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Fiscal Performance of Minority Governments: New Empirical Evidence for OECD Countries

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Fiscal Performance of Minority Governments: New Empirical Evidence for OECD Countries

Abstract

I use new data on central and general governments for 23 OECD countries over the period 1960-2015 (unbalanced panel) to examine fiscal performance under minority governments. The results do not suggest that minority governments had higher fiscal deficits and public expenditure than majority governments – corroborating many previous studies. An innovation of my study is to examine fiscal policies of minority governments that enjoy organized support of opposition parties. The results do not show that minority governments that enjoy organized support of opposition parties increased public expenditure to a larger extent than majority governments. If anything, fiscal deficits were somewhat higher under single-party minority governments with organized support of opposition parties than under majority governments especially. Minority and majority governments had quite similar fiscal performance in OECD countries.

JEL-Codes: D720, H000, C230, P160.

Keywords: minority governments, organized support of opposition parties, budget deficits, public expenditure, general and central government, OECD countries, panel data models.

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1. Introduction

The parties forming minority governments do not have a majority in parliament. When minority governments wish to pass a law, they need to organize majorities in parliament and are likely to make compromises with other parties in parliament when an individual law needs to be passed. The other parties know about their bargaining power. The exploitation of this bargaining power to achieve expensive compromises may give rise to higher budget deficits and greater public expenditure under minority than majority governments. Scholars have examined empirically whether minority governments do in fact increase budget deficits and public expenditure in industrialized countries. The empirical evidence is mixed (Table 1). Some early studies confirm the expected effects of minority governments, while more recent studies do not (Roubini and Sachs 1989a and 1989b, Edin and Ohlson 1991, De Haan and Sturm 1994 and 1997, Borelli and Royed 1995, Hahm et al. 1996, De Haan et al. 1999, Sakamoto 2001, Perotti and Kontopoulos 2002, Falcó-Gimeno and Jurado 2011).[2]

I use new central and general government data for 23 OECD countries over the period 1960-2015 (unbalanced panel) to examine the effect of minority governments on budget deficits and public expenditure. As compared to previous studies on fiscal performance of minority governments in OECD countries, my sample includes data later than the year 2000. The results do not suggest that minority governments had higher budget deficits and public expenditure than majority governments. I also disentangle the effects of single-party and coalition minority governments.

Minority governments often have agreements with other non-governing parties that "support" the minority government. Passing laws therefore does not require seeking a political majority in parliament in every individual case. An innovation of my study is to investigate the

[2] CO2 emissions and public employment have not been shown to be influenced by minority/majority government in OECD countries (Garmann 2014a and Aaskoven 2017). On pledge fulfillment and activities of minority governments see, for example, Ganghof et al. (2012) and Thomson et al. (2017).

fiscal policies of minority governments that enjoy organized support of opposition parties. In countries like New Zealand and Sweden, it is common for minority governments to actually sign a formal coalition agreement with the supporting opposition parties – this has been called "contract parliamentarism". Bale and Bergman (2006: 422) explain: "In contract parliamentarism, what are formally minority governments (formed by either a single party or coalition of parties) have relationships with their 'support' parties that are so institutionalized that they come close to being majority governments." Minority governments with organized support of opposition parties may govern rather like majority than minority governments. The results do not show that minority governments that enjoy organized support of opposition parties had higher public expenditure than majority governments. If anything, fiscal deficits were somewhat higher under single-party minority governments with organized support of opposition parties than under majority governments. Fiscal performance of minority and majority governments was quite similar in OECD countries.

Policies of minority governments have received more attention since the euro and refugee crises that began in 2007/2015. An important reason is that the platforms and policies of established parties have converged in many European countries. As a result, new populist parties have emerged and party systems have become more fragmented. With established parties no longer able to form single- or two-party majority governments, minority governments have become political options in countries that have not previously had minority governments. In my sample of 23 OECD countries, minority governments occurred in 12 countries (117 country-year observations of minority governments in a sample of 594 country-year observations). In the United Kingdom, Theresa May formed a minority government after the 2017 general election. The new minority government relies on a confidence and supply agreement with the Democratic Unionist Party (DUP). The media reported that the DUP

secured £1bn extra funding for Northern Ireland.[3] Opponents of minority governments maintain that budget deficits and government expenditure are likely to increase under minority governments. In view of the drastic changes to party systems in recent years, new research is needed to examine the fiscal policies of minority governments in industrialized countries.

2. Theoretical background and hypotheses

Theories describe how minority governments influence public expenditure and deficits. Minority governments are often believed to be less stable and durable than majority governments (Warwick 1979, Lijphart 1984, Saalfeld 2013). The party(ies) forming minority governments do not have majorities in parliament and need to organize majorities for individual laws they want to pass. Compromises need to be negotiated and log-rolling between the minority government and opposition parties supporting individual laws may well give rise to a large size and scope of government. Public spending is likely to increase because every party wants to get satisfied (common pool problem).[4] Politicians are often election-motivated and hesitate to increase taxes to finance higher public expenditure. If this is true, the bargaining between minority governments and opposition parties also promotes public deficits.

Political stability is expected to be smaller under minority than majority governments. When minority governments do not manage to find partners for passing individual laws, early elections are likely to be called more often than under majority governments. Early elections may well give rise to electoral cycles which, in turn, result in expansionary policies such as increasing public spending and deficits (on the political business cycle theories see Nordhaus 1975, Rogoff and Sibert 1988, Rogoff 1990, De Haan and Klomp 2013 and Dubois 2016 for

[3] https://www.independent.co.uk/news/uk/politics/tory-dup-deal-1-billion-northern-ireland-funding-down-payment-uk-treasury-chief-nick-macpherson-a7811506.html (accessed 24 June 2019).
[4] Empirical studies consider the number of parties in government or indices of government fragmentation (e.g. Volkering and de Haan 2001, Ricciuti 2004, Mierau et al. 2007, De Haan et al. 2013, Moessinger 2014).

surveys). Inefficient electoral cycles, excessive public expenditure and deficits, would thus be induced by the presence of minority governments.

Other theories describe why public expenditure and deficits are not likely to be higher under minority than majority governments. Minority governments are expected to be strong and stable when it consists of one large party which is centrally-located (Crombez 1996, Tsebelis 2002). The centrally-located party is likely to form agreements with many other parties. A party's platform/ideal points is closer to other parties' platforms/ideal points when it is centrally-located than when it has polarized platforms/ideal points. When a party is large, it may well receive majorities for individual laws by collaborating with just one or two other parties. The bargaining position of a large and centrally-located party is strong. There is no need for expensive compromises.

By contrast, deficits and public expenditure may be smaller under minority than majority governments because minority governments can choose among various potential partners and choose the least costly alternative. It is conceivable that minority governments find support for individual laws passed by political parties in parliament whose platforms fit the law proposal. If the law proposal is closely aligned with the political parties' platforms, the minority government does not need to make expensive compromises to gain the support of opposition parties.

Parties outside government may well enjoy the policy benefits of supporting the government without being punished for the bad governance performance of the cabinet (Strøm 1990: 52-53). Punishment may also occur when voters realize that individual opposition parties needed to be financially rewarded for supporting individual laws.

Heads of governments are likely to influence governments' performance. In particular, minority government leaders may be especially strong (Pech 2004), and only form minority governments when they believe that they will succeed. When minority government leaders are especially strong, they are well prepared to resist opposition parties, the bargaining power of

the opposition parties notwithstanding. In turn, increases in public expenditure and deficits may well be smaller than theories of log-rolling suggest. Overall, theoretical predictions on how minority governments influence public expenditure and deficits are ambiguous. The first hypothesis to be examined empirically is:

Hypothesis 1: budget deficits and increases in public expenditure are larger under minority than majority governments.

Coalition partners in any coalition government need to make compromises – having political majorities in parliament notwithstanding (e.g. Thomson et al. 2017). Coalition governments are therefore expected to have larger budgets and deficits than single-party governments. On the other hand, coalition partners know that they must pull themselves together (disciplinary effects). My second hypothesis to be examined is:

Hypothesis 2: budget deficits and increases in public expenditure are larger under coalition minority governments than single-party minority governments (and any majority government).

Some minority governments enjoy organized support of opposition parties (contract parliamentarism, see Bale and Bergman 2006). Strom (1990) suggested already to distinguish between "substantive" and "formal" minority governments. Minority governments that enjoy organized support of opposition parties are expected to govern like majority governments. My third hypothesis to be examined is:

Hypothesis 3: budget deficits and increases in public expenditure are larger under minority governments that do not enjoy organized support of opposition parties than minority governments that enjoy organized support of opposition parties (and any majority government).

3. Data and descriptive statistics

3.1 Budgets deficits and public expenditure

Following related studies like De Haan and Sturm (1994 and 1997) and De Haan et al. (1999), I use data on budget deficits and public expenditure for both central and general governments. Previous studies examined how political characteristics of the national government (e.g., electoral motives, government ideology, minority governments) influenced policy outcomes (e.g., overall expenditure, budget composition, public debt, deficits) of the general government. However, general government data includes data of subnational governments (states, provinces, municipalities) that the national government may not influence (e.g. Castro and Martins 2018, Potrafke 2019). It is therefore useful to compare how national government's characteristics influence central and general government data.

I measure budget deficits by net lending/net borrowing and use the change in overall expenditure (also measured as a percentage of GDP). The data is taken from the OECD (2018) – "National Accounts". Data on general and central government deficits (net lending/net borrowing) and expenditure is used for the period 1960-2015 (unbalanced panel). The imbalance of the panel is based on data availability of the net lending/net borrowing and expenditure. The 23 countries included in the baseline model are: Australia (1960-2015)[5], Austria (1995-2015), Belgium (1995-2015), Canada (1981-2015), Denmark (1995-2015), Finland (1975-2015), France (1978-2015), Germany (1995-2015), Greece (1995-2015), Iceland (1998-2015), Ireland (1995-2015), Italy (1995-2015), Japan (2005-2015), Luxembourg (1995-2015), the Netherlands (1995-2015), New Zealand (1986-2014), Norway (1995-2015), Portugal (1995-2015), Spain (1995-2015), Sweden (1995-2015), Switzerland (1995-2015), the United Kingdom (1990-2015), and the United States (1970-2015).

[5] There is no data available for central government's expenditure in Australia. My models for central governments' expenditure therefore only include 22 instead of 23 countries.

3.2 Minority governments

I use data on minority governments by Armingeon et al. (2017). There were 117 country-year observations of minority governments in my sample of 594 country-year observations: Australia (2011-2013), Canada (2005-2010), Denmark (1995-2015), France (1986-1992), Ireland (1995-2001), Italy (1996-2000), the Netherlands (2011-2012), New Zealand (1999-2014), Norway (1995-2005 and 2014-2015), Portugal (1996-2001 and 2010), Spain (1995-1999 and 2004-2011), and Sweden (1995-2006 and 2011-2016). 63 (54) out of the 117 country-year observations of minority governments relate to single-party (coalition) minority governments.

3.3 Unconditional correlations

Central and general governments' deficits (as a share of GDP) were 1.91% and 1.98%; -0.24% and 0.11% under minority governments compared to 2.45% and 2.43% under majority governments. The differences under minority and majority governments are statistically significant at the 1% level for both central and general government indicating that deficits were lower under minority than majority governments. These unconditional correlations are based on pure sample averages and do not consider any systematic differences across countries and over time. The change in central (general) government expenditure was -0.10% (-0.001%) on average. The change was -0.32% (-0.24%) under minority and -0.04% (0.06%) under majority governments – not indicating any differences under minority and majority governments.

4. Empirical model

The estimated baseline panel data model has the following form:

$$\text{Fiscal policy measure}_{ijt} = \alpha_j \text{ Minority government}_{it} + \Sigma_l \gamma_{jl} X_{ilt} + \eta_i + \mu_t + u_{ijt}$$

with $i=1,\ldots,32$; $j = 1,\ldots,4$; $l=1,\ldots,10$; $t=1,\ldots,55$ (1)

where the dependent variable Fiscal policy measure$_{ijt}$ describes the fiscal policy measure j (four dependent variables: net lending/net borrowing and the change in public expenditure both measured as a percentage of GDP for central and general government) of country i in year t. X_{ilt} contains ten control variables that are likely to be correlated with net lending/net borrowing and the change in public expenditure (and the presence of minority governments). I follow the related literature and include as explanatory variables: two dummy variables for left-wing and rightwing government ideology as measured by Potrafke's (2009) government ideology index (updated till the year 2015). Centrist governments are the reference category. Partisan theories suggest that leftwing governments increase the growth rate in public debt and public expenditure (on ideology-induced policies in OECD countries see, for example, the surveys of Schmidt 1996, Potrafke 2017 and 2018, and Zohlnhöfer et al. 2018). I include a parliamentary election year dummy variable. Political business cycle theories predict that election-motivated politicians increase budget deficits and expenditure before elections (for surveys on political business cycles see De Haan and Klomp 2013 and Dubois 2016). I include the number of parties in government to measure government fragmentation and the veto player index by Jahn et al. (2018) (see the related studies in Table 1).[6] The change in the unemployment rate is included: governments may well respond to high unemployment by increasing budget deficits and expenditure. I follow De Haan et al. (1999) by including either the change in the unemployment rate or in per capita GDP because the change in the unemployment rate and per capita GDP are quite closely correlated. The change in trade openness (sum of imports and exports as a share of GDP) is added. Two theories describe how trade openness influences government expenditure: globalization (as measured by trade openness) may give rise to tax competition, declining tax revenues, and hence smaller budgets ("race-to-the bottom-hypothesis"). By

[6] In the baseline model, I use the veto player index 1 (left-right) which is based on Tsebelis (2002). For robustness tests, I also use the veto player index 1 (green-growth), veto player index 2 (left-right) and veto player index 2 (green-growth). Inferences regarding the minority government variable(s) do not change. See also Jahn (2010, 2011 and 2018).

contrast, the compensation hypothesis holds that public expenditure increases over the course of globalization because national governments compensate for the risks of globalization (on the globalization welfare-state nexus see, for example, Schulze and Ursprung 1999, Ursprung 2008 and Potrafke 2015).[7] I include the change in the shares of the young population (aged 14 and below as a share of total population) and the elderly population (aged 65 and above as a share of total population). Budget deficits and overall expenditure are expected to be higher when the population ages rapidly. I also include the lagged dependent variable. Including the lagged dependent variable in a classical fixed effects model gives rise to Nickell bias. The Nickell bias is 1/T and thus quite small in my model. Table 2 shows the descriptive statistics and data sources of the individual variables. η_i describes a fixed country effect, μ_t is a fixed period effect and u_{ijt} is an error term. I estimate the fixed-effects model with ordinary least squares (OLS) and standard errors robust to heteroskedasticity (Huber/White/sandwich standard errors – see Huber 1967 and White 1980).

5. Results

5.1 Baseline model

Table 3 shows the results for central governments. Columns (1) and (2) relate to regressions when net lending/net borrowing (as a share of GDP) is used as the dependent variable; columns (3) and (4) relate to regressions when the change in the expenditure-to-GDP ratio is used as the dependent variable. I describe results excluding (columns 1 and 3) and including (columns 2 and 4) explanatory variables to show the extent to which inferences regarding the minority government dummy variable change when control variables are included/excluded. The minority dummy variable has a positive sign in columns (1), (3) and (4) and a negative sign in

[7] I have also used the new KOF Globalisation Index (Dreher 2006, Gygli et al. 2019) instead of trade openness. The new KOF Globalisation Index is available since 1970. I therefore do not use new KOF Globalisation Index in the baseline model.

column (2), but lacks statistical significance in columns (1) to (4). This result is in line with previous studies like De Haan and Sturm (1994 and 1997) and De Haan et al. (1999).

The government ideology variables, the election year variable, the number of parties in government and the veto player index lack statistical significance. The lagged dependent variables are statistically significant at the 1% level in columns (1) to (4). The change in the unemployment rate has the expected negative sign in column (2) and the expected positive sign in column (4) and is statistically significant at the 1% level. The numerical meaning of the effects is: when the unemployment rate increased by 1 percentage point, the surplus-to-GDP ratio decreased by around 1.13 (0.464/(1-0.591)) percentage points and the change in the expenditure-to-GDP ratio increased by around 0.45 (0.589/(1+0.301)) percentage points in the long-run. Changes in elderly population share are negatively related with the surplus-to-GDP ratio (column 2), but do not tend to be significantly correlated with changes in the expenditure-to-GDP ratio (column 4).

Table 4 shows the results for general governments in comparison to central governments. The minority government dummy variable does not turn out to be statistically significant as in Table 3.[8]

I replace the minority government dummy variable with two dummy variables for single-party and coalition minority governments. The results in Table 5 relate to econometric specifications as in Tables 3 and 4 – I report the coefficient estimates of the single-party and coalition minority governments dummy variables in Table 5 to save some space. Both the single-party and coalition minority government dummy variable lack statistical significance in columns (1) to (4) – using data for central and general government notwithstanding. Wald tests

[8] I have replaced the change in the unemployment rate with the change in real per capita GDP. Real per capita GDP is positively correlated with budget surpluses (as a share of GDP) and negatively correlated with the change in government expenditure. Using real per capita GDP does not change any inference regarding the effect of minority governments.

do not suggest that the coefficient estimates of the single-party and coalition minority government dummy variables differ statistically.

5.2 Organized support by opposition parties

I distinguish effects for minority governments that do (not) enjoy organized support by opposition parties. "Support" certainly varies across cabinets. I consider it to include "confidence and supply" of the opposition, "parliamentary support" of individual opposition parties, and formal cooperation. I compile information by hand on organized support and use internet sources, reports and research articles such as Weeks (2004), Christiansen and Pedersen (2014) and Oireachtas Library & Research Service (2016).[9] These supported minority governments are considered in my sample: Australia (2011-2013), Denmark (2002-2015), Italy (1996-2000), Netherlands (2011-2012), New Zealand (2000-2014), Norway (1998-2005 and 2014-2015), Spain (1995-1999), Sweden (1995-2006 and 2015). The sample includes 67 country-year observations of minority governments with organized support by opposition parties (29 single-party and 38 coalition minority governments) and 50 country-year observations of minority governments without organized support by opposition parties (25 single-party and 25 coalition minority governments). I estimate the econometric model as described above and now include dummy variables for supported and non-supported minority governments. The estimated coefficients of the minority governments need to be interpreted in relation to majority governments (reference group).

Table 6 shows the results for minority governments when I do not disentangle single-party and coalition minority governments. The dummy variables for minority governments with and without organized support by opposition parties lack statistical significance – both for central and general government outcomes. The only exception is in the lower panel in column

[9] Internet sources include: https://www.thecanadianencyclopedia.ca/en/article/minority-government (accessed 26 June 2016).

(3) where the support dummy variable is statistically significant at the 10% level when no other control variables are included. A Wald test does not suggest that the coefficient estimate of the support dummy variable differs statistically from the no-support dummy variable.

Table 7 shows the results for single-party and coalition minority governments with and without organized support of opposition parties. The results do not suggest any effects of minority governments on deficits and changes in expenditure. The exception is the lower panel in column (3) where the support dummy variable of coalition governments is statistically significant at the 10% level when no other control variables are included. Wald tests do also not suggest that the coefficient estimate of single-party minority governments with organized support of opposition parties differs statistically from the coefficient estimate of single-party minority governments without organized support of opposition parties.

5.3 Robustness tests

I examine the robustness of the results in several ways. First, my sample is quite unbalanced. I therefore estimate the models from 1995 to 2015, a period for which data for many countries is available. Inferences only somewhat change when disentangling effects of single-party and coalition minority governments with organized support of opposition parties: single-party minority governments with organized support of opposition parties had larger deficits than majority governments. This effect is the only notable one that also arises in the baseline model when the lagged dependent variable is not included. This effect is based, however, on a quite small number of country-year observations and on within-country variation. When I exclude fixed country effects and estimate a random effects model, the results suggest that minority governments with organized support of opposition parties had somewhat smaller deficits than majority governments. Third, I use different types of standard errors. Using classical standard errors and panel-corrected standard errors (Beck and Katz 1995) does not change any inference of the baseline model.

5.4 Government ideology and minority governments

Fiscal policies may well differ between minority governments with leftwing, center, and rightwing ideology. The partisan theories describe that leftwing governments implement more expansionary fiscal policies than leftwing governments (see Schmidt 1996 and Potrafke 2017 and 2018 and Zohlnhöfer et al. 2018 for surveys). Examining interactions between government ideology and the individual types minority governments requires a large sample, however. My sample is already quite small to disentangle effects of single-party/coalition minority governments and those that do (not) enjoy support of opposition. There is hardly any variation to exploit when I disentangle the nine types of minority governments for leftwing, center and rightwing governments. In any event, I have re-estimated the baseline model and interacted the minority government dummy and the government ideology variables. The results (not shown) do not suggest that fiscal policies of leftwing, center, and rightwing governments differed. Future research should examine fiscal policies of minority governments with leftwing, center, and rightwing ideology in more detail when more data is available.

6. When do minority governments take office?

One may well maintain that minority governments are elected into office in economic crises, indicating that there is serious concern about reverse causality between budget deficits, growth in public expenditure, and the presence of minority governments. The panel data models used in sections 4 and 5 based on OECD macro data are indeed no strongholds for estimating causal effects.[10] Firstly, I cannot rule out omitted variable bias; there may still be third variables that predict both the budget deficits and the change in expenditure-to-GDP ratios and the presence of minority governments. Secondly, I cannot rule out reverse causality. There seem to be no

[10] Scholars use more fine-grained regional data and employ regression discontinuity and kink designs to estimate causal effects of coalition and single-party majority governments on fiscal policies (e.g., Meriläinen 2013, Garmann 2014b, Freier and Odendahl 2015, Artés and Jurado 2018).

studies to date examining the economic conditions under which minority governments take office. I briefly elaborate on the economic and political circumstances under which minority governments take office.

I regress the minority government variable on lagged net lending/borrowing and the change in government expenditure (my dependent variables in section 5) including fixed country and fixed year effects (Tables 8 and 9). The lagged net lending/borrowing and the first difference in government expenditure are not related to the presence of minority governments in period t. Moreover, I have regressed the minority government variable on lagged first differences in the unemployment rate and real per capita GDP (and fixed year and fixed time effects). The lagged growth rate in the unemployment rate lacks statistical significance. The first difference in real per capita GDP is somewhat positively correlated with the presence of minority governments in period t (an effect that slightly fails statistical significance at the 10% level when no other control variables are included). In any event, minority governments do not seem to be associated with economic downturns, "nor do they typically indicate political crises" (Müller 2009: 230), and "they are not as problematic as once assumed" (Field 2016: 31f.).

Minority governments are likely to take office when the party or parties that form a minority government hold center (median) policy positions (Strøm 1990, Laver and Schofield 1998 and Tsebelis 2002). There is some preliminary evidence across OECD countries supporting this theory. Minority governments in Denmark and Sweden have been active, however, in passing laws with opposition parties that had similar party platforms (Klüver and Zubek 2018).

Institutions such as government formation rules tend to predict the presence of minority governments across countries (Bergman 1993). Minority governments are more likely in countries with "negative" government formation rules, meaning that the government must only

be tolerated, but not elected by parliament.[11] Countries with "negative" government formation rules include Canada, Denmark, Finland, Iceland, Norway Portugal, Sweden and the United Kingdom. Countries with "positive" government formation rules (the government needs to be elected by the members of parliament with absolute or relative majorities) include Belgium, Germany, Ireland, Israel, Italy, the Netherlands and Spain (Bergman 1993: 59).

7. Conclusion

Minority governments in OECD countries will receive more attention because of the changing party systems. The platforms of established parties converged in many European countries, new (populist) parties entered the political arena, and party systems grew more fragmented. Established parties struggle to form single-party or two-party majority governments. Alternatives include majority governments with three or more parties or minority governments.

Minority governments are expected to have higher budget deficits and public expenditure than majority governments because they need to make many compromises. Previous empirical studies like De Haan and Sturm (1994 and 1997) and De Haan et al. (1999) do not, however, suggest that minority governments increased budget deficits and spending. Strøm (1990: 238) concludes that: "contrary to conventional wisdom, minority governments do not perform particularly poorly in office." I have used new data from 23 OECD countries for central and general governments over the period 1960-2015 (unbalanced panel) to re-examine fiscal policies of minority governments. My results confirm the findings of previous studies and do not show that budget deficits and increases in public expenditure were higher under minority than majority governments. An innovation of my study has been to disentangle the fiscal performance of minority governments who enjoy organized support of opposition parties and those who do not. Minority governments with organized support of opposition parties may

[11] Investiture decision rules influence the propensity for parties to form minority governments (Cheibub et al. 2019).

govern rather like majority than minority governments. My results do not suggest that minority governments with organized support of opposition parties increased public expenditure to a larger extent than majority governments. If anything, fiscal deficits were somewhat higher under single-party minority governments with organized support of opposition parties than under majority governments especially. Further research on this issue is needed when more data is available.

Future research may well examine whether the political ideology of the individual minority governments and the supporting opposition parties influences their policies. Larger datasets are required to disentangle policies of single-party/coalition minority governments and those that do (not) enjoy support of the opposition conditional on leftwing, center, and rightwing government ideology.

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Table 1: Effects of minority governments. OECD panel data studies.

"+" positive effect; "−" negative effect; "0" no significant effect; "+/0" positive effect in some specifications, no significant effect in other specifications; "−/0" negative effect in some specifications, no significant effect in other specifications.

Study	Influence on	Effect (minority government)	Time period	# countries	Minority government measure
Outcomes					
Falcó-Gimeno and Jurado (2011)	Annual deficit (in % of GDP)	+ (min gov coalitions and when the opposition is concentrated)	1976-2000	12	Dummies
Potrafke (2010)	Public health expenditure (growth)	0	1971-2004	18	Dummy variable
Potrafke (2006)	Budget composition (growth) General government	- (general public services) + (education) 0 (other expenditure types)	1990-2004	15	Dummy variable
Sakamoto (2001)	Deficit (in % of GDP) General government	0/-	1961-1994	18	Dummy variable
Perotti and Kontopoulos (2002)	Deficit (% of GDP, changes)	+/0	1970-1995	19	Type of government index (including minority governments)
Perotti and Kontopoulos (2002)	Primary expenditure (% of GDP, changes)	0	1970-1995	19	Type of government index (including minority governments)
Perotti and Kontopoulos (2002)	Primary government revenues (% of GDP, changes)	-	1970-1995	19	Type of government index (including minority governments)
De Haan et al. (1999)	Debt-to-GDP-ratio (growth) General government (net and gross)	0	1979-1995	20	Political cohesion index Dummy variable
De Haan et al. (1999)	Debt-to-GDP-ratio (growth) Central government	0	1979-1995	19	Political cohesion index Dummy variable
De Haan and Sturm (1997)	Debt-to-GDP-ratio (changes) General government	0 (+)	1981-1992	21 (14)	Political cohesion index Dummy variable
De Haan and Sturm (1997)	Exhaustive government spending in % of GDP (changes) General government	0	1981-1992	21	Political cohesion index Dummy variable
Hahm et al. (1996)	Central government Deficit	0	1958-1990	9	Type of government index (including minority governments)
Borelli and Royed (1995)	Log real deficit (changes) Central government	-	1959-1990	16	Months of minority government being in office
De Haan and Sturm (1994)	Debt-to-GDP-ratio (changes)	0	1981-1989	12 (EU)	Political cohesion index Dummy variable

Study	Influence on	Effect (minority government)	Time period	# countries	Minority government measure
De Haan and Sturm (1994)	Expenditure-to-GDP-ratio (changes)	0	1981-1989	12 (EU)	Political cohesion index Dummy variable
Edin and Ohlsson (1991)	Debt-to-GDP-ratio (changes)	+	1960-1985	14	Political cohesion index Dummy variable
Roubini and Sachs (1989a)	Debt-to-GDP-ratio (changes)	+	1960-1985	14	Political cohesion index
Roubini and Sachs (1989b)	Expenditure-to-GDP-ratio (changes)	+/0	1960-1985	14	Political cohesion index Dummy variable

Table 2: Descriptive statistics and data sources.

	N	Mean	Std. Dev.	Min	Max	Source
General government net lending/borrowing (in % of GDP)	594	-1.98	4.57	-32.05	18.67	OECD (2018)
Central government net lending/borrowing (in % of GDP)	582	-1.91	4.35	-32.04	19.70	OECD (2018)
General government expenditure (in % of GDP)	594	44.38	7.49	22.24	65.10	OECD (2018)
Central government expenditure (in % of GDP)	538	28.29	8.47	9.93	62.94	OECD (2018)
Minority government	594	0.20	0.40	0	1	Armingeon et al. (2017)
Minority government - single party	594	0.09	0.29	0	1	Armingeon et al. (2017)
Minority government - coalition	594	0.11	0.31	0	1	Armingeon et al. (2017)
Minority government (support)	594	0.11	0.32	0	1	Armingeon et al. (2017) and own calculation
Minority government (no support)	594	0.08	0.28	0	1	Armingeon et al. (2017) and own calculation
Minority government – singly party (support)	594	0.05	0.22	0	1	Armingeon et al. (2017) and own calculation
Minority government – coalition (support)	594	0.06	0.24	0	1	Armingeon et al. (2017) and own calculation
Minority government – singly party (no support)	594	0.04	0.20	0	1	Armingeon et al. (2017) and own calculation
Minority government – coalition (no support)	594	0.04	0.20	0	1	Armingeon et al. (2017) and own calculation
Leftwing government	594	0.35	0.48	0	1	Potrafke (2009) and update
Rightwing government	594	0.42	0.49	0	1	Potrafke (2009) and update
Election year	594	0.30	0.46	0	1	own calculation
Number of parties in government	594	2.22	1.25	0	6	own calculation
Veto Player 1 (left-right)	594	7.46	7.93	0	37.97	Jahn et al. (2018)
Veto Player 1 (green-growth)	594	6.67	7.83	0	39.39	Jahn et al. (2018)
Veto Player 2 (left-right)	594	7.79	8.05	0	37.97	Jahn et al. (2018)
Veto Player 2 (green-growth)	594	6.92	7.84	0	39.39	Jahn et al. (2018)
Unemployment rate	575	7.42	3.82	1.80	27.50	World Bank (2018a)
GDP per capita (real)	594	42816.85	17512.53	18080.55	111968.35	World Bank (2018a)
Trade openness (as a share of GDP)	594	75.71	55.36	10.73	410.17	World Bank (2018a)
Population aged younger 15 (share of total)	594	18.81	3.36	12.99	30.26	World Bank (2018b)
Population aged older 65 (share of total)	594	14.84	3.08	8.22	26.02	World Bank (2018b)
KOF Globalisation Index	584	80.38	7.45	57.75	90.97	Dreher (2006), Gygli et al. (2019)

Table 3. Regression Results. Dependent variables: Net lending/ net borrowing and change in expenditure (both as a share of GDP).
Central government.

	(1) Surplus	(2) Surplus	(3) Expenditure	(4) Expenditure
Minority government	0.339	-0.218	0.061	0.028
	(1.069)	(0.365)	(0.238)	(0.321)
Leftwing government		0.337		-0.395
		(0.516)		(0.516)
Rightwing government		0.113		-0.119
		(0.543)		(0.432)
Election year		-0.119		0.056
		(0.135)		(0.158)
Numbers of parties in government		-0.042		0.091
		(0.111)		(0.111)
Veto Player		-0.003		0.006
		(0.016)		(0.017)
Unemployment		-0.464***		0.589***
		(0.126)		(0.150)
Trade openness		-0.046		-0.002
		(0.036)		(0.029)
Young share		-1.826		-0.672
		(1.065)		(0.821)
Elderly share		-2.022***		-0.464
		(0.498)		(1.186)
Lagged dependent variable		0.591***		-0.301***
		(0.063)		(0.077)
Fixed country effects	Yes	Yes	Yes	Yes
Fixed year effects	Yes	Yes	Yes	Yes
Observations	582	552	516	494
Countries	23	23	22	22
R^2 within	0.357	0.666	0.198	0.296
R^2 between	0.080	0.987	0.094	0.001
R^2 overall	0.185	0.797	0.196	0.285

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, in changes: Unemployment rate, Trade openness, Young share, Elderly share.

Table 4. Regression Results. Dependent variables: Net lending/ net borrowing and change in expenditure (both as a share of GDP).
General government.

	(1) Surplus	(2) Surplus	(3) Expenditure	(4) Expenditure
Minority government	0.223	-0.404	0.351	0.477
	(1.070)	(0.336)	(0.231)	(0.313)
Leftwing government		0.284		-0.177
		(0.511)		(0.539)
Rightwing government		0.110		-0.010
		(0.537)		(0.470)
Election year		-0.127		-0.071
		(0.154)		(0.161)
Numbers of parties in government		-0.073		0.166
		(0.125)		(0.107)
Veto Player		-0.000		-0.006
		(0.016)		(0.015)
Unemployment		-0.497***		0.648***
		(0.129)		(0.155)
Trade openness		-0.037		-0.032
		(0.035)		(0.025)
Young share		-1.948**		-0.428
		(0.920)		(0.784)
Elderly share		-2.300***		-0.309
		(0.509)		(1.177)
Lagged dependent variable		0.615***		-0.281***
		(0.067)		(0.068)
Fixed country effects	Yes	Yes	Yes	Yes
Fixed year effects	Yes	Yes	Yes	Yes
Observations	594	552	571	530
Countries	23	23	23	23
R^2 within	0.410	0.720	0.306	0.387
R^2 between	0.054	0.982	0.012	0.030
R^2 overall	0.212	0.815	0.299	0.372

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, in changes: Unemployment rate, Trade openness, Young share, Elderly share.

Table 5. Regression Results. Dependent variables: Dependent variables: Net lending/ net borrowing and change in expenditure (both as a share of GDP). **Single-party and coalition minority governments.**

	(1) Surplus	(2) Surplus	(3) Expenditure	(4) Expenditure
Central government				
Minority government (single party)	-0.318	-0.369	-0.029	-0.150
	(0.715)	(0.287)	(0.220)	(0.317)
Minority government (coalition)	1.000	-0.093	0.140	0.153
	(1.460)	(0.589)	(0.371)	(0.444)
Controls	No	Yes	No	Yes
Observations	582	552	516	494
Countries	23	23	22	22
General government				
Minority government (single party)	-0.273	-0.497	0.265	0.404
	(0.806)	(0.290)	(0.211)	(0.291)
Minority government (coalition)	0.722	-0.327	0.437	0.536
	(1.441)	(0.535)	(0.391)	(0.474)
Controls	No	Yes	No	Yes
Observations	594	552	571	530
Countries	23	23	23	23

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, in changes: Unemployment rate, Trade openness, Young share, Elderly share.
Regressions as in Tables 3 and 4, but the explanatory variable minority government is replaced by two dummy variables for single-party and coalition minority governments.

Table 6. Regression Results. Dependent variables: Dependent variables: Net lending/ net borrowing and change in expenditure (both as a share of GDP). **Minority governments with organized support.**

	(1) Surplus	(2) Surplus	(3) Expenditure	(4) Expenditure
Central government				
Minority government (support)	-0.214	-0.426	0.149	0.192
	(1.010)	(0.419)	(0.322)	(0.443)
Minority government (no support)	0.861	-0.034	-0.013	-0.095
	(1.220)	(0.411)	(0.248)	(0.327)
Controls	No	Yes	No	Yes
Observations	582	552	516	494
Countries	23	23	22	22
General government				
Minority government (support)	-0.419	-0.537	0.390*	0.601
	(1.048)	(0.409)	(0.214)	(0.352)
Minority government (no support)	0.830	-0.286	0.315	0.368
	(1.200)	(0.384)	(0.342)	(0.383)
Controls	No	Yes	No	Yes
Observations	594	552	571	530
Countries	23	23	23	23

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, in changes: Unemployment rate, Trade openness, Young share, Elderly share.
Regressions as in Tables 3 and 4, but the explanatory variable minority government is replaced by two dummy variables for single-party and coalition minority governments.

Table 7. Regression ResultsDependent variables: Net lending/ net borrowing and change in expenditure (both as a share of GDP). **Single-party and coalition minority governments with organized support.**

	(1) Surplus	(2) Surplus	(3) Expenditure	(4) Expenditure
Central government				
Minority government – single party (support)	-0.503	-0.666	-0.112	-0.040
	(0.407)	(0.439)	(0.230)	(0.514)
Minority government – single party (no support)	-0.213	-0.130	0.058	-0.217
	(1.095)	(0.512)	(0.318)	(0.472)
Minority government – coalition (support)	0.218	-0.269	0.291	0.313
	(1.664)	(0.761)	(0.483)	(0.574)
Minority government – coalition (no support)	2.019	0.027	-0.126	-0.025
	(1.716)	(0.459)	(0.370)	(0.473)
Controls	No	Yes	No	Yes
Observations	582	552	516	494
Countries	23	23	22	22
General government				
Minority government – single party (support)	-0.602	-0.695	0.045	0.343
	(0.544)	(0.489)	(0.227)	(0.516)
Minority government – single party (no support)	-0.025	-0.335	0.513	0.468
	(1.150)	(0.494)	(0.314)	(0.396)
Minority government – coalition (support)	-0.113	-0.435	0.615*	0.732
	(1.652)	(0.719)	(0.348)	(0.467)
Minority government – coalition (no support)	1.754	-0.261	0.073	0.215
	(1.720)	(0.418)	(0.555)	(0.673)
Controls	No	Yes	No	Yes
Observations	594	552	571	530
Countries	23	23	23	23

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, in changes: Unemployment rate, Trade openness, Young share, Elderly share.
Regressions as in Tables 3 and 4, but the explanatory variable minority government is replaced by two dummy variables for single-party and coalition minority governments.

Table 8. When do minority governments take office? Regression Results. Dependent variable: **Minority Government.**

	(1)	(2)	(3)	(4)	(5)	(6)
Surplus (t-1, central government)	0.008					
	(0.014)					
Surplus (t-1, general government)		0.008				
		(0.013)				
Expenditure (t-1, central government)			-0.000			
			(0.006)			
Expenditure (t-1, general government)				0.004		
				(0.006)		
Per capita GDP (t-1)					0.000	
					(0.000)	
Unemployment (t-1)						-0.007
						(0.019)
Fixed country effects	Yes	Yes	Yes	Yes	Yes	Yes
Fixed year effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	559	571	494	548	548	529
Countries	23	23	22	23	23	23
R2 within	0.058	0.059	0.068	0.061	0.073	0.060
R2 between	0.237	0.198	0.069	0.063	0.031	0.073
R2 overall	0.096	0.091	0.052	0.057	0.057	0.052

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. In changes: Expenditure, per capita GDP, unemployment.

Table 9. When do minority governments take office? Regression Results. Dependent variable: **Minority Government (support).**

	(1)	(2)	(3)	(4)	(5)	(6)
Surplus (t-1, central government)	-0.006					
	(0.009)					
Surplus (t-1, general government)		-0.008				
		(0.009)				
Expenditure (t-1, central government)			0.003			
			(0.004)			
Expenditure (t-1, general government)				0.005		
				(0.004)		
Per capita GDP (t-1)					0.000	
					(0.000)	
Unemployment (t-1)						0.003
						(0.015)
Fixed country effects	Yes	Yes	Yes	Yes	Yes	Yes
Fixed year effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	559	571	494	548	548	529
Countries	23	23	22	23	23	23
R2 within	0.058	0.059	0.068	0.061	0.073	0.060
R2 between	0.237	0.198	0.069	0.063	0.031	0.073
R2 overall	0.096	0.091	0.052	0.057	0.057	0.052

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. In changes: Expenditure, per capita GDP, unemployment.