the results that are of importance according to the previous discussion are the ones in with country fixed effect and both time and country fixed effect. When the expenditure regression yields unexpected signs of the coefficients of the minority dummy and the interaction term, the same coefficients of the revenue regression yields the expected sign, ie the same sign as in the expenditure regression, but with a higher point estimate. Thus the results are naturally connected, since the difference between the government primary balance and expenditure is the revenue. This says that minority governments affect both revenue and expenditure negatively, but since the negative effect is more extensive for revenue than for expenditure, the net effect is that it affects revenue more negative *relative to* expenditure. Thus the net result, ie the government primary balance, is also negative.

This initial test reflects the importance of estimating the model with especially country-fixed effects and just like Kontopoulos and Perotti (1999) all regressions will be controlled for both time and country fixed effect from here on after. Also, since most of the action is concentrated to the government primary balance and expenditure, the results from the revenue regression are not given any more attention from on.

7. Controlling for robustness

In the following five sections the results from the benchmark regression is controlled for in an extensive sensitivity analysis. First the total time period is separated into three decades. Second I control for possible outliers. Third, I perform two sensitivity tests for the dependent variable. Fourth, I examine for different type of minority government. Finally I control for the robustness of difficult times.

7.1.1 Controlling for decades

This section controls for the three decades within the total time period. The decade with the most significant results are presented first.

Kontopoulos and Perotti (1999) showed that it is central to distinguish between the three decades within the total time period due to each decade's unique economic environment. Table 7.1 presents the results for each decade, and as one can see, most of the action is concentrated to the 2000s. MIN_{ti} and $DY*MIN_{ti}$ remains highly significant in especially the

government primary balance-and expenditure regression. The coefficient of MIN_{ti} in the expenditure regression estimates to about a fifth of MIN_{ti} in the government primary regression, while $DY*MIN_{ti}$ estimates to about a fourth. The macroeconomic variables are working as expected and $ELEC_{ti}$ is not of statistical significance.

In the 1980s MIN_{ti} loses its statistical significance in the expenditure regression compared to the 2000s. The point estimate of MIN_{ti} is about 0.35percentage points less for the government primary regression than in the 2000s. Neither MIN_{ti} nor $DY*MIN_{ti}$ are of statistical significance in the revenue regression. The coefficients of the macroeconomic variables are in general just marginally different from zero and not statistically significant. $ELEC_{ti}$ is still statistically insignificant.

The 1990s contains the least amount of action regarding MIN_{ti} and $DY*MIN_{ti}$. Only MIN_{ti} is significant in the expenditure regression. Only MIN_{ti} is significant in the expenditure regression. Mainly the same results apply to the macroeconomic variables and $ELEC_{ti}$ as in the 1980s.

The difference between the 1990s and the 2000s is remarkable. As Kontopoulos and Perotti (1999) argued, the difference may be explained by the different nature of fiscal economic shocks in the two decades. The last decade has been characterized by unstable growth and a lot of fiscal action, mainly due to the global financial crises in 2007. With respect to the currency crisis in Asia, the European Exchange Rate mechanism crisis, and the financial crisis in Russia, the crisis in the 1990s were more sequential and not affecting the global economy as direct and sudden as the crises in the 1980s and 2000s. The 1980s was also distinguished by severe bank failures after the two oil shocks in the seventies and extensive changes in the regulatory and legislative fiscal environment. In line with the theory described in section 3, one would expect minority governments to have significant effect during the 2000s and the 1980s, since these shocks require considerable cooperation to engage in fiscal consolidation.

This test confirms the importance of separating between the decades within the total time period. Since most of the significance appear on the 2000s and the 1980s the following sensitivity analysis will focus on these two decades.

Table 7.1 Controlling for decades

	Δ PRIM 1979-1989 (1)	Δ REV 1979-1989 (2)	Δ EXP 1979-1989 (3)	Δ PRIM 1990-1999 (4)	Δ REV 1990-1999 (5)	Δ EXP 1990-1999 (6)	Δ PRIM 2000-2011 (7)	Δ REV 2000-2011 (8)	Δ EXP 2000-2011 (9)
DY	0.17 (1.37)	0.35*** (3.28)	-0.01 (-0.27)	-0.03 (-0.29)	-0.08 (-0.90)	0.06 (1.18)	0.31*** (2.52)	0.39*** (3.10)	-0.07*** (-3.32)
MIN	-1.97** (-2.07)	-0.94 (1.20)	-0.70 (-1.64)	-0.03 (-0.04)	0.67 (0.97)	-0.92*** (-2.47)	-2.34*** (-2.57)	-1.86** (-2.03)	-0.43*** (-2.42)
DY*MIN	0.50** (2.22)	-0.21 (-1.09)	0.30*** (3.04)	-0.09 (-0.59)	-0.04 (-0.27)	0.04 (0.59)	0.40** (1.99)	0.26 (1.29)	0.12*** (3.51)
INFL	0.06 (1.57)	-0.09*** (-2.04)	-0.01 (-0.89)	-0.07 (-0.69)	-0.03 (-0.28)	0.13** (2.23)	-0.01 (-0.11)	-0.09 (-0.52)	0.02 (0.95)
DU	-0.47*** (-4.13)	-0.75*** (-7.31)	0.04 (0.89)	-0.35*** (-3.37)	-0.45*** (-4.48)	0.22*** (4.42)	-0.55*** (-4.29)	-0.70*** (-5.45)	0.14*** (6.52)
ELEC	0.12 (0.29)	0.15 (0.43)	0.03 (0.16)	-0.31 (-0.91)	-0.33 (-1.08)	0.04 (0.26)	-0.34 (-0.84)	-0.43 (-1.02)	0.06 (0.80)
R ²	0.63	0.90	0.92	0.66	0.81	0.93	0.76	0.83	0.95
N	175	141	141	180	174	174	215	215	215

Note: All columns contain year and country dummies. See also note to table 6.

7.1.2 Controlling for outliers

This section controls for possible outliers. Once again I present the results in the same manner as Kontopoulos and Perotti (1999). First I describe the results from the government primary balance regression result and later the results from the expenditure regression.

To avoid naïve interpretations of the coefficients at this point, it is essential to control for outliers. In order to do so, one can remove one country at a time from all regression estimations (Kontopoulos and Perotti, 1999). At this moment the time period of the 2000s is of interest, considering the results from the analysis in section. The results from the 1980s are also of some interest, since the interactive term is significance at the ten percent level. The results are presented in table 7.1 where the maximum p-values of the coefficients MIN_t and $DY_t * MIN_t$ are shown together with the point estimate and the corresponding country.

In the government primary balance regression, none of the individual countries affect the coefficients and their significance separately in a profound manner. Initially when looking at column two the exclusion of Ireland causes the interactive term to lose its statistical significance with a p-value of 0.31. In all other exclusions the interactive term remains significant at the ten percent level with a point estimate of 0.32-0.68. Moving on to the time period of 2000-2011, when excluding Norway the coefficient of MIN_{it} loses its statistical significance with a p-value of 0.17, in contrast to all of the other countries whose exclusion

leaves the coefficient of MIN_{it} significant at either the one or five percent level. When Greece is excluded, the interactive term loses its statistical significance with a p-value of 0.11. The interactive term only loses its statistical significance when Greece is excluded. Thus, the coefficient of MIN_{it} and the interactive term does not appear to be sensitive to the inclusion of individual countries.

It is worth to mention that the government primary balance was relatively high (low) in Norway (Greece) compared to all other countries during this time except for Ireland in 2010 when the government primary balance was negative at a point of 28.25 percent of GDP. Furthermore, Norway had minority governments in parliament during the first half of the decade, and minimal winning coalition in the second half. Greece had single party majority government during the entire time period. In the matter of Greece, this result supports the evidence that minority government is more significant in bad rather than in good times.

Similarly in the expenditure regression, none of the exclusions in the 1980s causes the interaction term to lose its statistical significance. The point estimate lies between 0.25-0.31 and is significant at the three percent level. In the 2000s the exclusion of Spain causes the MIN_{it} to lose its statistical significance with a p-value of 0.37. In all other exclusions the MIN_{it} and the interactive term remains significant at the one percent level with a point estimate of -0.35 to -0.44 and 0.10-0.12 respectively.

Note however that one can argue whether France and Portugal should be included or not since they are semi presidentially regimes compared to all other countries which are different types of parliamentary regimes. The variable MIN_{it} could be more difficult to define in a precise manner for these countries. In the case of the expenditure regression, recall that data is missing to some extent regarding the time period from 1979-1989, which could question the result concerning the interactive term in the first decade.

Table 7.2 Controlling for outliers

Dependent variable	ΔPRIM		ΔEXP		ΔPRIM		ΔEXP	
Period	1979-1989		1979-1989		2000-2011		2000-2011	
Coefficient	MIN (1)	MIN*DY (2)	MIN (3)	MIN*DY (4)	MIN (5)	MIN*DY (6)	MIN (7)	MIN*DY (8)
Maximum p-value, Individual significance								
Coefficient estimate	-1.07	0.22	-0.47	0.21	-1.41	0.31	-0.17	0.07
Maximum p-value	0.28	0.31	0.35	0.03	0.17	0.11	0.37	0.06
Country excluded	NORWAY	IRELAND	FRANCE	NORWAY	NORWAY	GREECE	SPAIN	SPAIN
Country excluded								

Note: First line: presents the point estimates of the coefficients in each column. Second line: presents the maximum p-value in each column. Third line: presents the excluded country. See note to table 6.

7.1.3 Controlling for the dependent variable

This section controls for the results by choosing two different compositions of the dependent variable. Once again I present the results like Kontopoulos and Perotti (1999).

Recall from section 4 the shortcoming in the construction of the fiscal variable. In table 4.1 and 4.2 two alternative definitions of the dependent variable are presented. Just like before the time period of the 1980s and the 2000s are examined, where most of the significant results are located.

7.3a Controlling for the Government Primary Balance Definition

	Δ PRIM 1979-1989 (1)	Δ PRIM 1980-1989 (2)	Δ PRIM 2000-2011 (3)	Δ PRIM 2000-2011 (4)
DY	0.09 (0.71)	0.20*** (2.75)	0.30*** (2.54)	0.42*** (5.53)
MIN	-1.59* (-1.75)	-0.89* (-1.82)	-2.12*** (-2.45)	0.04 (0.06)
DY*MIN	0.52*** (2.42)	0.41*** (2.68)	0.37* (1.89)	0.32* (1.91)
INFL	-0.01 (-0.04)	-0.03*** (-2.45)	-0.01 (-0.06)	-0.03*** (-3.31)
DU	-0.31*** (-2.80)	-0.02 (-0.80)	-0.48*** (-3.97)	-0.04 (-0.60)
ELEC	0.20 (0.54)	0.52* (1.87)	-0.25 (-0.65)	-0.10 (-0.22)
PRIM _{t-1}		0.83*** (17.78)		0.72*** (15.64)
R^2	0.56	0.78	0.74	0.67
N	174	160	215	215

Note: Column 1 and 3: dependent variable is the percent change of real GDP. Column 2 and 4: dependent variable is in level of government primary balance. See note to table 6.

The first alternative definition of the fiscal variable is shown in column two and four in table 7.3a and 7.3b, respectively. Here the dependent variable is in levels and on the right-hand side of the equation; the lagged value of the dependent variable is controlled for. Naturally the fixed effects of the model are now excluded since the combination of lagged variables and country-fixed effects produces incompatible estimates. Furthermore this test removes nearly all signs of autocorrelation¹¹. Since the data contains very few gaps, the coefficient of the lagged dependent value is very close to one. Mainly this test confirms the robustness of $DY*MIN_{it}$ in the government primary balance regression and MIN_{it} in the expenditure regression for both decades. The point estimates of $DY*MIN_{it}$ is about 0.10

¹¹ There has been some signs of autocorrelation in....

percentage points less than those from the benchmark regression. This difference is even greater for the point estimates of MIN_{it} which is about 0.25-0.40 percentage points less than in the benchmark regression. For the first time ELEC is significant and of the unexpected sign in column two.

7.3b Controlling for the Expenditure Definition

	ΔEXP 1979-1989 (1)	ΔEXP 1980-1989 (2)	ΔEXP 2000-2011 (3)	ΔEXP 2000-2011 (4)
DY	0.03 (0.45)	-0.09*** (-3.54)	0.01 (0.48)	-0.05*** (-5.81)
MIN	-0.56 (-1.30)	-0.31** (-1.34)	-0.39* (-1.32)	-0.17** (-2.17)
DY*MIN	0.27*** (2.61)	0.08 (1.54)	0.16*** (3.17)	0.00 (0.10)
INFL	-0.02 (-1.28)	0.01 (1.10)	0.01 (0.15)	0.06*** (4.15)
DU	0.13*** (2.39)	0.03*** (2.92)	0.13*** (5.43)	0.04*** (4.31)
ELEC	-0.03 (-0.15)	-0.07 (-0.71)	0.06 (0.70)	-0.05 (-0.95)
EXP_{t-1}		0.98*** (59.04)		0.93*** (68.89)
R^2	0.89	0.97	0.82	0.97
N	128	129	212	215

Note: See note to table 6 and table 7.3a

The second alternative definition of the fiscal variable is shown in column one and three in table 7.3a and 7.3b. As mentioned, it is important to control for the percentage change rather than just percentage of real GDP in the dependent variable. This is because changes in GDP growth alone are able to change deficit measured as percentage of GDP even when the deficit remains unchanged. In general the basic results remain unchanged compared to the regression in table 7.1. $DY*MIN_{it}$ remains highly significant, the only exception being in the primary government regression where it is now significant only at the ten percent level in the 2000s. The point estimates are also very similar to those in table 7.1. MIN_{it} remains significant in the government primary regression, although with point estimates of 0.20-0.30 percentage points less than in table 7.1. The same applies to the expenditure regression where MIN_{it} loses its statistical significance in the 1980s.

Overall this test confirms the robustness of the benchmark results and the results are especially strong for the government primary balance and the interaction variable.

7.1.4 Controlling for type of government

In this section I control for the type of government by separating for two different types of minority governments. I also create a new set of dummies for each type of government. The government primary balance results are discussed first, followed by the results from the expenditure regression.

The limitation with the variable MIN_t is that it does not separate between different types of minority governments. That is, if the variable is significant as soon as one party in government does not possess majority in parliament, or if the significance appears later on, when more than one party in government do not possess majority in parliament. To control for this, three dummy variables were created for the government type index. The first one is equal to one for single party minority, zero otherwise. The second dummy variable is equal to one if multi party minority, zero otherwise and the third dummy variable is equal to one if majority government, zero otherwise. The three new dummy variables are named SIN_t , MUL_t and MAJ_t respectively. The results are presented in table 7.3.

As shown in table 7.3, only SIN_t was of statistical significance in the 1980s. In the 2000s MUL_t and MAJ_t were of the right sign and of statistical significance. The same results apply to the 1980s concerning the expenditure regression. However in the 2000s SIN_t and MAJ_t were of the right sign and of statistical significance. To further control for the statement of Edin and Ohlsson (1991) that the difference between multi-party coalition governments and minority governments is often hard to define, a dummy was created for each type of government except for the caretaker government type. Only the dummy for the surplus coalition (minimal winning coalition) was negative (positive) and of statistical significance in the 2000s for the government primary balance regression. Thus the argument could be applied for the government primary balance during the last decade only.

Very important to note here is that the interpretation of the caretaker government is not clear since it is just a temporary solution in times of severe political crisis. Also, this test separates between single and multi minority governments, but it still does not say anything about how many parties that is significant in contrast to a single party.

Table 7.4a

	Δ PRIM 1979-1989 (1)	Δ EXP 1979-1989 (2)	Δ PRIM 2000-2011 (3)	Δ EXP 2000-2011 (4)
DY	0.16 (1.39)	0.00 (0.05)	0.32*** (2.50)	-0.05*** (-2.53)
SIN	-2.77*** (-3.11)	-1.16*** (-3.04)	-1.85 (-1.47)	-0.62*** (-2.85)
DY*SIN	0.76*** (3.07)	0.38*** (3.35)	0.20 (0.56)	0.23*** (3.61)
INFL	0.06 (1.64)	-0.01 (-0.77)	0.00 (0.01)	0.04 (1.24)
DU	-0.49*** (-4.27)	0.03 (0.59)	-0.59*** (-4.23)	0.16*** (6.86)
ELEC	0.18 (0.45)	0.07 (0.39)	-0.43 (-1.03)	0.06 (0.86)
R^2	0.65	0.92	0.76	0.96
N	173	139	215	215

Note: SIN: single minority government. See note to table 6.

Table 7.4b

	Δ PRIM 1979-1989 (1)	Δ EXP 1979-1989 (2)	Δ PRIM 2000-2011 (3)	Δ EXP 2000-2011 (4)
DY	0.32*** (2.77)	0.07 (1.25)	0.29** (2.27)	-0.07*** (-3.23)
MUL	1.50 (1.18)	0.63 (1.17)	-2.19* (-1.72)	-0.29 (-1.29)
DY*MUL	-0.34 (-0.80)	0.09 (0.50)	0.44* (1.84)	0.07 (1.65)
INFL	0.07* (1.72)	-0.01 (-0.51)	-0.02 (-0.09)	0.03 (1.13)
DU	-0.43*** (-3.65)	0.06 (1.12)	-0.63*** (-4.95)	0.13*** (5.67)
ELEC	0.17 (0.40)	0.06 (1.34)	-0.42 (-1.01)	0.03 (0.40)
R^2	0.63	0.92	0.77	0.95
N	173	139	215	215

Note: MUL: multi party minority government See note to table 6 and 7.4a.

Table 7.4c

	Δ PRIM 1979-1989 (1)	Δ EXP 1979-1989 (2)	Δ PRIM 2000-2011 (3)	Δ EXP 2000-2011 (4)
DY	0.57*** (2.95)	0.23*** (2.71)	0.73*** (3.18)	0.06 (1.53)
MAJ	1.41 (1.58)	0.56 (1.44)	2.44*** (2.82)	0.56*** (3.77)
DY*MAJ	-0.38* (-1.73)	-0.23** (-2.31)	-0.42** (-2.05)	-0.13*** (-3.75)
INFL	0.06 (1.54)	-0.01 (-0.84)	-0.02 (-0.09)	0.03 (1.00)
DU	-0.46*** (-3.95)	0.04 (0.79)	-0.56*** (-4.39)	0.15*** (6.66)
ELEC	0.10 (0.25)	0.02 (0.15)	-0.33 (0.80)	0.06 (0.87)
R^2	0.63	0.92	0.77	0.95
N	173	139	215	215

Note: MAJ: majority government. See note to table 6 and 7.4a.

7.1.5 Controlling for difficult times

In this final section I control for robustness concerning the relationship between political factors in times of economic stress.

Recall from the benchmark regression in section 6.1 that the interaction term suggested that the minority dummy was more important in bad than in good times. Like Kontopoulos and Perotti (1999) this result will now be tested for by using a measure from the OECD Economic Outlook named the GDP gap which measures the deviation of actual GDP from potential GDP as a percent of potential GDP. The results are presented in table 7.4.

In the 1980s the interaction term loses its statistical significance in both the government primary balance and the expenditure regression. In the 2000s it has a point estimate of 0.40 suggesting that the negative effect of minority government on government primary balance increase with 0.40 percentage points of GDP if real GDP growth rate is negative with one percentage point. In the expenditure regression the interaction term is marginally negative with a point estimate of 0.05.

Note that extensive gap in data in the 1980s causes the number of observations to fall drastically.

Table 7.5 Controlling for difficult times

	Δ PRIM 1980-1989 (1)	Δ EXP 1980-1989 (2)	Δ PRIM 2000-2011 (3)	Δ EXP 2000-2011 (4)
DY	0.25** (2.09)	-0.00 (-0.07)	0.36*** (2.83)	-0.07*** (-2.98)
MIN	-2.33** (-2.37)	0.30 (0.76)	-1.87*** (-2.46)	-0.18 (-1.35)
DY*MIN	-0.05 (-0.31)	-0.05 (-0.88)	0.40** (2.38)	0.06* (1.91)
INFL	0.00 (0.11)	-0.07*** (-4.77)	0.01 (0.05)	0.03 (1.07)
DU	-0.85*** (-3.75)	-0.08 (-0.82)	-0.51*** (-3.91)	0.13*** (6.05)
ELEC	0.05 (0.14)	0.06 (0.36)	-0.36 (-0.85)	0.03 (0.36)
R^2	0.89	0.98	0.78	0.95
N	75	75	203	203

Note: DY is the GDP gap from potential output, OECD definition. See note to table 6.

8 Conclusion

The goal of this paper was to extend the study of Kontopoulos and Perotti (1999) and to examine for new data from the last decade. The variable of political fragmentation differed from Kontopoulos and Perotti (1999). Instead of separating for number of parties in ruling coalition and number of spending ministers, the type of government was categorized into dummy variables in the manner of Edin and Ohlsson (1991).

The main results from this study show evidence of a relationship between minority government, expenditure and revenues. As one would expect, this relationship is negative for the government primary balance and revenue. More surprisingly it is also negative between minority government and expenditure. This might seem unrealistic at a first glance, but appears logical when the results from each regression are connected. The negative relationship is stronger for revenue than for expenditure. In words it says that minority governments affect both revenue and expenditure negatively, but that the effect is stronger for revenue than for expenditure. Naturally this results in a negative government primary balance.

The results from the sensitivity tests show that minority government has a strong and robust effect on especially government primary balance regression and expenditure and that the relationship is strong for the last decade and the 1980s. The robustness of the interaction variable is also confirmed in the last decade. Also, surplus coalition government affect the government primary negatively in the 2000s, as opposed to single minority government,

which implies that one type of majority coalition government typically affects the budget negatively as opposed to a single minority government.

Since the relationship between the minority dummy and expenditure did not work as expected, this empirical investigation demonstrates that it was justifiable to choose minority government as a measure of political variable as opposed to number of parties in ruling coalition. The level of cooperation in a minority government depends on the support of at least on other party in parliament, and maybe more importantly on whether this support is consistent in terms of the most important policy questions. The budget proposition is typically one of the most controversial questions where parties with different ideologies rarely agree. With strong support there are clear advantages with minority governments. It benefits the democracy by giving more power to the parliament than the government. It might also be more transparent given the fact that many parties are forced to communicate. With weak support however, there is a big risk of political fragmentation. Consequently, political fragmentation might vary substantially among different minority governments. This study shows how both revenue and expenditure is negatively affected by minority governments. To some extent this reflects the minority government's ambiguous influence over the primary balance.

I believe my results have two important implications. First, minority governments cannot directly translate into more numbers of parties in ruling coalition and more precisely not into more political fragmentation. Two, if the goal is to measure political fragmentation, minority governments as a measure needs to be reconstructed. Particularly it seems important to determine the causes of why minority governments need to seek support among dissident parties in parliament. One suggestion is to study the party which contains balance of power in parliament with respect to the budget deficit.

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