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Political budget cycles under single party- and coalition governments

How the composition of local governments affects opportunistic fiscal policy

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Abstract

This paper examines the empirical relationship between political budget cycles (PBCs) and two types of governments; single party- and coalition governments. Most PBC models implicitly assume that governments have unitary preferences and unconstrained control over fiscal policy, as is the case under single-party governments. However, under a coalition government, preferences over fiscal policy might vary significantly. Hence, the ability to implement a PBC may differ depending on the composition of governments, since coalition governments require the agreement of multiple parties to determine fiscal policy. Using a fixed effects model and a panel data set comprising of 283 Swedish municipalities over 24 years, we find that net cost as a share of revenue increases with, on average, 2.03 percentage points under single party governments during election years. In relation to single party governments, the election year effect is 0.62 percentage points lower in municipalities ruled by a coalition government. We find no empirical evidence that the PBC is further moderated by the size of, or the ideological distance within a coalition.

Supervisor: Andreea Mitrut
Keywords: Political budget cycles; veto player theory; local governments; power dispersion

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1. Introduction

Opportunistic politicians are often assumed to manipulate budgets prior to elections in order to increase their chances of re-election[1] (Drazen, 2000). This electioneering leads to a cyclic fluctuation in public spending and tax rates, and consequently also public deficits, a phenomenon which is termed a political budget cycle (PBC). Since Nordhaus' (1975) first attempt to outline how macroeconomic variables are affected by political considerations, the literature concerning PBCs has grown substantially. In recent years, the somewhat inconsistent empirical findings[2] of PBCs have underscored the importance of understanding the contextual determinants of politicians' incentive- and ability to implement a PBC (Dubois, 2016). Authors such as Franzese & Jusko (2006), Alt & Rose (2009) and De Haan & Klomp (2013) argue that the occurrence- and magnitude of a PBC is conditional on the level of power dispersion within a government. Power dispersion can take different forms, for example power can be shared between different coalition members or institutions[3] (Franzese, 2002, p. 383f). Although some type of power dispersion is the rule rather than the exception in democratic countries, most PBC models implicitly assume that incumbent politicians have full discretional control of fiscal policy[4]. Thus, these models ignore the fact that the ability of incumbent politicians to implement a PBC is reduced when the implementation of fiscal policy requires the agreement of other actors (Alt & Rose, 2009, p. 8).

The aim of this paper is to increase our understanding of how PBCs are affected by power dispersion. More precisely, the purpose is to address the following research question: *Does the ability to implement a PBC differ between single- party and coalition governments?* A single party government is likely to both have the incentive and ability to implement a PBC. In contrast, while all coalition members are likely to prefer the implementation of a PBC, issues such as bargaining- or coordination difficulties are likely to reduce the ability of a coalition government to implement a PBC (Franzese 2002, p. 384). Thus, the relationship between PBCs and coalition governments is expected to be negative.
Using a fixed effects (FE) model and data on Swedish municipalities, we find that net cost as share of revenue increase with, on average, 1.50 percentage points during an election year.

[1] Politicians can attempt to improve their expected economic performance and likelihood of re-election by expanding the economy before an election and contracting the economy after.
[2] For example, although Brender & Drazen (2005) and Shi & Svensson (2006) find evidence of a PBC, they note that their findings vary between countries. The findings of Brender & Drazen (2005) disappear when developing countries are omitted from their sample while the findings of Shi & Svensson (2006) suggest that the magnitude of a PBC is larger in less developed countries.
[3] Examples of different institutions include the legislative, executive and judicial branches
[4] See e.g. Shi & Svensson (2006), Lohmann (1998) and Rogoff & Sibert (1988)

This result confirms the occurrence of a small PBC in Swedish municipalities. Furthermore, when we compare coalition governments to single party governments, we find that net cost as a share of revenue increases with, on average, 2.03 percentage points under a single party government during election years. This increase in net cost over revenue is, on average, 0.62 percentage points lower under a coalition government. We do not find that the PBC is further moderated by the size of a coalition government[5] or by the ideological distance between coalition members[6].

Our analysis builds upon the veto player theory proposed by Tsebelis (1995, 2002)[7]. A veto-player is an actor whose agreement is required for a change in policy. According to the theory, the potential for policy change decreases with the number of veto players. Tsebelis distinguishes between *institutional veto players*, the institutions such as the executive- and legislative branch established by a country's constitution, and *partisan veto players*, the political parties in a ruling coalition. Unlike most of the previous literature on this subject, the focus of this thesis is on coalition governments and partisan veto players. Previous literature has instead focused on institutional arrangements[8] and veto players or divided governments[9] and institutional veto players[10]. This is surprising considering the extensive literature investigating the effects of coalition governments on fiscal policy in general[11].

To the best of our knowledge, only one other study has investigated the effect of coalition governments on PBCs[12]. Using data from 21 OECD countries in a cross-country study during the period 1973 to 2000, Chang (2008) finds that the increase in spending during an election year is smaller under a coalition government than under a single party government. These findings suggest that the ability to implement a PBC is reduced when power is dispersed between different coalition members. However, the use of spending as the dependent variable does not necessarily capture a PBC. If an increase in spending is accompanied by an equal increase in revenue, this suggests an expansion of the public sector rather than a PBC. Unlike Chang (2008), the dependent variable in our analysis is a ratio between net cost and revenue.

[5] Measured by the number of coalition parties
[6] Measured by the ideological distance between the two coalition parties furthest away from each other
[7]The veto player theory proposed by Tsebelis (1995, 2005) is commonly used. See e.g. Chang (2008), Alt and Rose (2009) and Garmann (2018)
[8] For example Persson & Tabellini (2003) considers parliamentary- and presidential democracies while Chang (2008) considers, among other things, single member districts- and proportional electoral systems
[9] A situation when control over the legislative- and executive branch of government belongs to different parties (Garmann, 2018)
[10] See e.g. Alt and Rose (2009) and Garmann (2018)
[11] See e.g. Edin and Ohlsson (1991), Grilli et al. (1991) and Ashworth et al (2005)
[12] It should be noted that similar to the topic of PBCs and coalition governments, few papers have been published on the topic of PBCs and divided governments (Alt & Rose, 2009)

This variable aligns well with the theoretical concept of a budget used in most PBC models[13]. Furthermore, we use data on subnational level as opposed to data on national level.

We use a panel dataset consisting of data from 283 of Sweden's 290 municipalities during the period 1995 to 2018. Using Swedish municipalities as an empirical setting has several attractive features. The use of municipality- rather than cross-country data allows us to control for institutional heterogeneity. Sweden, as a unitary state, exhibits no institutional variation between municipalities. The right of self-determination, the quasi-parliamentary system and the services[14] Swedish municipalities provide are all regulated by national laws (SFS 2017:725) and are subsequently the same for all municipalities. Moreover, although the development of factors such as demographics and infrastructure differ between Swedish municipalities over time, these differences are small in comparison to differences between countries and are therefore less likely to affect our findings. Unlike most OECD countries, elections to the national parliament, county- and municipality assemblies are all held in September every fourth year in accordance with a fixed election schedule. The potential endogeneity due to politicians strategically calling elections early is thereafter circumvented (Lidbom, 2003). The institutional set up of Swedish municipalities in conjunction with the fixed election schedule of Sweden also implies that few institutional veto players exist. For example, these features mean that potential confounding elements, such as the occurrence of divided governments in a presidential democracy, is avoided. Finally, the data provides substantial variations in the types of government across municipalities and over time.

In conclusion, economists often assume that under election years, fiscal policy is designed by opportunistic and unconstrained politicians. Our findings challenge this perspective by showing that budgetary opportunism is constrained when policy power is shared between coalition members. Since coalition governments have become more frequent in Swedish municipalities during recent years, our findings are not only theoretically interesting but will also have real world implications.

The remainder of this master thesis is structured as follows. In section 2 we present an overview of the existing PBC literature with a focus on context-conditional PBC studies. In section 3, the theoretical framework on which we build our analysis is provided together with the hypothesis that will be tested. The empirical setting in which we test our hypothesis is presented in section 4. In section 5 we present the variables used in our analysis. The

[13] See e.g. Rogoff & Sibert (1988) and Shi & Svensson (2006)
[14] Municipalities constitute a large part of Sweden's extensive welfare system. Municipalities are for example responsible for the provision of education, healthcare and infrastructure (Petersson, 2006, p.32 & 37ff).

identification strategy and the econometric specification is provided in section 6. In section 7 we present our main results together with some robustness checks of said results. In section 8 we conclude and discuss our results. Lastly, in section 9 we present some ideas for future research.

2. Previous literature

Nordhaus (1975) was among the first to formalize the idea that macroeconomic variables are influenced by political considerations within an analytical framework. In his ground-breaking paper, Nordhaus (1975) argues that fluctuations in macroeconomic variables are due to incumbent politicians exploiting the relationship between inflation and unemployment illustrated by the Phillip's curve. By expanding the economy before an election and contracting the economy after, politicians can attempt to inflate their expected economic performance[15] and subsequently improve the likelihood of being re-elected. The cyclic fluctuations in macroeconomic variables caused by an election is termed a "Political Business Cycle". Since its publication, Nordhaus' model has received much attention from the macroeconomic-literature, although criticism has also been raised. The point of contention is the assumption of naïve and non-rational voters, which seem questionable since it implies that voters can repeatedly be fooled by politicians prior to elections.

The criticism raised by "the rational expectations revolution" is addressed in Rogoff & Sibert's (1988) influential paper. In their paper, Nordhaus' (1975) assumption of naïve and non-rational voters is replaced by the assumptions of rational voters and information asymmetry[16]. Rogoff & Sibert (1988) suggest that politicians are able to hide their true "competence", that is, the ability to provide public goods at a lower cost, prior to an election due to temporary information asymmetry. This means politicians can appear to be more competent prior to an election by expanding the economy thorough deficit spending and thereafter improve the likelihood of being re-elected. The true competence of politicians is first revealed after an election period when the deficit caused by the expansion of the economy prior to the election has to be reimbursed. A reimbursement which is associated with a social welfare loss.

The lack of empirical evidence for the predictions made by Nordhaus' (1975) model has also led to a shift in focus within the macroeconomic-literature. Among others, Tufte (1978)

[15] Measured by voters' utility from inflation, unemployment and other economic variables.
[16] While the model of Rogoff & Sibert (1988) remains highly influential, alternative models do exist. For example, authors such as Lohmann (1998) and Shi & Svensson (2006) suggest models based on moral hazard rather than information asymmetry. However, the predictions remains largely the same.

argues that if PBCs do exist, their existence should be sought in *instruments* of economic policy, rather than in economic *outcomes*. Rogoff (1990) suggests that the macroeconomic literature should focus on the existence of electoral cycles in transfers, taxes and government consumption spending. He terms opportunistic cyclic fluctuation in fiscal variables a "Political Budget Cycle" rather than a "Political Business Cycle" since the primary interest of these models does not lie in fluctuations in macroeconomic outcome variables.

Even after the shift in focus from economic outcome variables to instruments of economic policy, the empirical findings of PBCs remains somewhat inconsistent[17]. The inconsistency of empirical evidence highlights the limitations of earlier PBC models. Recent PBC literature thereafter contends that PBC models should be placed in an institutional, structural and strategic context which forms politicians' incentive and ability to implement a PBC. Earlier PBC models implicitly assume that an elected government has unified preferences and has sole control over the fiscal policy. In doing so, earlier PBC models ignore a key institutional fact. That is, implemented economic policy is affected by numerous internal and external actors, thus the implemented economic policy reflects the interaction between these actors rather than the unified will of the government (Drazen, 2000).

Persson & Tabellini (2003) consider how separation of power affects the ability of governments to implement a PBC. They argue that fiscal outcome is dependent on the form of- and relationship between different institutions. Presidential democracies are often associated with greater dispersion of power between institutions than representative democracies. This means that the magnitude of PBCs is expected to be smaller in presidential democracies since the ability of incumbent governments to alter policy from a status quo is presumed to diminish with the number of veto players. Persson & Tabellini (2003, p.205) find evidence supporting this notion, finding that both presidential and representative democracies are associated with tax cuts prior to an election however greater tax cuts are observed in representative democracies.

Unlike Persson & Tabellini (2003), Chang (2008) considers partisan veto players. He assumes that the ability of governments to implement a PBC is curtailed by the number of partisan veto players. Unlike institutional veto players, partisan veto players raise the possibility of a

[17] Shi & Svensson (2006), Brender & Drazen (2005) and Klomp & de Haan (2013) all find empirical evidence of a PBC. For example, Shi & Svensson (2006) find that the national deficit increases with almost one percent of GDP prior to an election. However, Brender & Drazen (2005) and Shi & Svensson (2006) note that their findings vary between countries. For example, the findings of Brender & Drazen (2005) disappear when developing countries are removed from their sample while Shi & Svensson (2006) and Klomp & de Haan (2013) find that the PBC is larger in developing countries than in developed countries.

so called “common pool problem”. That is, a situation in which a political actor in a coalition oversupply public goods to the group they represent. This occur since the cost internalized by the political actors group is reduced as the number of political actors in the coalition increase (Ashworth et al, 2005). To reconcile the different predictions, Chang (2008) suggests that spending should generally be higher under a coalition government but PBCs should be smaller compared to that of a single party government. Chang (2008) finds evidence supporting this notion. Spending during an election year is reduced by the number of partisan veto players but is higher during non-election years.

Alt & Rose (2009) and Garmann (2018), using sub-national data, rather than cross country data, consider PBCs in the context of a divided government. Alt & Rose (2009) argue that a divided government is a situation when institutional veto players are present. As a result, the ability of incumbents to implement a PBC should be curtailed. Garmann (2018) presents a related argument. The legislative branch is likely to help the executive branch to implement a PBC if both branches are controlled by the same party while the opposite being true in the case of a divided government. Alt & Rose (2009) find clear evidence supporting the notion that during an election year spending is larger under a unified government than under a divided government in US state governments. Garmann (2018) find more mixed result in German municipalities. He finds that during an election year business tax cuts are smaller under a divided government than under a unified government. However, he finds no significant differences in property tax cuts under a unified or divided government. He argues that the mixed results could be explained by the presence of a coalition partner in the legislative branch, where the coalition partner might be willing to help the party holding the executive branch in exchange for the realization of some of its policy proposal. Garmann (2018) finds evidence supporting this explanation. No property tax cuts occur under a divided government when a different party than the party holding the executive branch have an absolute majority in the legislative branch.

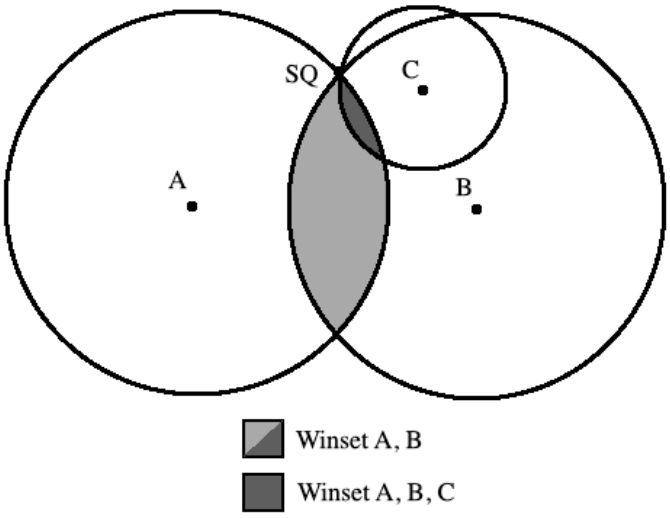
3. Theory

In this section, we present the theoretical predictions underpinning our analysis. Firstly, we introduce Tsebelis (1995, 2002) highly influential veto-player framework. The veto-player framework relates observed *policy outcome* to the bargaining process between different *veto-players*. Thereafter, we discuss veto player theory in the context of a PBC. Lastly, we present our hypothesis.

3.1 The veto player theory

In Tsebelis (1995, 2002) influential work on veto player theory (henceforth called 'the veto player theory'*),* he attempts to unify comparative analysis of various political systems. Tsebelis defines a veto-player as an actor whose agreement is required for a change in policy and distinguishes between *institutional veto players*, institutions established by a country's constitution, and *partisan veto players*, the political parties in a ruling coalition[18]. The outcome is the *potential for policy change* in different institutional settings. Potential for policy change does not necessarily imply such change but the absence of such potential precludes it.
The veto player theory is based on a spatial model of preferences, where different policy alternatives are represented as points in a one- or multidimensional policy space. The preferences of the players are represented by indifference curves which are defined on the policy space. Figure 1 illustrates a two-dimensional policy space with three veto players.

Figure 1. Veto players on a two-dimensional policy space



Each player has an *ideal point* (A, B and C) on the space which is the set of policy alternatives the player prefers over all others. Further, each player has circular indifference curves. That is, the player is indifferent to alternatives located at an equal distance from the player's ideal point. The *status quo* (SQ) is the set of policies which are currently in force and a player will veto any policy outcome that they do not prefer over the status quo. All players are assumed to have the same ability to issue a veto independent of e.g. the party's relative size or whether they are members of an over-sized government or not. The opposition is

[18] As previously stated in section 1, the focus of this thesis is on coalitions and PBCs. The following discussion will thus focus on partisan veto players.

assumed to lack the ability to veto policies even in the presence of a minority government. The *winset of the status quo* is defined as the set of policy outcomes that can defeat the status quo. The winset of the status quo represents the intersection of different veto players' indifference curves. As the *number of players* who are required to agree about movement of the status quo increases, the winset of the status quo will decrease (or stay the same) since the winset of the status quo for n+1 players is a subset of the winset of the status quo for n players. This is illustrated by the addition of player C in figure 1. Subsequently, the potential for policy change decreases (or, at least, does not increase) with the number of parties in a coalition. Tsebelis notes that an additional player will *not* affect policy stability if the additional player's indifference curve is located within existing players indifference curves. That is, if an additional player has preferences which are already defined by current veto players, the additional player will not affect the policy outcomes. Tsebelis calls this condition the *absorption rule*. Lastly, Tsebelis illustrates that the potential for policy change decreases not only with the number of veto players but also with the *distance* between the veto players' preferences, since the winset of the status quo will decrease as the players move further apart[19].

It should once more be stressed that the veto player propositions described above provide *necessary* but not *sufficient* conditions to change the status quo. That is, one can identify conditions where the change of the status quo is difficult (or impossible), but the theory does not provide predictions about actual policy change. If policy change is possible, the actual change will depend on individual choices by the involved agents.

3.2 Veto players in a PBC and coalition context

Chang (2008, p.1089) argues that the veto player theory has clear implications for PBC models

> *"Since political budget cycles imply changing the existing budgetary structure during elections, incumbents are less capable of manipulating budgetary cycles in a multiple veto players environment"*

While this statement is true, the veto player theory makes no predictions as to how policy- or more precisely PBC preferences are formed. Policy preferences in general are likely formed by the ideology of a party. However, during an election period, this would suggest that an

[19] Tsebelis makes a third proposition which states that potential for policy change decreases with the internal cohesion of each veto player. See Tsebelis (2002) for a complete demonstration of the veto player framework.

incumbent party is either purely partisan, i.e. solely interested in the implementation of their preferred policy without considerations about the electoral outcome, or that parties differ in their preferred execution of a PBC[20]. If the former were to be true, no PBC would occur. If the latter were to be true, PBC would still occur under a single-party government but differ in execution between parties. That would imply that any difficulties in implementing a PBC under a coalition government would stem from ideological differences in the preferred PBC execution.

The assumption that parties are purely partisan seem highly unlikely. Even if parties are partisan in general, they would likely still be interested in the implementation of their preferred policy after an election. Thus, as argued by Drazen (2000), it seems more likely that parties, in accordance with PBC theories, are opportunistic prior to an election to be able to be partisan after the election. While the preferred execution of a PBC might differ between single-party governments, the prediction of PBC theories remains the same. That is, a deteriorating budgetary situation. Further, the prediction of all PBC models is that parties share a common interest in increasing their likelihood of re-election by the implementation of a PBC. Thus, under a coalition government, potential differences in the preferred execution of a PBC seem unlikely to hinder the implementation of a PBC. Seemingly, as argued by Belke & Potrafke (2012), the ideologies of parties likely retire to the background and their policy preferences converge prior to elections.

It seems more likely that any difficulties in implementing a PBC under a coalition government would stem from differences in the expected benefit from a PBC. Hanusch (2012) develops a PBC model where parties can increase their chances of re-election by increasing their expected vote share through a PBC[21]. Unlike other PBC models (e.g. Shi & Svensson, 2006), parties are assumed to form coalitions. This implies that a PBC is not necessarily associated with an increase in the expected vote share for all coalition parties. Whether a party expects to receive a positive or negative change in their vote share depends on its relative size and ideological position. If a party's relative size is too small and/or if the party is located at an extreme end of the ideological spectrum, they will expect a negative change in their vote share. This means, that within a coalition, not all parties prefer the implementation of a PBC and would thus hinder its implementation. In contrast, under a

[20] The execution of a PBC could for example take the form of lowering taxes while holding spending constant or vice versa.
[21] See Appendix A for a full summary of Hanusch (2012) PBC model.

single party government the incumbent party receives all of the expected benefit from a PBC and do not need the agreement of another party. Subsequently, a single party government would always prefer and have the ability to implement a PBC. Notably, Hanusch' model does not contradict the veto player theory. Rather it should be seen as a complementary foundation to understand observed policy outcome in a PBC and coalition context.

Explicitly testing how PBC preferences are formed is beyond the scope of this thesis. Instead, the purpose of this thesis is to answer the research question: *Does the ability to implement a PBC differ between single- party and coalition governments?* A research question related to observed policy outcome rather than the formation of policy preferences. The veto player framework offers testable predictions of how the potential of policy change is reduced by the number of veto players and the ideological distance between them. Although we would argue that PBC preferences are not formed by ideology, the possibility remains. Subsequently we formulate the following hypotheses:

- H_1: *Municipality net cost as a share of revenue increases during an election year compared to a non-election year.*
- H_2: *Municipality net cost as a share of revenue is smaller under a coalition government than under a single party government during an election year.*
- H_3*: Municipality net cost as a share of revenue decreases with the number of coalition members during an election year.*
- H_4: *Given the number of coalition members, Municipality net cost as a share of revenue decreases with the ideological distance within a coalition during an election year.*

4. Empirical setting

Sweden, as well as all other Nordic countries, can be described as a decentralised unitary state. Sweden's government is divided into three levels of administration; national, regional[22] and local. The local level of administration consists of 290 municipalities. The right for self-determination of Swedish municipalities is extensive and is greater than that of municipalities in countries such as the UK or France[23] (Petersson, 2006, p.32f). Crucially, municipalities do not need authorization from other levels of administration to borrow or to decide on matters

[22] The regional level of administration consist of 21 counties.
[23] The same holds true for municipalities in other Nordic countries.

regulated in their so-called general- and special competence (Gustafsson, 1992, p.43f & 47f). Municipalities constitute a large part of Sweden's extensive welfare system. Similar to municipalities in other European countries, Swedish municipalities are responsible for e.g. the provision of education, healthcare and infrastructure[24]. These services are to a large extent financed by income tax[25] levied by the municipalities (Petersson, 2006, p.32 & 37ff).

The municipality assembly (henceforth called the assembly) represents the legislative branch of municipalities. The assemblies pass decisions with a simple majority in most matters (Gustafsson, 1992, p.116). However, a minority in the assembly is also able to pass decisions, including budgetary decision, as long as there is not a majority against the decision (Hansson, 2015). Members of different political parties are elected to the assembly in proportional elections[26]. The election is held simultaneously with the elections to the national parliament and to the county assembly in September every fourth year in accordance with a fixed election schedule (SFS 2017:725). Sweden's electoral system can be characterized as a multi-party system which is dominated by eight national parties represented at all levels of administration. Other parties do exist, although they are only represented at the local and/or regional level of administration. These local parties are often characterized by a local- or single issue such as health care (Pettersson, 2006, p.115). Most national parties are thought of belonging either to a right-wing or a left-wing bloc. The right-wing bloc consist of the Moderate Party (M), the Christian Democratic Party (KD), the Centre party (C) and the Liberal party (L) while the left-wing block consist of the Social Democratic Party (S) and the Left Party (V). The two remaining parties, the Green Party (MP) and the Sweden Democrats (SD) are often assumed not to be included in any of the blocs[27] (Larsson, 2007).

Together, the municipality council (henceforth called the council) and various committees represent the municipalities' executive branch. The main responsibility of the council's is to lead and coordinate the administration of the municipality (Pettersson, 2006, p.149). This responsibility includes among other things the budgetary process. The council will present a budget proposal for the coming fiscal year[28] in October**.** The assembly is then to decide on the

[24] As of 2018, education and health care (mainly elderly- and disability care) are the two largest spending categories. Together they represent approximately 61.1 percent of the total amount that the municipalities spend (SKLb, 2019).
[25] As of 2018, the income tax constitutes the largest source of income for the municipalities, approximately equalling 66.6 percent of the municipalities' total income. The second largest source of income, as of 2018, is intergovernmental grants, approximately equalling 20.8 percent of the municipalities' total income (SKLb, 2019).
[26] The electorate often vote for a party representing a set of ideas rather than a specific candidate.
[27] The Sweden democrats never ruled a municipality or was part of a ruling coalition during the sample period
[28] The fiscal year equals the calendar year (SFS 2017:725)

budget proposal before the end of November. The budget will among other things include how different services are to be financed as well as the municipality tax rate. The members of the council and various committees are appointed by the assembly. The assembly can also, in principal, remove members of the council and committees (SFS 2017:725). The members of the council and the committees are almost exclusively chosen in accordance with a proportional principal. That is, opposition parties have the right to be represented in the council and the committees. Thus, some, or all opposition parties are in practice always represented in the council and the committees (Gustafsson, 1992, p.187). The practise of choosing members to the council and the committees in accordance with a proportional principal implies that municipalities have a form of "constant coalition government". However, important positions such as the chairman of the council are often reserved for the ruling party or distributed between members of a ruling coalition. Thus, the political system can be seen as "quasi-parliamentary" (Bäck, 2006, p17). Swedish municipalities share this somewhat unique system with municipalities in other north-European countries (Petersson, 2006, p.39).

In conclusion, this short introduction to Swedish municipalities underlines the advantages of Swedish municipalities as an empirical setting for testing our hypotheses. The right for self-determination of Swedish municipalities means that the implementation of a PBC is under the direct control of the municipalities. Since Sweden has a fixed election schedule, potential endogeneity caused by politicians calling election early is avoided. In conjunction, the right for self-determination, the quasi-parliamentary system of Swedish municipalities and Sweden's fixed election schedule implies that confounding institutional elements such as a divided government is avoided. Lastly, members of different parties are elected to the assembly in proportional elections. This means that there is substantial variation in the types of government.

5. Variables and data

In this section, we present and discuss the variables and data used to test hypothesis 1-4[29]. Our dataset is a balanced panel on 283 Swedish municipalities[30] during the period 1995 to 2018. In

[29] In appendix B we present some preliminary results in order to see how well the predictions made in section 2 and 3 compares with our data. See graph B.9 to B.12

[30] The municipalities of Knivsta and Nykvarn were created during the sample period. Knivsta and Nykvarn were earlier a part of the municipalities of Uppsala and Södertälje. Subsequently, these four municipalities are excluded since they are not comparable over time. The municipalities of Göteborg, Gotland and Malmö were also excluded since they were responsible for some regional task during either part of or all of the sample period. Thus, these municipalities are not comparable to the rest of the sample.

total, we have 6 371 observations[31]. During this time period, there have been six elections; 1998, 2002, 2006, 2010, 2014 and 2018. The data is compiled from the Swedish Association of Local Authorities (SKL), Swedish employment service, Statistics Sweden (SCB) and their publications[32]. All monetary variables are expressed in Swedish crowns (SEK) per capita and are deflated with base year 1995=100[33]. Summary statistic of the dependent variable, independent- and control variables is presented in table 1.

Table 1. Summary statistics

Variable	Obs	Mean	Std.Dev.	Min	Max
Net cost/ Revenue	6371	98.25	3.51	56.95	127.02
Election year	6371	0.26	0.44	0	1
Coalition government	6371	0.84	0.36	0	1
Three or more party government	6371	0.63	0.48	0	1
Maximum ideological distance	6371	1.97	1.65	0	6.39
Minority government	6371	0.11	0.31	0	1
Proportion old	6371	20.56	4.13	6.79	34.01
Proportion young	6371	18.75	2.37	12.21	25.94
Proportion foreigner	6371	10.05	5.44	1.83	41.48
Proportion unemployed	6371	7.4	3.21	1.09	26.22
Population density	6371	126.1	451.23	0.2	5689.1
Taxable income	6371	115.99	20.76	68.69	254.05
Ideology to the right	6371	0.51	0.5	0	1
Deficit rule	6371	0.83	0.37	0	1

5.1 The dependent variable

PBCs have previously been measured in numerous ways. Earlier works have mainly focused on the electoral effect on budget deficits[34], total expenditures and/or the tax rate[35]. Although there is some uncertainty how to best measure a PBC, the PBC theories proposed by e.g. Rogoff & Sibert (1988), Shi & Svensson (2006) and Hanusch (2012) all state that the budgetary situation should deteriorate during election year due to opportunistic increases in spending and/or decreases in the tax rate. Increases in public expenditures or tax cuts by themselves do not necessarily imply a PBC. If an increase in spending is accompanied by an equal increase in revenue, this would suggest an expansion of the public sector rather than a PBC. Therefore, we consider a ratio between municipality net cost- and revenue per capita times 100 as our dependent variable.

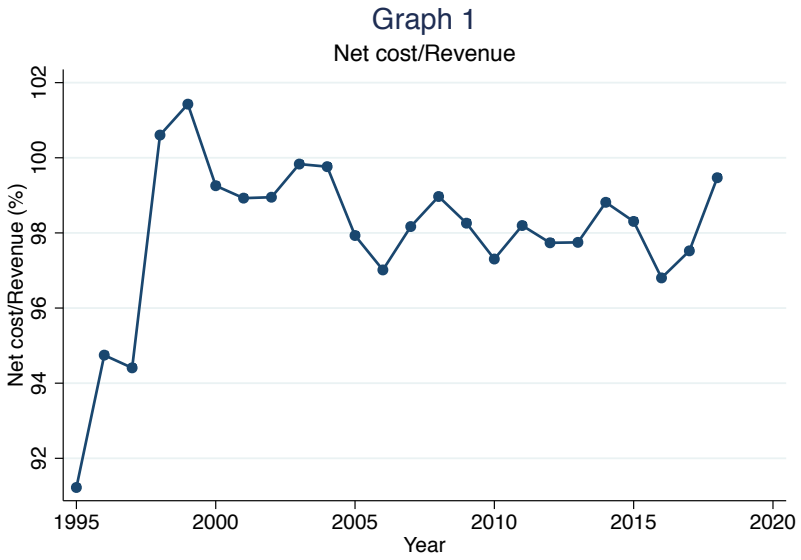
[31] Due to missing data, some observations are omitted from the dataset
[32] The publications used are "Vad kostar verksamheten I din kommun 1995-1997" and "Befolkningsstatistik 1995-1999". See Table B.4 in appendix B for a full summary of the construction and data sources of the variables used in the analysis.
[33] The monetary variables are deflated using the implicit GDP deflator which is calculated as the ratio of GDP in current local currency to GDP in constant local currency.
[34] See e.g. Shi & Svensson (2006) and Brender & Drazen (2008)
[35] See e.g. Pettersson-Lidbom(2003) and Veiga &Veiga (2007)

The net cost represents the cost of the main responsibility for municipalities and is defined as the cost of municipal services minus revenues from service fees and designated grants from the national level of government. The net cost is mainly financed by tax revenue and general intergovernmental grants (henceforth called grants) from the national level of government. Consequently, revenue is defined as tax revenue plus grants. Grants are based on taxable income, demographic- and geographic conditions and also includes a structural part with the aim to support municipalities with a small number of inhabitants and/or labor market problems[36]. With the exception of grants, these components of the dependent variable are under the direct control of the assembly and can therefore easily be matched against each other. Since municipalities have information about tax revenue and grants prior to any budgetary decision[37], an increase in the *net cost-revenue ratio* indicates a deliberate decision to increase expenditures as a share of revenues[38]. From table 1, we observe that the net cost-revenue ratio on average equals approximately 98 percent. Thus, on average, revenue slightly exceeds net cost. The standard deviation of approximately 3.5 percent implies that most observations are clustered around the mean and while some outliers are present, they are few in numbers[39].

The use of panel data necessitate that the time dimension is taken into account. This can be done by the inclusion of either a time trend or time dummies. The development of the net cost-revenue ratio during the sample period is plotted in graph 1. From graph 1, it is clear that our dependent variable does not follow a linear time trend. Thus, the use of time dummies seems preferable to the use of a time trend. Unfortunately, the inclusion of a full set of times dummies is not possible due to the fixed election schedule in Sweden. Therefore, we follow

[36] Since the purpose of the grant is to equalize the constraint faced by municipalities, some municipalities will receive a negative grant.
[37] As described in section 4, the budget for year t is decided in November $t-1$. In September $t-1$, municipalities receive information about the tax base and grants. Hence, by the time of the budget decision they have information about grants and tax revenue given their choice of tax rate for year t.
[38] It should be noted that municipalities have some costs and revenues besides tax revenue, grants and net cost such as extraordinary- and financial costs and revenues. Therefore, a value greater (less) than 100 does not necessarily imply that the municipality is running a deficit (surplus). Under the assumption that these costs and revenues are orthogonal to the size of local government, this does not affect our results. This assumption is likely to hold. Extraordinary cost and revenues are not associated with the cost and revenue of regular municipal services and happens unfrequently. Furthermore, financial costs and revenues are unlikely to affect the cost and revenue of municipal services. Even if they did the effect is likely to be small since the financial costs and revenues accounts for a minor part of the municipality budget (in 2018, the financial net cost on average corresponded to 0.8 percent of the revenues received from tax revenue and grants (SKLc, 2019)
[39] See graph B1 and B2-B5 in appendix B for a graphic representation of the distribution of the net cost-revenue ratio and its components. Further see table B.1 for summary statistic of the components of the net cost-revenue ratio.

Lidbom (2003) by including a set of mandate period fixed effects. Subsequently, the election year effect is identified by variation within mandate periods and between municipalities[40].



The sharp increase in the net cost-revenue ratio during the first mandate period (1995-1998) is attributed to an increase in net cost[41]. The increase in net cost is partly due to the fact that the municipalities overtook some welfare services which prior to 1995 had been provided by the counties. The use of mandate period fixed effects implies that the increase in the net cost-revenue ratio is accounted for. The decline in the net cost-revenue ratio after 1999 is partly attributed to the introduction of balanced budget rule in 2000. The effect of the balance budget rule will be controlled for[42]. After the introduction of the balanced budget rule, the net cost-revenue ratio is relatively stable and follows a downward trend.

5.2 Independent variables of interest

5.2.1 Election year

According to PBC theories, the budgetary situation is to deteriorate prior to an election due to opportunistic increases in spending and/or decreases in tax rate. Since Swedish elections are held towards the end of the election year, the potential electoral effects are then to occur during the election year rather than the year before, as would be expected if elections were held in the beginning of the year. To test hypothesis 1, we therefore construct a dummy variable, *Election*, which is equal to 1 during an election year and 0 during a non-election

[40] As a robustness check, we will also estimate regressions which in addition to the mandate period fixed effects also includes either a municipality- or county specific time trend.
[41] See graph B6 in appendix B for the development of net cost and revenue over our sample period.
[42] See section 5.3

year. In total, we have 4710 observations from non-election years and 1661 observations from election years.

5.2.2 Coalition government

In accordance with the veto player theory, a PBC should be moderated by the presence of one or more partisan veto players (henceforth called veto players). A veto player is a coalition member whose agreement is necessary for a policy change. In order to test hypothesis 2, we differentiate between a single party- and a coalition government. To do so, we first identify the actual number of parties in power[43]. Thereafter, we construct a dummy variable, *Coalition*, which is equal to 1 if the local government consists of two or more parties and 0 in the case of a single party government. The independent variable of main interest is an interaction term between the coalition government dummy and the election year dummy. From table, 1 we observe that coalition government represent a majority of all observation. However, single party governments represent a sizable minority, accounting for 16 percent of all observations.

The use of the actual number of parties in power to identify coalition members and by extension veto players trades some theoretical accuracy for measurement simplicity. In accordance with the absorption rule, a coalition member should not be counted as a veto player if their preferences are defined by the preferences of other members. However, since we are not able to determine the preferences of each party in our sample, the actual number of parties in power is used as a proxy for the number of veto players.

Another measurement decision is how to deal with minority and oversized governments. Opposition parties are not counted as veto players under a minority government. Tsebelis (1999) argues that minority governments are expected to have an institutional advantage as agenda setters over opposition parties, which allow them to impose their will. Furthermore, as described in section 4, a minority in the assembly can pass budgetary decisions as long as there is not a majority against the decision. Under an oversized government, a coalition member whose agreement is not necessarily required for a policy change is still counted as a veto player since, as argued by Tsebelis (1999), altering policy without the agreement of all coalition members is likely to be politically unfeasible[44].

[43] In some municipalities a power shift occurred during the mandate periods. Due to data limitation we do not know when the power shift occurred. Therefore, the number of ruling parties during the mandate period is defined as the number of ruling parties prior to the elections. As a robustness check, regressions where a power shift dummy is included will be estimated as well.

[44] We do not have information concerning the mandates obtained by different local parties. Therefore, we are unable to identify oversized governments and are thus unable to control for the potential effect of oversized

The use of a simple dummy variable to divide municipalities into a group with either a single-party- or a coalition government makes it easy to identify whether there are some differences between these groups beyond the type of government. As stated in section 4, Swedish parties are often positioned into either a left- or right-wing bloc. Thus, an obvious question is whether the type of government is related to political affiliation[45]. In table 2, single party government observations are sorted by party affiliations.

Table 2. Observations of parties in a single-party government

	Mandate period						
Single-party government	1995-1998	1999-2002	2003-2006	2007-2010	2011-2014	2014-2018	Total
Social Democratic Party	280	124	172	120	128	92	916
Moderate party	9	12	4	4	12	4	45
Left party	3	8	0	4	4	0	19
Centre party	0	0	0	0	4	4	8
Total	292	144	176	128	148	100	988

The Social democratic party represents the majority of single party government observations, accounting for almost 93 percent of all single-party government observations. Thus, the comparison between single-party- and coalition governments will to some extent be a comparison between municipalities ruled by the social democratic party and municipalities ruled by different forms of coalition governments[46]. In table 3, observations of coalition government are sorted into either a left, right or mixed-wing bloc[47].

Table 3. Observations of right, left and mixed coalition over mandate periods

	Mandate period						
Coalition type	1995-1998	1999-2002	2003-2006	2007-2010	2011-2014	2014-2018	Total
Right coalition	171	400	396	576	512	356	2411
Left coalition	218	312	320	216	284	276	1626
Mixed coalition	126	208	236	200	188	388	1346
Total	515	920	952	992	984	1020	5383

The right-wing bloc represents a majority of coalition government observations. However, coalition government observation are in general balanced between the different political blocs. Based on table 3 and 4, we can conclude that there are differences between municipalities which co-vary with the likelihood of coalition governance, such as ideology,

governments. However, oversized government are as Tsebelis (1999) argues unlikely to pose a problem. Further, observations of oversized government are likely rare since it would imply unnecessary policy compromises.

[45] Other differences exist between municipalities with a single party- or a coalition government. From table B.2 in appendix B, we observe some differences with the largest differences being population density and unemployment.

[46] As a robustness check, we will test hypothesis 2 on a smaller sample excluding observations where the Social democratic party is part of the ruling government.

[47] A coalition including at least one party from the other bloc

and therefore may affect our results. Consequently, we include a set of commonly used control variables as well as municipality fixed effects in all preferred specifications[48].

5.2.3 Number of coalition members

According to the veto player theory, a PBC will be further moderated by the number of veto players. To test hypothesis 3, we first create a dummy variable, *three or more parties,* which is equal to 1 if a coalition consists of three or more parties and 0 if the ruling constellation consists of less than three parties. Thereafter, we create a triple interaction term between *election, coalition* and *three or more parties* to test whether the addition of one or more veto players further moderates a PBC[49]. In table 4, we present the frequency of the number of parties in local government over the mandate periods.

Table 4. Number of parties in local government

	Mandate period						
Number of parties in local government	1995-1998	1999-2002	2003-2006	2007-2010	2011-2014	2014-2018	Total
One	292	144	176	128	148	100	988
Two	186	280	284	204	176	212	1342
Three	143	212	252	204	272	332	1415
Four	135	252	248	368	372	300	1675
Five or more	51	176	168	216	164	176	951
Total	807	1064	1128	1120	1132	1120	6371

From table 4, we observe that observations of municipalities with a coalition government consisting of three or more parties are more common than observations of municipalities with either two party- or single party governments, constituting 63 percent, 21 percent and 16 percent of all observations respectively. Observations of municipalities with a coalition government consisting of three or more parties are also more common during the second half of the sample period, with a hike in the frequency of four-party governments in the fourth mandate period (2007-2010). This structural break is likely related to the 2004 formation of "the Alliance", a political cooperation between the four centre-right parties (M, KD, C and L) in which the member parties issued a common election manifesto and joint policy statements. The formation of the Alliance was a political success in the 2006 elections, both at the national level, where they gained majority, and at the municipality level where centre-right parties increased their vote share with 2.5 percent[50] (Larsson, 2007).

[48] See section 5.3

[49] As an alternative way to test hypothesis 3 we will create, in addition to the dummy variable *three or more party government,* a dummy variable, *two party government,* which is equal to one if the coalition consist of two parties and thereafter interact both dummies with the election year dummy. The additional effect of one or more coalition members would be identified by the difference between these coefficients. As a further robustness check we will also omit observations of single-party governments from the sample and interact the election year dummy with the actual number of parties.

[50] Its effect should be well accounted for by the mandate period fixed effects

5.2.3 Ideological distance within coalitions

In accordance with the veto player theory, a PBC will be moderated by the ideological distance between the veto players. As discussed in section 3.2, it seems unlikely that ideological differences in the preferred execution of a PBC would hinder the implementation of PBC. Nevertheless, the possibility remains. To test hypothesis 4, we construct a proxy of ideological distance within a coalition, *maximum ideological distance*. The variable is simply the ideological distance between the coalition members farthest away from each other on the left-right dimension[51]. The variable is thereafter interacted with the election year dummy to test whether ideological distance within a coalition further moderates a PBC[52].

The ideological position of each party is obtained using data from Chapel Hill Expert Survey (CHES). The dataset contains national experts' estimations of the general ideological position of parties on a 0-10 scale where 0 represent the far left and 10 the far right. Since the variable is an estimation of the ideological position of Swedish parties at the national level, the measurement could be somewhat inaccurate at the municipality level[53]. In addition, the dataset does not include the ideological position of local parties. Therefore, we make the simplifying assumption that local parties have no impact on the ideological distance[54]. The first CHES survey was conducted 1999 with subsequent waves in 2002, 2006, 2010, 2014 and 2017. The ideological positions are updated each mandate period by the results of the survey closest to the election year[55]. The average ideological position of each party during our sample period is illustrated in graph 2[56].

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[51] This is a simplified version of that used by Chang & Tsebelis (2004). Whereas we use a one-dimensional ideological space, Chang & Tsebelis (2004) locate each veto players' ideological position in a two-dimensional space representing the parties' position in a left-right dimension and a dimension based "pro-friendly relations to the USSR versus anti".

[52] As a robustness check, we will also use a measurement of the ideological standard deviation of each coalition and a dummy variable indicating if there is a mixed government.

[53] The use of parties' ideological position at the municipality level would be preferable. Parties' ideological position at the municipality level is available from "Kommun- och landstingsfullmäktigeundersökningen" (KOLFU) in which municipality- and county politicians are asked to identify their own position on a left-right dimension ranging from 0 (far left) to 10 (far right). When the result from the 2012 KOLFU survey is compared to the result from the 2010 "Riksdagsundersökningen" survey, the ideological position of each party at municipality level differ slightly from their ideological position at the national level (Karlsson & Gilljam, 2014). The ideological position of each party also differ when comparing the result from KOLFU to CHES. For a comparison between the average ideological positions obtained from KOLFU and CHEES, see graph B.7 in appendix B. Unfortunately, data from KOLFU is only available from 2008 and onward. As a robustness check, we will use the ideological position obtained from KOLFU for a subsample of our dataset. KOLFU also provides an average ideological position of local parties, which allow us to also include the average ideological position of local parties in the robustness check.

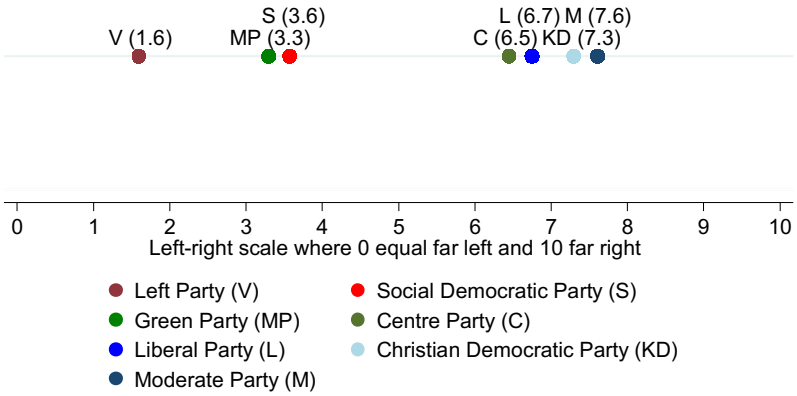
[54] As a robustness check, we will estimate our models using a sub-sample excluding observations where local parties are represented in the council.

[55] For example, the ideological position of each party for the mandate period 1995-1998 is retrieved from the CHES survey conducted in 1998 while the ideological position of each party for the mandate period 1999-2002 is retrieved from CHES survey conducted in 2002.

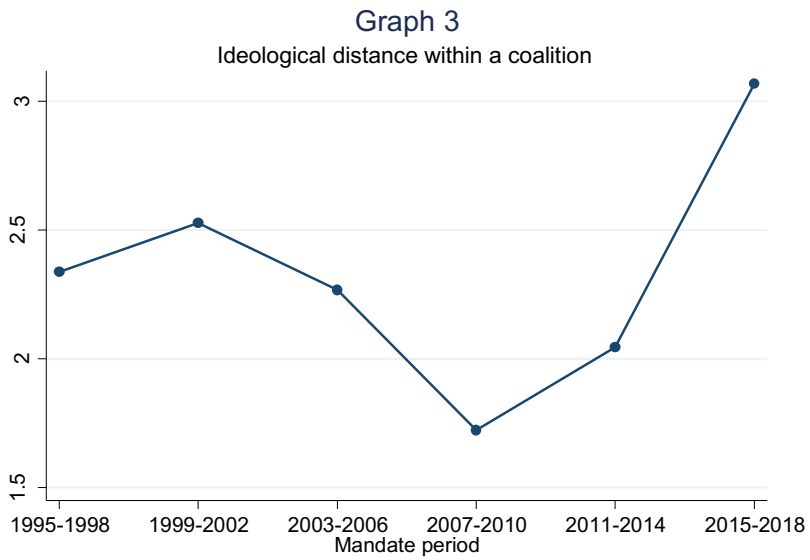
[56] The development of each party's ideological position during our sample period is presented in graph B.8

Graph 2

Average ideological position of Swedish parties (CHES 1995-2018)



The ideological distance within a coalition will depend on which parties are in coalition and the ideological positions of the parties located farthest apart. Thus, a coalition consisting of V and M will have the same ideological distance as a coalition consisting of all seven national parties. In table B.3 in appendix B, we present summary statistic for a sub-sample where observations of single party governments are omitted. From table B.3, we observe that the average ideological distance is equal to 2.33, which is slightly larger than the ideological distance between the Social democratic party and the left party. It should be added, that the minimum ideological distance of zero in table 1 either represent a single party government or the ideological distance within a coalition consisting of one national party and one or more local parties. This is due to our simplifying assumption that local parties do not affect the ideological distance within a coalition. The development of the average ideological distance between coalition members during our sample period is plotted in graph 3.



The average ideological distance between coalition members fluctuated considerably during our sample period, falling to 1.7 during the mandate period 2007-2010 and rising to approximately 3 during the mandate period 2015-2018. The fall in the average ideological distance between coalition members during the mandate period 2007-2010 is likely due to the political cooperation between the centre right parties known as the Alliance. During this mandate period, centre-right coalitions became more frequent at the same time as the ideological distance between the centre-right parties declined. The sharp increase in ideological distance during the last mandate period is attributed to an increase in the number of observations of mixed wing coalitions in conjunction with an increase in ideological distance between most parties.

5.3 Control variables

Finally, we include a set of commonly used control variables that are likely to co-vary with both government formation and fiscal policy[57]. Since the budgetary decision for year t is taken in year $t-1$, all control variables except the tax base and the balanced budget rule are included in the regressions with a one-year lag. The tax base is included without a lag since it is lagged by definition[58].

The proportion of old, young, foreign born and unemployed are included since these variables are likely to affect the components of the net cost-revenue ratio as well as the expected benefit of a PBC and the government formation. For example, many of the services provided by

[57] A similar set of control variables is used by e.g. Garmann (2018) who also looks at PBCs and government formation at municipality level.
[58] The tax base is discussed in greater detail below.

municipalities are directed towards people in the age groups 0-15 and 65+. Thus, spending on municipality services will in general be higher in municipalities where these age groups represent a large share of the total population. Consequently, the expected benefit of an increase in spending during an election year will also be higher since it would be favourable to a larger part of the electorate.

As described in section 5.2.2, only coalition members are counted as veto players in the case of a minority government. However, authors such as Strom (2000) argues that policy stability could to be higher under a minority government than under a minimum-winning government. Therefore, we include a dummy variable which is equal to 1 in the case of a minority (single-party or coalition) government and 0 otherwise[59].

The number of inhabitants per square kilometre is included to control for the ability of the municipalities to take advantage of economies of scale. Municipalities are required to offer the same services regardless of its population density. Since more populous municipalities are better able to take advantage of economies of scale, the cost of municipality services, and therefore the cost of PBC, is lower in these municipalities. Further, population density could co-vary with government formation. For example, left leaning governments are more common in municipalities with few inhabitants per square kilometre (Larsson, 2007).

Tax revenue represents the largest source of revenues for the municipalities. To control for the fiscal capacity of municipalities, the municipality tax base is included in our regressions. Furthermore, the tax base could also control for some local business cycle fluctuations (Lidbom, 2001). The inclusion of tax base might seem inappropriate since it is endogenous in a model of fiscal decision. However, the tax base of a municipality in year t is based on the tax assessment from year $t-1$, which in turn is based on the actual income in year $t-2$. This means that the tax base cannot be affect by the tax revenue or the net cost in year t and the tax base can be used as a control variable in our analysis (Edmark & Ågren, 2008)

A balanced budget rule was introduced in the year 2000. It states that municipalities should uphold budgets in which revenue exceeds spending. If deficits occur, municipalities are required to balance it with a surplus within the next three years. Hence, the balanced budget rule will decrease the possibility of municipalities to implement PBCs. In order to capture this

[59] Further, Strom (2000) argues that that policy stability could be lower under an over-sized government compared to a minimum-winning coalition. Unfortunately, due to data limitations, we are unable to identify over-sized governments. However, as discussed in section 5.2.2, over-sized coalition governments are unlikely to pose a problem and are likely few in numbers

potential structural brake, we include a dummy variable which is equal to one from the year 2000 and forward.

Parties and coalitions are often assumed to have different ideological preferences that affect the execution of a PBC (Dubois, 2016). For example, it is plausible that spending during an election year is higher under a more liberal government than under a more conservative government. To capture the potential effect of the ideological position of a ruling party or coalition, a dummy variable, *Ideology to the right*, will be included in the regressions. The dummy variable is equal to 1 if the ideological mean of a ruling party or coalition, as measured by CHES, is greater than 5 and 0 otherwise.

6. Econometrics

In this section we will first present our choice of identification strategy and discuss potential problems associated with it. Thereafter, we will present and briefly discuss the econometric specifications used in our analysis.

6.1 Identification strategy

The choice of identification strategy often affects the estimated relationship between the dependent- and independent variable since different methods are better suited at establishing certain relationships. Accordingly, our results and subsequent analysis will depend on our choice of method. A cross section regression, such as ordinal least square (OLS) regression, is a powerful tool for establishing a relationship between a dependent- and independent variable. However, a cross-section regression is susceptible to omitted variable bias and cross-section estimates are for that reason likely to be biased. Regressions using panel data, such as fixed effects (FE) regressions, are generally more robust against omitted variable bias (Stock & Watson, 2015) and are subsequently commonly used to identify a PBC[60]. Thereafter, we choose to use a FE regression to outline the relationship between election, spending and revenue[61].

The use of FE regressions is associated with some econometric problems that must be addressed. One common but difficult problem is whether estimates can be assumed to reflect the casual relationship between the dependent- and independent variable. A FE regression yields unbiased estimates if the assumption of *strict exogeneity conditional on the unobserved*

[60] See e.g. Shi & Svensson (2006), Akhmedov & Zhuravskaya (2004) and Veiga & Veiga (2007)
[61] Alternatives to a FE regression includes a random effect (RE) regression or a pooled OLS regression. In all econometric specifications, a Hausman test reject the null hypothesis that RE or pooled OLS estimates are preferable to FE estimates at the one percent level

effect is met. This assumption is violated if endogeneity occurs. Numerous factors including omitted variables, missing data points or measurement errors can cause endogeneity. Another problem, related to statistical interference, is the use of incorrect standard errors. Each issue is presented and discussed below.

Omitted variable bias occur if a confounding variable is omitted from the regression. A FE regression is able to control for a confounding variable that either varies between municipalities, but not over time, or over time, but not between municipalities. However, a FE regression is unable to control for a confounding variable that systematically varies between municipalities and over time. This means that it is important to identify and control for possible confounding variables. In our regressions, we employ an extensive set of control variables in order to minimize the risk of omitted variable bias. Another form of omitted variable bias occurs if the functional form is incorrectly specified. For example, omitted variable bias occur if the relationship between a dependent- and an independent variable is quadratic but the relationship is instead erroneously assumed to be linear (Stock & Watson, 2015). The veto player theory suggests that the ability to alter policy from a status quo diminishes with the number of veto players and with the ideological distance between them. However, the veto player theory makes no assumption of the functional form of these relationships. The choice to measure the number of veto players with dummy variables allows for both a linear and non-linear relationship, thus minimizing the risk of misspecification of the function form. Specifying the functional form of ideological distance is less straightforward. We will follow Tsebelis (2002) who assumes a linear relationship between ideological distance and potential for policy change[62].

Missing data is only a source of endogeneity if data is missing due to the dependent variable. Otherwise, the effect of missing data is just to reduce sample size (Stock & Watson, 2015). The dataset used by this thesis has some missing data. However, since there is no reason to suspect a systematic relationship between the dependent variable and the missing data, it is unlikely that the missing data is a source of bias.

Measurement errors can cause endogeneity if the independent variable is imprecisely measured. Measurement errors can occur for numerous reasons. For example, some of the data covering the period 1995 to 1998 is manually entered into our dataset and there might have been some typological errors when the data was added to the dataset. However, these

[62] This assumption also seems reasonable based on graph B.12 in appendix B

errors are likely few in numbers since we used an OCR-software[63] to manually enter data from printed material.

The assumption of homoscedastic standard errors is often violated. A common cause of heteroscedasticity is the presence of outliers, observations that clearly deviate from other observations[64]. Further, standard errors also tend to be correlated over time within clusters when panel data or time series are used. Standard errors derived under an erroneous assumption of homoscedasticity are not reliable for use in statistical interference since these standard errors can be misleading. However, this problem is avoided by the use of standard errors robust against heteroscedasticity and correlation within cluster (Stock & Watson, 2015).

6.2 Econometric specification

The first regression test, whether there is an unconditional PBC and is illustrated below:

(1) $y_{i,t} = \alpha_i + \beta_1 Election_t + \delta' C_{i,t-1} + \eta' X_{i,t} + P_t + u_{i,t}$

$y_{i,t}$ is net cost as a share of revenue in a municipality i during year t. $Election_t$ is an election year dummy which is equal to 1 if t is an election year. The effect of an election is captured by β_1. If β_1 is positive, it would suggest a deteriorating budgetary situation during an election year in accordance with hypothesis 1. $C_{i,t-1}$ and $X_{i,t}$ are vectors of lagged and non-lagged control variables specified in section 5.3. α_i and P_t are, respectively, municipality- and mandate period fixed effects. The inclusion of P_t implies that the effect of election is identified from variation within mandate periods.

To test whether the magnitude of a PBC is moderated by the presence of veto players, $Election_t$ is first interacted with the dummy variable $Coalition_{i,t}$ which is equal to 1 if a municipality is ruled by a coalition. The regression is illustrated below:

(2) $y_{i,t} = \alpha_i + \beta_1 Election_t * Coalition_{i,t} + \beta_2 Election_t + \beta_3\, Coalition_{i,t} + \delta' C_{i,t} + \eta' X_{i,t} + P_t + u_{i,t}$

If β_1 is negative while β_2 is positive, it would suggest that a PBC is moderated by the presence of two or more veto players in accordance with hypothesis 2.

To test whether the magnitude of a PBC is further moderated by the addition of one or more veto players, $Election_t * Coalition_{i,t}$ is interacted with the dummy

[63] We used the OCR-software ABBYY FineReader
[64] The data set includes numerous outliers and the standard error used in this paper exhibits heteroscedasticity

variable $Three\ or\ more\ parties_{i,t}$. $Three\ or\ more\ parties_{i,t}$ is equal to 1 if the ruling coalition consists of three or more parties. The regression is illustrated below:

(3) $y_{i,t} = \alpha_i + \beta_1 Election_t * Coalition_{i,t} * Three\ or\ more\ parties_{i,t} + \beta_2 Election_t * Coalition_{i,t} + \beta_3 Election_t + \beta_4 Coalition_{i,t} + \beta_5 Three\ or\ more\ parties_{i,t} + \delta' C_{i,t} + \eta' X_{i,t} + P_t + u_{i,t}$

If β_1 and β_2 are negative while β_3 is positive, it would suggest that a PBC is moderated by a coalition and that the PBC is further moderated by the addition of one or more veto players in accordance with hypothesis 3.

To test whether the magnitude of a PBC is conditional on the ideological distance between veto players, observations of single party governments are dropped and $Election_t$ is interacted with the running variable $Ideological\ distance_{i,t}$. The subset is used in order to separate the effect of ideological distance between veto players from the effect of going from a single party- to a coalition government. The regression is illustrated bellow:

(4) $y_{i,t} = \alpha_i + \beta_1 Election_t * Ideological\ distance_{i,t} + \beta_2 Election_t + \beta_3 Ideological\ distance_{i,t} + \beta_4 Number\ of\ parties_{i,t} + \delta' C_{i,t} + \eta' X_{i,t} + P_t + u_{i,t}$

The number of coalition members is a potential confounding variable in regression 4. The running variable $Number\ of\ parties_{i,t}$, which is equal to the number of coalition members, is hence added as a control variable. If β_1 is negative while β_2 is positive, it would suggest that a PBC is moderated by the ideological distance between different coalition members, in accordance with hypothesis 4.

7. Results

In this section, we first test for an unconditional PBC. Thereafter we investigate whether the occurrence of a PBC is conditional on coalition governments, the number of coalition parties and the ideological distance between them[65].

7.1 Unconditional PBC

The results from regression 1 are presented in table 5. The results are presented stepwise. First, we present the results without control variables. Subsequently, we add control variables and mandate period fixed effects to the regression.

[65] Our results from regression 1 to 4 do not change with the inclusion of other control variables such as the share of inhabitants with at least an upper secondary education, total population, whether there have been a power shift during the mandate period or if the municipality is ruled by a coalition consisting of parties from both the right- and left leaning blocks. These results are available upon request.

Table 5. Regression 1

VARIABLES	(i) Net cost/ Revenue	(ii) Net cost/ Revenue	(iii) Net cost/ Revenue
Election year	0.940***	0.744***	1.502***
	(0.0862)	(0.0800)	(0.124)
Minority government		0.259	0.212
		(0.171)	(0.170)
Proportion old		0.0120	-0.126*
		(0.0485)	(0.0694)
Proportion young		-0.0358	-0.00867
		(0.0730)	(0.0871)
Proportion foreigner		0.0730*	-0.136**
		(0.0433)	(0.0608)
Proportion unemployed		-0.377***	-0.256***
		(0.0425)	(0.0469)
Population density		-0.00454***	-0.00457***
		(0.00137)	(0.00141)
Taxable income		-0.0450***	-0.120***
		(0.0111)	(0.0201)
Ideology to the right		0.122	-0.0336
		(0.141)	(0.133)
Deficit rule		0.114	-2.555***
		(0.280)	(0.248)
Constant	97.75***	106.1***	120.5***
	(0.0216)	(2.405)	(3.460)
Observations	6,776	6,371	6,371
Adjusted R-squared	0.102	0.177	0.239
Municipality specific fixed effects	Yes	Yes	Yes
Control variables	No	Yes	Yes
Mandate period specific effects	No	No	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

In accordance with hypothesis 1, the coefficient of the election year dummy is positive and statistically significant at the 1 percent level in all specifications. The result implies, in accordance with PBC theories, a deteriorating budgetary situation during election years compared to non-election years. According to our preferred specification (column iii), the net cost-revenue ration on average increases by 1.50 percentage points during election years[66]. As seen in table B.1 in appendix B, revenue on average equals 34 128 SEK per capita during our sample period. Thus, when revenue is held constant at its mean, the coefficient of the election

[66] The result does not change when we include either a municipality- or county time trend in addition to the mandate period fixed effect. The coefficient of the election year dummy does not change notably and remains statistically significant at the one percent level. See table C1 in appendix C.

year dummy in column (iii) suggests that net cost on average increases with 512 SEK or 49.71 EUR per capita during an election year. This means that while our finding is highly statistically significant, its economic significance is relatively modest.

In column (iii), the coefficients of most control variables are also statistically significant. As expected, the inclusion of control variables and mandate period fixed effects increase the adjusted R^2 value. However, even in column (iii), the adjusted R^2 value remains relatively small. This suggests that the variables included in our model are some among other variables affecting the budgetary decision.

In table C2 in appendix C, we replace the net cost-revenue ratio with its components to get a sense of whether a PBC in a Swedish municipality is attributed to an increase in net cost and/or a decrease in revenue[67]. In table C2, we observe, in accordance with PBC theories, that net cost increases[68] while tax revenue decreases during an election year[69]. However, overall revenue increases during election years. The increase in revenue is attributed to an increase in grants, suggesting that the decrease in tax revenue is offset by grants from the national level of government. Hence, the results in table 5 are attributed to an increase in net cost rather than a decrease in revenue or a combination thereof.

7.2 Conditional PBC

7.2.1 PBC conditional on a coalition government

Regression 2 tests hypothesis 2: whether a PBC is moderated by a coalition government when compared to a single party government. The results are presented stepwise. First, we present the results from regression 2 without control variables. Subsequently, we add control variables and mandate period fixed effects to the regression.

[67] Grants are added as a control variable in column (v) and (vi) since it might be a confounding variable.
[68] The coefficient of the election year dummy remains positive and statistically significant at the one percent level when grants are added as control variables in column (v) in which the net cost-revenue ratio is replaced with net cost.
[69] The coefficient of the election year dummy is statistically insignificant when grants are added as a control variable in column (vi) in which the net cost-revenue ratio is replaced with tax revenue.

Table 6. Regression 2

VARIABLES	(i) Net cost/ Revenue	(ii) Net cost/ Revenue	(iii) Net cost/ Revenue
Election year*Coalition government	-1.349***	-0.595*	-0.621**
	(0.355)	(0.312)	(0.312)
Election year	2.030***	1.245***	2.026***
	(0.336)	(0.291)	(0.314)
Coalition government	1.416***	0.283	-0.190
	(0.312)	(0.239)	(0.217)
Minority government		0.276	0.153
		(0.174)	(0.169)
Proportion old		0.0104	-0.122*
		(0.0487)	(0.0690)
Proportion young		-0.0369	0.00120
		(0.0732)	(0.0871)
Proportion foreigner		0.0721*	-0.133**
		(0.0431)	(0.0609)
Proportion unemployed		-0.373***	-0.255***
		(0.0425)	(0.0469)
Population density		-0.00454***	-0.00459***
		(0.00138)	(0.00140)
Taxable income		-0.0450***	-0.121***
		(0.0111)	(0.0201)
Ideology to the right		0.106	0.00323
		(0.138)	(0.131)
Deficit rule		0.119	-2.541***
		(0.279)	(0.248)
Constant	96.57***	105.9***	120.4***
	(0.267)	(2.414)	(3.473)
Observations	6,634	6,371	6,371
Adjusted R-squared	0.113	0.177	0.240
Municipality fixed effects	Yes	Yes	Yes
Control variables	No	Yes	Yes
Mandate period fixed effects	No	No	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

As seen in table 6, the coefficient of the election year dummy is positive and statistically significant at the 1 percent level in all specifications. The coefficient in column (iii), suggests that under a single party government, the net cost- revenue ratio increases with, on average, 2.03 percentage points during an election year. Holding revenue constant at its mean, this corresponds to an increase in net cost of approximately 691 SEK or 67.09 EUR per capita.

In accordance with hypothesis 2, the coefficient of the interaction term between the election year- and the coalition government dummy is negative and statistically significant in all

specifications. In conjunction with the coefficient of the election year dummy, these results confirm the prediction made by the veto player theory, which states that the ability to change a policy from status quo is reduced by the presence of two or more veto players. The implementation of a PBC suggests a deliberate decision to change the net cost-revenue ratio from the status quo and we find that the ability to change the net-cost revenue ratio is reduced by the presence of two or more veto players. In column (iii), which is our preferred specification, the coefficient is statistically significant at the 5 percent level. The coefficient together with the coefficient of the election year dummy suggest that there also is a PBC under a coalition government. Furthermore, the coefficient of the interaction term suggests that a coalition government, on average, moderates a PBC by 0.62 percentage points[70] when compared to a single party government. Holding revenue constant at its mean, this corresponds to a decrease in net cost by approximately 212 SEK or 20.58 EUR per capita.

The coefficient of the coalition government dummy in column (iii) is statistically insignificant. This suggests that there are no differences between a coalition- and a single party government during non-election years. This result contradicts the prediction made by common pool theory[71]. The coefficient for the minority government dummy is also statistically insignificant in column (iii), suggesting that the lack of a majority in the assembly does not affect the net cost-revenue ratio. This result is in line with the prediction made by Tsebelis (1999)[72] but could also be explained by the ability of a minority government in Swedish municipalities to alter budgetary policy, as described in section 4.

In table 2 and 3 in section 5, we observed that The Social Democratic party represents the majority of single party governments while coalition governments are more balanced between the different political blocs. In order to address the concern that the results in table 6 are driven by party-specific features, we omit observations where The Social Democratic party is represented in the government in column (ii) of table D2 in appendix D. The coefficient of both the election year dummy as well as the interaction term between the election year- and the coalition government dummy preserves their sign and statistical significance. This means

[70] The coefficient for either the election year or the interaction term does not change notably with the inclusion of either a municipality- or county time trend. However, the coefficient of the interaction term between election- and coalition government dummy is only significant at the ten percent level when a municipality time trend is included. See table D1 in appendix D.

[71] As stated in section 2, common pool theory predicts that spending should be higher under a coalition government. When different politicians represent different groups (e.g. an area or a set of voters) and government expenditure is financed by a tax common to all groups, the cost internalised by a politician's group decline as the number of political actors increases (Ashworth et al, 2005).

[72] This result is also similar to that found by Tsebelis & Chang (2005). They find that a minority- and an oversized government have no effect on their ability to alter the budget composition

that our results in table 6 is not due to systematic differences between municipalities ruled by the Social Democratic party and other parties.

7.2.2 PBC conditional on the number of coalition members

Regression 3 tests hypothesis 3: whether a PBC is further moderated by the addition of one or more coalition members. The results are presented in table 7.

Table 7. Regression 3

VARIABLES	(i) Net cost/ Revenue
Election year*Coalition government*Three or more party government	-0.0359
	(0.209)
Election year*Coalition government	-0.595*
	(0.349)
Election year	2.028***
	(0.315)
Coalition government	-0.163
	(0.227)
Three or more party government	-0.0728
	(0.180)
Constant	120.5***
	(3.493)
Observations	6,371
Adjusted R-squared	0.240
Municipality fixed effects	Yes
Control variables	Yes
Mandate period fixed effects	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

In table 7, we observe that the coefficient for the election year dummy is positive and statistically significant at the one percent level. The coefficient suggests that under a single party government, the net cost-revenue ratio increase with, on average, 2.03 percentage points during an election year.

The interaction term between the election year dummy and the coalition dummy is negative and statistically significant at the 10 percent level. The coefficient together with the coefficient of the election year dummy suggest that there is a PBC under a two-party government and that a two party government on average moderates a PBC by 0.6 percentage points. However, the triple interaction term is statistically insignificant. This result contradicts hypothesis 3 and means that the addition of one or more coalition members does not further

moderate a PBC[73]. The veto player theory provides a possible explanation for this result. The PBC preferences of an additional veto player could, in accordance with the absorption rule, be defined by the PBC preferences of other veto players[74]. This means that an additional coalition member would not affect the ability to change the net cost-revenue ratio from the status quo.

7.2.3 PBC conditional on the ideological distance within a coalition

Regression 4 tests whether the ideological distance between different coalition members moderates a PBC in accordance with hypothesis 4. It should be noted that regression 4, unlike regression 1 to 3, uses a subset of our sample that omits observation of single party governments. Furthermore, the number of coalition members is added as a control variable. The results from regression 4 are presented in table 8.

Table 8. Regression 4

VARIABLES	(i) Net cost/ Revenue
Election year*Maximum ideological distance	0.0780
	(0.0658)
Election year	1.179***
	(0.195)
Maximum ideological distance	-0.0998**
	(0.0477)
Constant	118.1***
	(3.513)
Observations	5,383
Adjusted R-squared	0.237
Municipality fixed effects	Yes
Control variables	Yes
Mandate period fixed effects	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

[73] The coefficient for the election year dummy remains positive and statistically significant at the one percent level when either a municipality- or county time trend is included. The coefficient for the interaction term between the election - and coalition dummy is negative but no longer statistically significant, with a p-value of 0.11, if a municipality time trend is included in the model. However, it is robust against the inclusion of a county time trend. The coefficient for the triple interaction term remains statistically insignificant when either a municipality- or county time trend is included. See table E1 in appendix E

[74] This result is confirmed when alternative variables is used. When the triple interaction term in table 7 is replaced by the two interaction terms Election *Three or more party government and Election *Two party government in table E2, both coefficients are negative and statistically significant. This suggests that both a two party- and a three or more party government moderate a PBC. However, an F-test cannot reject the null hypothesis that the two coefficients are equal with a reported P-value of 0.86. When we instead omit observations of single-party governments and replace the triple interaction term with the interaction term Election*Number of parties in table E3, the coefficient also remains statistically insignificant. See appendix E.

In table 8, we observe that the coefficient for the election year dummy is positive and statistically significant at the one percent level. It suggests that under a coalition government, net cost as a share of revenue increases with, on average, 1.18 percentage points during an election year (in this sub-sample). Holding revenue constant at its mean, this corresponds to an increase in net cost of approximately 403 SEK or 39.10 EUR per capita.

The coefficient for the interaction term between the election year dummy and maximum ideological distance is statistically insignificant[7576]. This suggests that the ideological distance within a coalition does not moderate a PBC, a result that contradicts hypothesis 4[77]. However, this result is in accordance with our discussion in section 3.2, where we argued that the ability to implement a PBC should not be affected by ideological distance. The reason being that the implementation of a PBC means that parties are opportunistic rather than partisan. In addition, differences in the preferred execution of a PBC are unlikely to hinder its implementation since all parties share an interest in increasing their likelihood of re-election.

While the coefficient for the interaction term is statistically insignificant, the coefficient for maximum ideological distance is negative and statistically significant at the five percent level[78]. This suggests that net cost as a share of revenue declines with the ideological distance within a coalition. However, the effect does not differ between election- and non-election years.

In section 5.2.3, we mention that the use of data from KOLFU would be preferable to the use of data from CHES since data from KOLFU captures the ideological position of the parties at the municipality level rather than at the national level. However, since data from KOLFU first became available in 2008, we use data from CHES in table 8. In table F4 in appendix F, we omit observations prior to 2007 and use data from KOLFU. We observe that the election year dummy retains its sign and statistical significance level. The coefficient of the interaction term between the election year dummy and maximum ideological is negative but remains

[75] The coefficient of the interaction term remains statistically insignificant if either a municipality- or county time trend is included. See table F1 in appendix F.
[76] The coefficient of the interaction term remains statistically insignificant when we in column (ii) of table F2 in appendix F omit local parties from the sample.
[77] This result is confirmed when alternative variables are used. The coefficient of the interaction term remains statistically insignificant when maximum ideological distance is replaced by either the ideological standard deviation within a coalition or a dummy variable indicating whether a coalition is mixed or not. See table F3 in appendix F.
[78] The coefficient of maximum ideological distance retains its sign and statistical significance level when data from the KOLFU surveys is used. See table F4 in appendix F.

statistically insignificant[79]. Accordingly, the results in table 8 are not attributed to the use of CHES data at the municipality level.

8. Discussion and Conclusion

In this section, we will discuss the implications of our findings as well as some of its limitations. Lastly, we will present our conclusions.

In accordance with PBC theories, we find that opportunistic politicians increase net cost as a share of revenue during an election year. As argued by Rogoff & Sibert (1988), PBCs are associated with a social welfare cost. However, while the result is statistically significant, its economic significance is modest. Thus, the social welfare cost associated with a PBC in Swedish municipalities is likely small or negligible. Our result contributes to the existing PBC literature by finding a small PBC in a developed country. The result contradicts the finding of e.g. Brender & Drazen (2005), who find no evidence of PBCs in developed countries. However, the result is in line with the finding of e.g. Shi & Svensson (2006) who find evidence of small PBCs in developed countries. Furthermore, our result reinforces the findings from earlier PBC studies conducted in Sweden, such as Lidbom (2003) and Dahberg & Mörk (2011), who also find a PBC in Swedish municipalities. Our result is attributed to an increase in net cost rather than a decrease in revenue or some combination thereof. Interestingly, we find that grants from the national level of government increase during election years, suggesting the presence of vertical interaction between the different levels of government. Dahlberg & Mörk (2011) offer a possible explanation for the increase in intergovernmental grants during an election year. They argue that voters might be unaware of which level of government is responsible for which task. Thus, the national level of government might use grants to in part implement their PBC through the municipalities.

When we differentiate between single party- and coalition governments, we find that the ability of opportunistic politicians to implement a PBC is reduced when policy power is shared between coalition members. As mentioned above, a PBC is associated with a social-welfare cost. Accordingly, our results suggest that as coalition governments become more common in Swedish municipalities, the social welfare cost of a PBC will decline. However, we find that in economic terms, the difference between a coalition government and a single-party government is small. Therefore, the social welfare gain is also likely to be small. In addition, the social welfare gain of a coalition government during an election year must be

[79] The coefficient of the interaction term remains statistically insignificant when data from KOLFU is used and maximum ideological distance is replaced with the ideological standard deviation or a dummy variable indicating whether a coalition is mixed or not. These results are available upon request.

compared to the potential social welfare cost of a coalition government during a non-election year[80]. Our results align with those found by Chang (2008), who finds that a PBC is smaller under coalition government. In addition, these results are also in line with the findings of Garmann (2018) and Alt & Rose (2009) who find that the ability of opportunistic politicians to implement a PBC is reduced when policy power is shared between different institutions. A potential problem with these results are, as discussed in section 5.2.2, that we are unable to identify and control for oversized government. If a party with an absolute majority in the assembly for some reason chooses to form a coalition government with another party, the coefficient of the interaction term between the election year- and coalition government will suffer from upward bias. However, this is unlikely to pose a problem since observations of oversized governments are likely to be few. Furthermore, authors such as Tsebelis & Chang (2004) found that oversized governments had no effect on the budget composition.

While we find that the ability to implement a PBC is impeded when power is shared between coalition members, we do not find that the ability to implement a PBC is further reduced when the size of- or the ideological distance within a coalition increases. These results contradict hypothesis 3-4, which are derived from the veto player theory. The use of alternative econometric specifications, data and variables do not change these results. Hence, we are confident that the results are not attributed to our choice of econometric specifications, data and variables. The veto player theory offers an explanation as to why the PBC is not further moderated by an additional coalition member. The PBC preferences of an additional veto player could, in accordance with the absorption rule, be defined by the PBC preferences of other veto players. If, in accordance with Hanusch (2012), PBC preferences are formed from the expected benefit or loss from a PBC, this would suggest that the PBC preferences of an additional coalition member is defined by an existing coalition member who expect to lose more from a PBC. A possible explanation as to why ideological distance within a coalition government does not moderate a PBC is that PBC preferences are not formed by ideology. This is the reason why e.g. Garmann (2018) does not consider the effect of a divided government and ideology on PBCs. However, explicitly testing what forms PBC preferences, and by extension being able to better identify situations when a PBC should be further moderated is beyond the scope of this paper.

[80] For example, the veto player theory and "war of attrition models" predict that a coalition government is less able to adjust to exogenous shocks, such as a financial crisis, which could lead to e.g. a deficit (Ashworth et al, 2005).

As stated in section 5.1, there is some uncertainty how to best measure a PBC. Our choice of dependent variable should capture a deteriorating budgetary situation in accordance with most PBC models. However, since municipalities have some costs and revenues beside the components of our dependent variable, it does not capture deficit spending and we might not capture the full effect of the opportunistic politicians. Nevertheless, our choice of dependent variable should capture most of the effect of opportunistic politicians since its components represent the cost of the main responsibilities of municipalities and the principal source of revenue. Furthermore, they represent the largest cost and revenue posts on the income statement of Swedish municipalities. Some authors, such as Rogoff (1990), argue that it could be useful to look at specific categories of spending rather than aggregated spending as is done in this paper. The prediction of his model is that fiscal manipulation prior to an election leads to larger current expenditures and smaller capital expenditures since the former is more visible to the electorate. Such manipulation in the budgetary composition would not be captured by our dependent variable. However, we would argue that such a zero-sum game would indicate a change in welfare priorities rather than a PBC.

In this paper we have used a static FE model[81], albeit a dynamic model could have been used instead[82]. The choice between them crucially depends on whether there is a clear reason to assume that past fiscal policy affects the decision to implement a PBC. We would argue that there is no such reason[83]. Few authors state a reason for why past fiscal policy affects the choice to implement a PBC albeit some authors argue that past fiscal policy somehow constrains the ability of politicians to implement a PBC[84]. However, most if not all PBC theories state that a PBC should lead to a deficit and debt *due to fiscal constraints and opportunistic politicians*. As stated in section 4, Swedish municipalities are allowed to borrow to cover deficits. Thus, past fiscal policy should not hinder opportunistic politicians to implement a PBC in Swedish municipalities[85]. The use of a dynamic model also raises the question how many lags to include in the model. If politicians would only consider fiscal policy from the past year, its effect should be well accounted for by the inclusion of a linear time trend, against which our results are robust.

[81] Other authors commonly use static models. See e.g. Schneider (2010) and Dahlberg & Mörk (2011)
[82] See e.g. Shi & Svensson (2006), Veiga & Veiga (2007) and Akhmedov & Zhuravskaya (2004).
[83] A dynamic model is also associated with numerous econometric problems. See appendix G.
[84] See e.g. Lidbom (2003)
[85] Although they might be somewhat constrained by the balanced budget rule described in section 5.3, this effect is controlled for by the inclusion of the deficit rule dummy variable.

Finally, the use of Swedish municipalities as an empirical setting offers, as discussed in section 4, several advantages but it also limits the external validity of our findings. The responsibilities of Swedish municipalities are similar to those in other European countries. In addition, the right of self-determination- and quasi-parliamentary system of Swedish municipalities are similar to those in other north-European countries (Petersson, 2006, p.37ff). However, the responsibilities and institutional setup of Swedish municipalities differ from those found at the national level of administration in different countries. Thus, while our findings can be generalized to municipalities in other north-European countries and possible to municipalities in other European countries, it seems unlikely that our findings can be generalized to the national level of administration in Sweden or in other countries.

In conclusion, the purpose of this thesis has been to answer the research question: *Does the ability to implement a PBC differ between single- party and coalition governments*? To answer this question, we constructed a dataset including observations from 283 Swedish municipalities during the period 1995-2018. The use of Swedish municipalities offers several advantages over cross country studies, such as Chang (2008), but also limits some of the external validity of our findings. Using a FE method and an extensive set of control variables, we find that opportunistic politicians implement a small PBC in Swedish municipalities. Furthermore, we find that the ability of opportunistic politicians to implement a PBC is reduced when power is shared between coalition members. This finding contributes to the existing PBC literature by highlighting the limitation of earlier PBC models which implicitly assume that incumbent politicians have full discretional control of fiscal policy. Our findings challenge this perspective and future research investigating PBCs should consider that the ability of opportunistic politicians to implement a PBC is reduced under a coalition government. Moreover, we find no evidence that a PBC is further moderated by the size of- and ideological distance within a coalition government. These findings raise the question as to how PBC preferences are formed under coalition governments, which presents a fruitful field for future research.

9. Future research

To the best of our knowledge, this paper is among the first to find empirical evidence that a PBC is moderated by a coalition government. Thus, there exist multiple promising fields for future research. A logical next step would be to conduct similar studies in different countries to see whether the results presented here are robust against different settings. In addition, this paper has been concerned with testing the predicted *outcome* of a coalition government rather than testing what forms the *preferences* of coalition members lead to said *outcome*.

Thereafter, focusing on what forms these preferences also seems like a promising field for future research. For example, future research could explicitly test the predications made by Hanusch (2012) PBC model. This includes testing whether the incentive of a coalition member to implement a PBC is determined by its relative size and ideological position[86].

As discussed in section 8, we use a static model to estimate the relationship between PBCs and type of governments. Although we argue that earlier fiscal policy should not have an effect on the ability of politicians to implement a PBC, authors such as Shi & Svensson (2006) and Veiga & Veiga (2007) use a dynamic approach instead. Therefore, it might be useful to estimate a dynamic model to see if our findings are robust against different types of models, and to make our findings more comparable to those of other authors[87].

[86] To provide some preliminary results, we first omit observations of single party governments and local parties as well as adding the number of parties in government as a control variable. Thereafter, we interact the election year dummy with the effective number of parties. The effective number of parties (ENP) is equal to the inverse HHI, i.e. $\frac{1}{\sum_{i=1}^{n} p_i^2}$, where n is the number of parties in a coalition and p_i^2 is the square of each party's proportion of the total number of mandates the coalition holds. Given the number of parties in a coalition, a small value of the ENP suggests that one party is much larger than the remaining parties. If the prediction that the relative size of a party determines whether the party expects to gain or lose votes from a PBC is correct, we would expect that a PBC is moderated if one party in a coalition is larger than the remaining parties in the coalition. However, we find that the interaction term statistically insignificant, suggesting that a PBC is not moderated by an unequal distribution of mandates. See table G1 in appendix G.

[87]To get a sense of whether our findings are robust against the use of a dynamic model, we include a lagged dependent variable in our FE regressions. The results do not change with the notable exception of regression 2 where the interaction term between the election year- and the coalition government dummy is no longer statistically significant. This suggests that a PBC is not moderated by a coalition government. See table G3 in appendix G. However, the inclusion of a lagged dependent variable in FE regressions is a source of dynamic panel bias. Thereafter, this result should be viewed with some caution. Numerous methods have been proposed to overcome this bias, including different instrumental variable approaches such as e.g. difference- or system GMM. Unfortunately, we are unable to find valid instruments. See subsection G.1 in appendix G for a short introduction to dynamic panel bias, difference- and system GMM. See table G2 to for our results using a system GMM model.

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Appendix A: Appendix to section 3. Theory

Hanusch (2012) develops a PBC model illustrating how the PBC preferences of different parties in a coalition could be formed. The model assumes that elections are held every other period. During an election period, voters are only concerned with the amount of public goods they can expect during the following period while each party in office is concerned to gain "ego rent" during the next period. Ego rent can be thought of as a non-monetary reward from being in office and is proportional to a party's share of government. The amount of public goods depends on the amount of equilibrium taxes, current debt, the cost of prior debt as well as the competence of the government. During a non-election period, debt will not occur since it is costly and does not affect the probability of the government's re-election in the coming election period. Competence can be thought of as the ability of a government to limit budgetary waste and is assumed to equal the current- and prior period's "competence shocks" (CS) in accordance with a moving-average process of order 1 (MA (1) process). CS are in turn assumed to be identically and independently distributed with an expected mean of zero. The MA (1) process implies that the CS of the current election period says something about the competence of the incumbent government during the next period but not the period thereafter. By extension, the CS of the current election period also says something about the amount of public goods voters can expect during the next period but not the period thereafter. Voters are assumed to be rational and to prefer a more competent government over a less competent one, all other things being equal. They will choose to vote for the party which provides them the highest expected utility during the next period, which coincides with the party whose expected competence exceeds that of other parties. Voters have no expectations of the competence of opposition parties since voters do not observe the amount of public

goods the opposition can provide. Furthermore, voters observe the debt and the CS of the current period with a lag. Thus, they are left to form an estimate of the amount of debt and, by extension, the competence shock of the government during the current election period. Subsequently, a government is able to appear more competent and increase their share of the votes during an election period by increasing the amount of public goods through deficit spending or in other words a PBC.

Unlike many other PBC models, such as Shi & Svenssons (2006) model, parties are assumed to form coalition governments. Since parties form coalitions, the government formation will be preceded by a bargaining process, where the final outcome will be probabilistic. Due to the probabilistic outcomes of the government formation, parties in the model are assumed to maximize their vote share rather than their probability of re-election. However, since the vote share only translates into a share of government and ego rent if the party is re-elected, it is likely that the probability of joining a coalition government affects the pre-election incentives of a party. Therefore, Hanusch includes a separate exogenous parameter which represents the probability of a party to join a coalition government. The parameter is thought to capture e.g. historical trends or the relative strength of a party in a coalition bargaining process.

The assumption that parties form coalition governments means that the CS of a government is equal to the aggregate of the CS of each individual coalition member[88]. To be able to choose between coalition members, voters must estimate the CS of each individual coalition member from the CS of the government. Voters are assumed to attribute responsibility for the governments CS to each individual coalition member according to their relative share of the government. Only when all coalition members have an equal share of the government will voters attribute the same amount of responsibility to all coalition members. The model further assumes that the position of a party along a single policy dimension, determines whether it can gain votes from both the opposition and its coalition partners or only from its coalition partners. The assumption implies that a more centrist party has a larger incentive to implement PBC than a more extreme party, as it is able to gain more votes than an "extreme" party.

In his paper, Hanusch (2012) illustrates his model with an example where there are only three parties and no single party has an absolute majority. Thereafter, a two-party coalition will always be formed since the parties are assumed to form a minimal connected winning

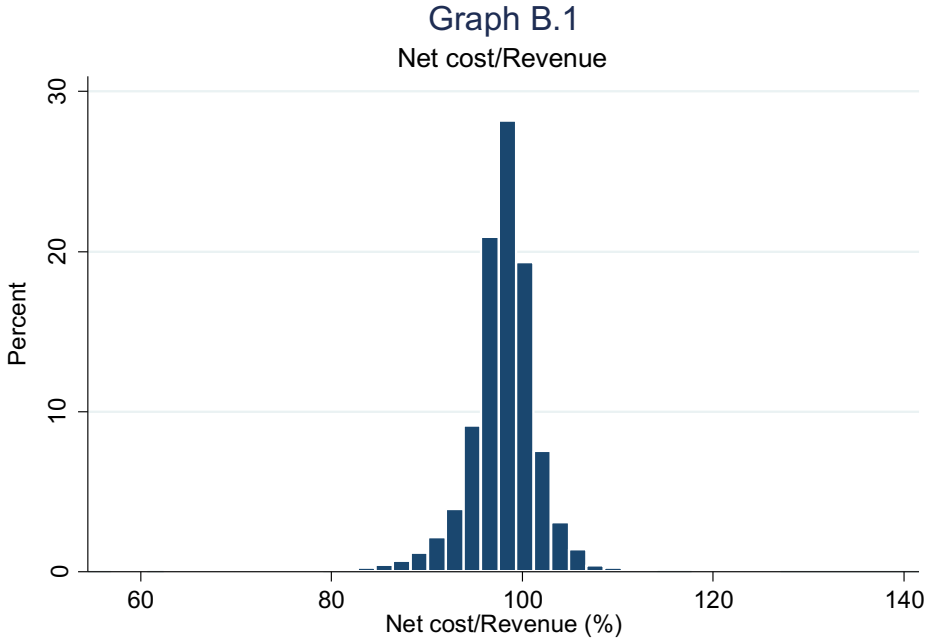
[88] Unlike other PBC models, such as Shi & Svensson (2006) model, where the CS of the government is equal to the CS of the incumbent party

coalition[89]. For a common government competence shock, a centrist party is thus able to gain votes from both the opposition and its coalition partners. That is, if the expected competence difference between the centrist party and the other coalition member as well as the opposition party is sufficiently large. The expected competence differences crucially depend on the share of government belonging to the centrist party. If the share of the centrist party is sufficiently large, the competence differences will be positive, and the centrist party will be able to gain votes from both the opposition and other coalition members and would thus prefer to borrow and implement a PBC. However, it is possible that the centrist party will lose more votes to its coalition partner than it will gain from the opposition if its share of government is too small. In such a situation, the centrist party would prefer a negative aggregated competence shock as to appear less "incompetent" than its coalition partners and would thus block borrowing and a PBC. The extreme coalition member will only be able to gain votes from the centrist coalition partner. The ability of the extreme party to do so, once more, crucially depends on its size and by extension, whether the expected competence difference between it and the other coalition member is positive or negative. Once more, if the extreme party will lose votes to its coalition partner due to its share of government, they would prefer a negative aggregated competence shock and block borrowing and a PBC.

Appendix B: Appendix to section 5. Variables and data

B.1 Descriptive statistics

[89] Thus, the centrist party will always be included in the coalition



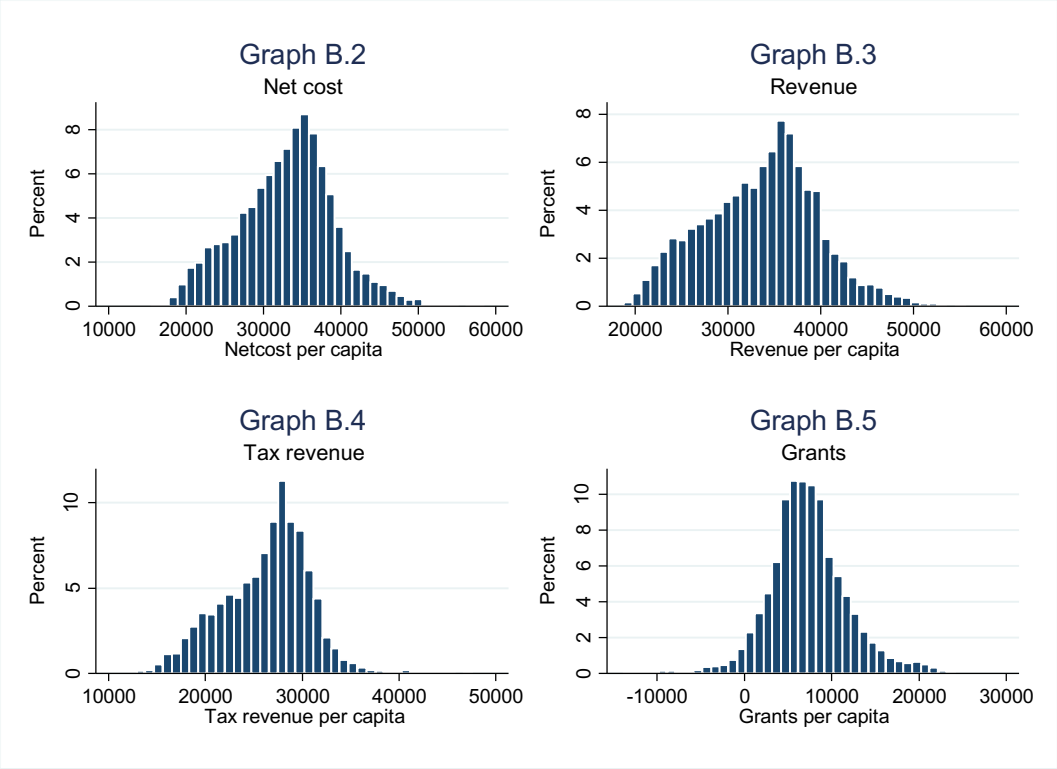


Table B.1. Summary statistics of the Net cost/Revenue & its components

Variable	Obs	Mean	Std.Dev.	Min	Max
Net cost/ Revenue	6371	98.25	3.51	56.95	127.02
Net cost	6371	33528.7	5807.95	15934.39	58462.91
Revenue	6371	34128.63	5807.77	18772.89	53590.91
Tax Revenue	6371	26717.56	4150.03	14897.17	47578.68
Grants	6371	7411.07	4470.93	-13814.74	24223.77

*In 2018, 1 EUR on average equaled 10.3 SEK

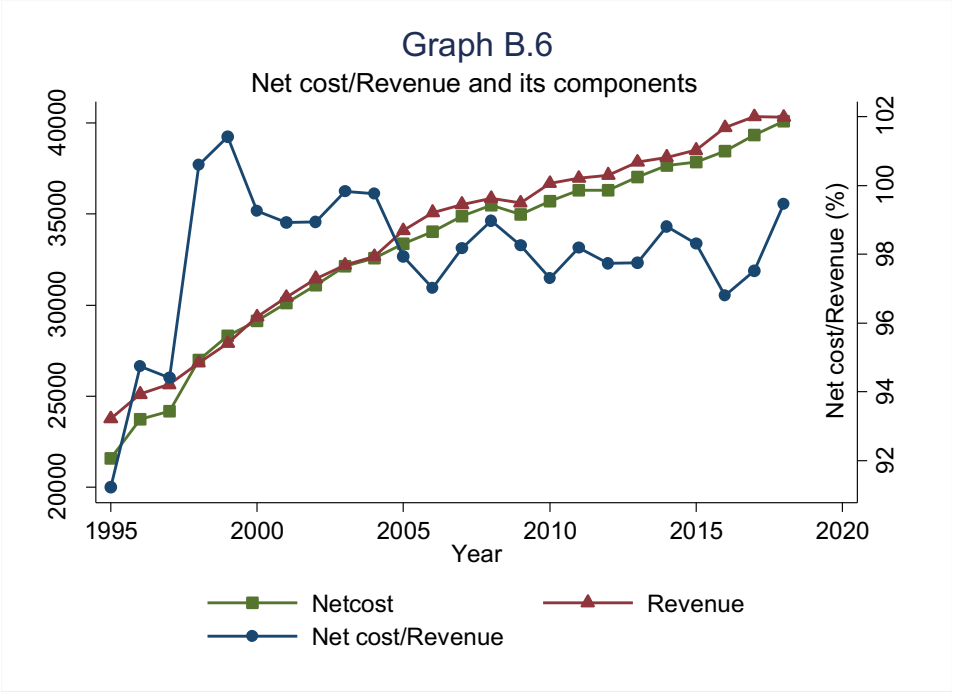
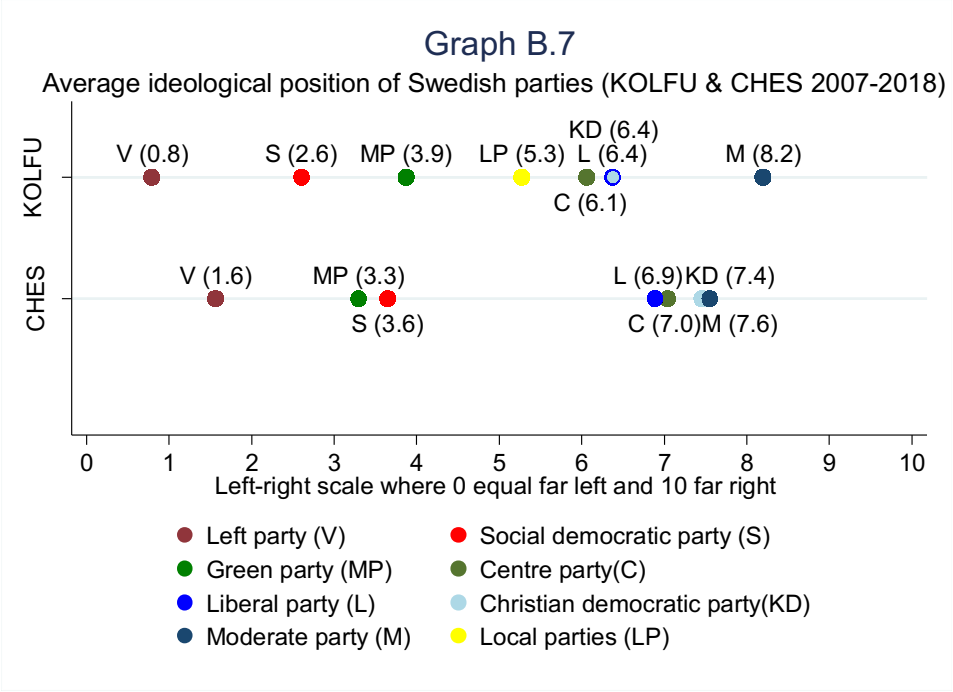


Table B.2. Summary statistics by type of government
Single party government

	N	mean	sd	min	max
Proportion old	988	21.08	3.64	11.78	33.93
Proportion young	988	18.46	2.03	12.21	23.4
Proportion foreigner	988	9.13	5.53	2.26	40.04
Proportion unemployed	988	9.54	3.83	1.51	26.22
Population density	988	76.7	264.13	.2	3883.5
Taxable income	988	110.02	18.51	77.13	183.54
Ideology to the right	988	.05	.23	0	1
Minority government	988	.17	.37	0	1
Coalition government					
Proportion old	5383	20.46	4.2	6.79	34.01
Proportion young	5383	18.8	2.43	12.52	25.94
Proportion foreigner	5383	10.22	5.4	1.83	41.48
Proportion unemployed	5383	7.01	2.92	1.09	20.75
Population density	5383	135.17	477.13	.2	5689.1
Taxable income	5383	117.09	20.97	68.69	254.05
Ideology to the right	5383	.59	.49	0	1
Minority government	5383	.09	.29	0	1

*In 2018, 1 EUR on average equaled 10.3 SEK



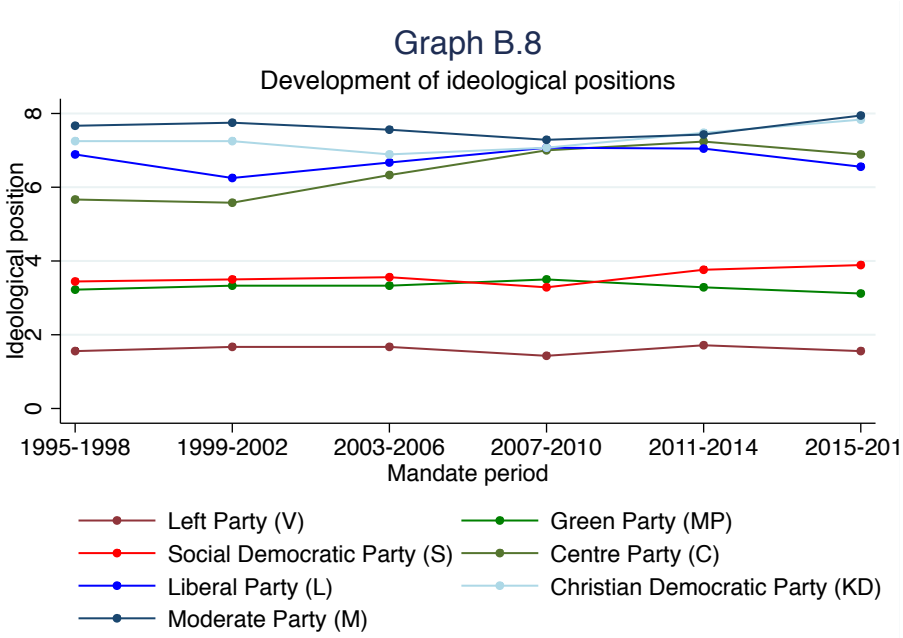


Table B.3. Summary statistics for coalition governments

Variable	Obs	Mean	Std.Dev.	Min	Max
Net cost/ Revenue	5383	98.27	3.31	59.51	127.02
Election year	5383	.26	0.44	0	1
Coalition government	5383	1	0	1	1
Three or more party government	5383	0.75	0.43	0	1
Maximum ideological distance	5383	2.33	1.54	0	6.39
Minority government	5383	0.09	0.29	0	1
Proportion old	5383	20.46	4.2	6.79	34.01
Proportion young	5383	18.8	2.43	12.52	25.94

Proportion foreigner	5383	10.22	5.4	1.83	41.48
Proportion unemployed	5383	7.01	2.92	1.09	20.75
Population density	5383	135.17	477.13	.2	5689.1
Taxable income	5383	117.09	20.97	68.69	254.05
Ideology to the right	5383	0.59	0.49	0	1
Deficit rule	5383	0.86	0.35	0	1

Table B.4 description and data sources of the variables used in the analysis

Variable	Construction	Data source	Comment
Net cost/ Revenue	$\frac{Net\ cost_{pc}}{Tax\ revenue_{pc} + Grants_{pc}}$	1995-1997: Sveriges kommuner och landsting (SKLa): Vad kostar verksamheten i din kommun 1997-2018: Statistics Sweden (SCB, 2019a)	pc = per capita
Election year	Dummy variable = 1 during an election year and 0 otherwise	-	
Coalition government	Dummy variable = 1 if number of parties in local government ≥ 2 and 0 otherwise	Personal correspondence with The Swedish Association of Local Authorities and Regiodns (SKL)	The data is self-reported from each municipality. The *number of parties* refers to the number of parties in local government *prior* to an election. Data on the number of parties in local government after election is available at SKL.se
Three or more party government	Dummy variable = 1 if number of parties in local government ≥ 3 and 0 otherwise	Personal correspondence with The Swedish Association of Local Authorities and Regions (SKL)	The data is self-reported from each municipality. The *number of parties* refers to the number of parties in local government *prior* to an election. Data on the number of parties in local government after election is available at SKL.se
Maximum ideological distance (CHES)	$MID_{ij} = \max(p_{ij}) - \min(p_{ij})$ Where p_i is the ideological position of party i in coalition j	The ideological position of each party at national level is obtained from Chapel Hill Expert Survey (CHES)	The ideological position is measured on a one-dimensional left-right scale between 0-10, where 0 represent far left and 10 far left
Maximum ideological distance (KOLFU)	$MID_{ij} = \max(p_{ij}) - \min(p_{ij})$ Where p_i is the ideological position of party i in coalition j	The ideological position of each party at municipality level is obtained from Kommun- och landstingsfullmäktigeundersökningen (KOLFU)	Personal correspondence…
Minority government	Dummy variable = 1 if the local government is ruled by a minority and 0 otherwise	Personal correspondence with The Swedish Association of Local Authorities and Regions (SKL)	The data is self-reported from each municipality Similar data is available at SKL.se

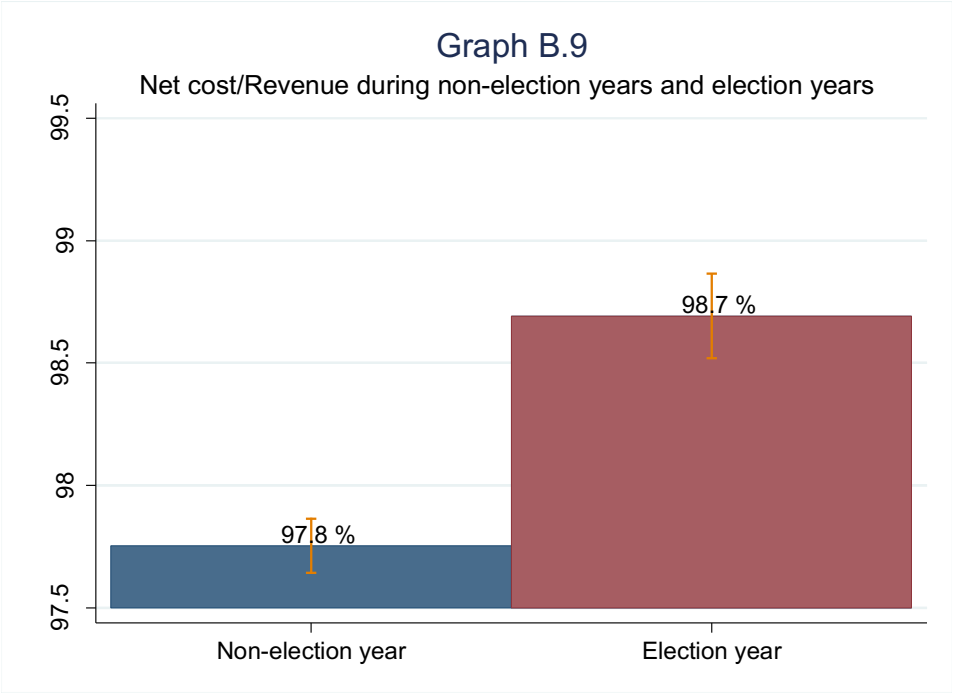
Proportion young	$\frac{Population\ aged\ 0-15}{Total\ population}$	SCB (2019b)	
Proportion old	$\frac{Population\ aged\ 65+}{Total\ population}$	SCB (2019b)	
Proportion foreigner	$\frac{Population\ foreign\ born}{Total\ population}$	1995-1999: Befolkningsstatistik (SCB 1995-1999) 2000-2018: SCB (2019c)	
Proportion unemployed	$\frac{Population\ unemployed}{Population\ aged\ 20-64}$	1995: Personal correspondence with Swedish employment service 1996-2018: Swedish employment service	
Population density	Inhabitants per square kilometer	SCB (2019d)	
Taxable income	Tax base per capita	SCB (2019e)	
Ideology to the right	Dummy variable = 1 if the average ideological position of a coalition > 5 and 0 otherwise	CHES	The ideological position is measured on a one-dimensional left-right scale between 0-10, where 0 represent far left and 10 far left
Deficit rule	Dummy variable = 1 if year ≥ 2000 and 0 otherwise	-	

B.2 Preliminary results

In this section, we present some preliminary results prior to the more rigorous testing in section 7. The purpose of this section is to see how well the predictions made in section 2 and 3 compares with our data.

B.2.1 Unconditional PBC

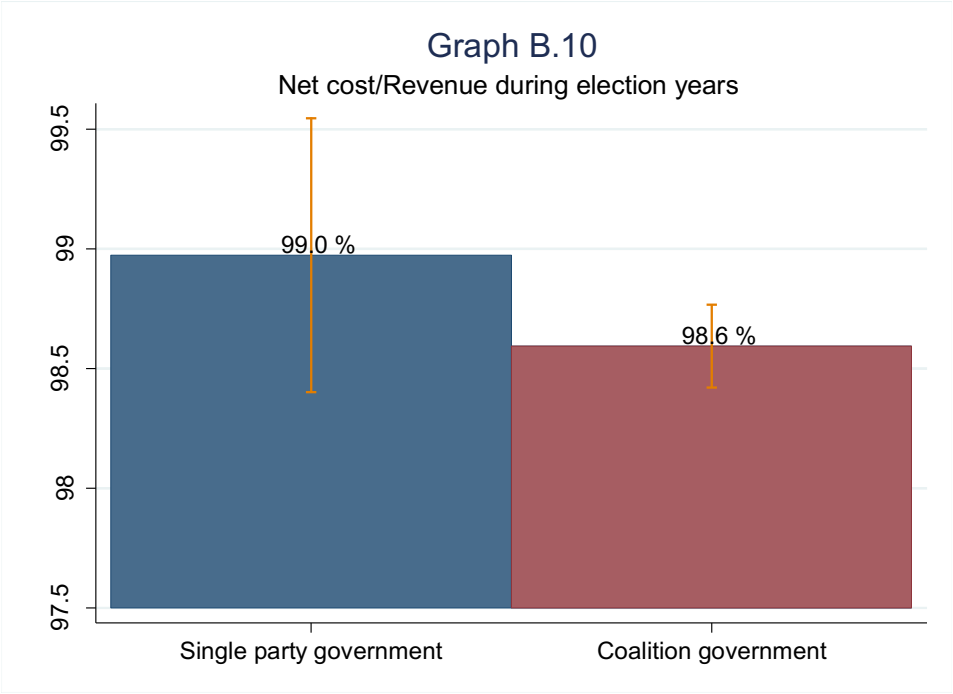
As discussed in section 2 and 3, politicians are assumed to have an incentive to increase spending and/or decrease taxes prior to elections in order to increase their likelihood of being re-elected. Thus, we can expect a positive relationship between our dependent variable and the election years which would suggest a deteriorating budgetary situation during the election years. In graph B.9, we plot our dependent variable against election years and non-election years.



In accordance with the predictions made in section 2 and 3, we observe a positive and statistically significant difference between election- and non-election years. On average, our dependent variable is approximately 0.9 percentage points higher during election years when compared to non-election years, suggesting a deteriorating budgetary situation during election years.

B.2.2 PBC conditional on a coalition government

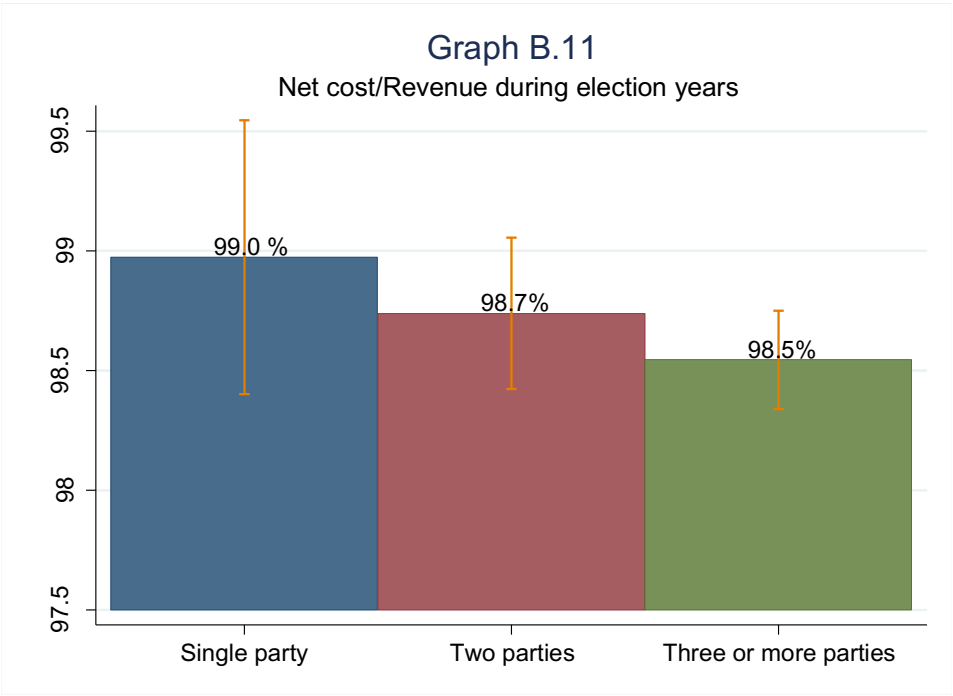
The veto player theory presented in section 3 suggests that a PBC should be moderated if one or more veto players are present in a municipality. Subsequently, we will expect to observe a negative relationship between PBCs and the type of government. In graph B.10, we plot our dependent variable during election years against budgetary decisions made by either a single party- or coalition government.



In graph B.10, we observe that during election years, the value of our dependent variable is on average 0.4 percentage points lower under a coalition government than under a single-party government. However, the difference is not statistically significant. When comparing graph 4 and 5 it is noteworthy that the value of the dependent variable during election years is higher than during non-election years regardless of whether the budgetary decision is made by a single-party- or a coalition government. Accordingly, the comparison of graph B.9 and B.10 suggest that there is a PBC that is not moderated by the presence of one or more veto players.

B.2.3 PBC conditional on the number of parties in government

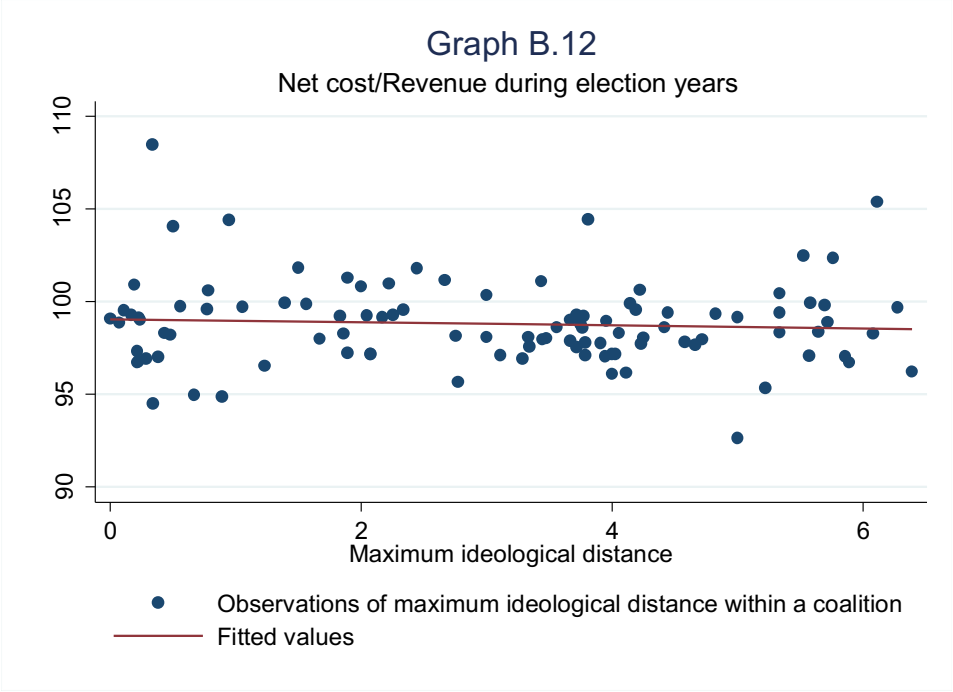
The veto player theory presented in section 3 suggests that the ability to implement a PBC decreases with the number of veto players. For that reason, we expect to find a negative relationship between our dependent variable and the number of coalition members.



In graph B.11, we observe a negative relationship between our dependent variable and the number of coalition members. However, the decline between a one party- and a two party government as well as the decline between a two party- and a three or more party government is small, respectively equalling approximately 0.3- and 0.2 percentage points. However, these differences are not statistically significant. When comparing graph B.9 and B.11 it is once more noteworthy that the value of the dependent variable during an election year is higher than during non-election years regardless of the number of parties in government. Thus, the comparison between graph B.9 and B.11 suggests that there is a PBC but it is not moderated by the number of veto players.

B.2.4 PBC conditional on the ideological distance within a coalition

The veto player theory presented in section 3 suggests that a PBC should not only be moderated by the number of veto players, but also by the ideological distance between them. Therefore, we will expect a negative relationship between our dependent variable and the maximum ideological distance between coalition members. In graph B.12, we plot our dependent variable during election years against the maximum ideological distance within coalitions.



In graph B.12, we observe that the value of our dependent variable during election years slightly declines with the ideological distance within coalitions, suggesting that a PBC is somewhat moderated by ideological distance. However, the slope of the fitted line is statistically insignificant and relatively flat, ranging from approximately 99 when the ideological distance is zero[90] to approximately 98.5 at the largest ideological distance in our sample, 6.38. Lastly, when we compare graph B.12 with graph B.9 we observe that the predicted value of our dependent variable at the largest ideological distance exceeds the value of our dependent variable during non-election years. Similar to previous comparisons made in this section, the comparison between graph B.12 and B.9 suggests that there is a PBC but it is not moderated by the ideological distance between veto players.

B.2.5 Summary of preliminary results

The purpose of this section is to see how well the predictions made in section 2 and 3 compares with our data. Graph B.9 shows a positive correlation between election years and our dependent variable and the difference between election- and non-election years is statistically significant. This result, suggests in accordance with the PBC theories presented in section 2, and a deteriorating budgetary situation during election years. Moreover, graph B.10 to B.12, shows that coalition governments, the number of coalition members as well as the ideological distance between them are all negatively correlated with our dependent variable during election years. However, the difference between single party- and coalition

[90] Removing observation with an ideological distance of zero does not notably change the fitted line

governments as well as the difference between two party- and three or more party governments are small and statistically insignificant. Furthermore, the fitted line between our dependent variable and the maximum ideological distance within coalitions is relatively flat and statistically insignificant. These results do not necessary imply that a coalition government have no effect on a PBC. As illustrated by graph B.9, a PBC in a Swedish municipality is likely to be small[91]. Thereafter, the moderating effect of a coalition government is also likely to be small. Furthermore, as illustrated in section 5, potential confounding variables, such as ideology, exist. To obtain results that are more likely to reflect the casual effect of a coalition government on a PBC, we will employ an identification strategy which is presented in section 6 and as stated, in section 5, an extensive set of control variables.

Appendix C: Appendix to section 7.1 Unconditional PBC

Table C1. Regression 1

VARIABLES	(i) Net cost/ Revenue	(ii) Net cost/ Revenue	(iii) Net cost/ Revenue
Election year	1.502***	1.827***	1.824***
	(0.124)	(0.130)	(0.123)
Observations	6,371	6,371	6,371
Adjusted R-squared	0.239	0.324	0.254
Municipality fixed effects	Yes	Yes	Yes
Mandate period fixed effects	Yes	Yes	Yes
Municipality time trend	No	Yes	No
County time trend	No	No	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table C2. Regression 1

VARIABLES	(i) Net cost	(ii) Revenue	(iii) Tax Revenue	(iv) Grants	(v) Net cost	(vi) Tax Revenue
Election year	1,331***	882.5***	-233.7***	1,116***	567.0***	-29.68
	(63.06)	(43.77)	(35.01)	(45.59)	(53.02)	(29.51)
Grants					0.685***	-0.183***
					(0.0374)	(0.0230)
Minority government	-80.67	-148.3*	-78.05	-70.24	-32.58	-90.89

[91] Authors who previously investigated whether there is a PBC in Swedish municipalities also find a small PBC. See e.g. Lidblom (2003) and Dahlberg & Mörk (2011)

	(84.10)	(75.46)	(62.18)	(60.40)	(77.71)	(60.56)
Proportion old	18.11	56.08	-48.34*	104.4***	-53.38	-29.25
	(44.58)	(38.03)	(28.02)	(30.11)	(35.64)	(27.84)
Proportion young	48.45	30.79	-75.22**	106.0***	-24.13	-55.84*
	(51.51)	(44.65)	(33.87)	(39.04)	(44.97)	(33.15)
Proportion foreigner	112.1***	152.5***	-30.06*	182.5***	-12.85	3.308
	(35.20)	(25.94)	(16.84)	(23.85)	(30.85)	(17.77)
Proportion unemployed	-65.98**	11.42	-88.99***	100.4***	-134.7***	-70.64***
	(27.68)	(16.73)	(10.56)	(15.38)	(21.90)	(10.62)
Population density	-5.804***	-4.612***	-2.338***	-2.274***	-4.248***	-2.753***
	(1.381)	(1.248)	(0.551)	(0.787)	(0.928)	(0.668)
Taxable income	20.51*	63.35***	208.5***	-145.1***	119.9***	182.0***
	(11.79)	(7.383)	(5.845)	(8.249)	(8.233)	(4.725)
Ideology to the right	-36.31	-34.37	-129.4***	94.99*	-101.3	-112.0***
	(74.79)	(62.08)	(40.95)	(52.42)	(62.22)	(40.88)
Deficit rule	1,103***	1,818***	1,061***	757.1***	584.5***	1,199***
	(112.4)	(64.17)	(42.46)	(60.50)	(88.61)	(40.94)
Constant	28,725***	22,307***	5,448***	16,859***	17,184***	8,529***
	(2,063)	(1,588)	(1,365)	(1,343)	(1,703)	(1,255)
Observations	6,371	6,371	6,371	6,371	6,371	6,371
Adjusted R-squared	0.948	0.973	0.975	0.962	0.958	0.977
Municipality specific fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Mandate period specific effects	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix D: Appendix to section 7.2.1 PBC conditional on a coalition government

Table D1. Regression 2

VARIABLES	(i) Net cost/ Revenue	(ii) Net cost/ Revenue	(iii) Net cost/ Revenue
Election year*Coalition government	-0.621**	-0.557*	-0.613**
	(0.312)	(0.306)	(0.309)

Election year	2.026***	2.291***	2.333***
	(0.314)	(0.300)	(0.299)
Coalition government	-0.190	0.0652	-0.131
	(0.217)	(0.210)	(0.202)
Observations	6,371	6,371	6,371
Adjusted R-squared	0.240	0.324	0.255
Municipality fixed effects	Yes	Yes	Yes
Mandate period fixed effects	Yes	Yes	Yes
Municipality time trend	No	Yes	No
County time trend	No	No	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table D2. Regression 2

VARIABLES	(i) Net cost/ Revenue	(ii) Net cost/ Revenue
Election year*Coalition government	-0.621**	-1.462**
	(0.312)	(0.734)
Election year	2.026***	2.910***
	(0.314)	(0.741)
Coalition government	-0.190	0.885
	(0.217)	(0.646)
Observations	6,371	2,562
Adjusted R-squared	0.240	0.239
Municipality fixed effects	Yes	Yes
Control variables	Yes	Yes
Mandate period fixed effects	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix E: Appendix for section 7.2.2 PBC conditional on the number of coalition members

Table E1. Regression 3

VARIABLES	(i) Net cost/ Revenue	(ii) Net cost/ Revenue	(iii) Net cost/ Revenue
Election year*Coalition government*Three or more party government	-0.0359	-0.00820	-0.0352
	(0.209)	(0.205)	(0.206)
Election year*Coalition government	-0.595*	-0.551	-0.587*
	(0.349)	(0.345)	(0.345)
Election year	2.028***	2.290***	2.334***
	(0.315)	(0.300)	(0.299)
Coalition government	-0.163	0.0364	-0.115
	(0.227)	(0.218)	(0.215)
Three or more party government	-0.0728	0.0863	-0.0478

	(0.180)	(0.182)	(0.172)
Constant	120.5***	115.5***	121.2***
	(3.493)	(6.646)	(4.638)
Observations	6,371	6,371	6,371
Adjusted R-squared	0.240	0.324	0.255
Municipality fixed effects	Yes	Yes	Yes
Mandate period fixed effects	Yes	Yes	Yes
Municipality time trend	No	Yes	No
County time trend	No	No	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table E2. Regression 3

VARIABLES	(i) Net cost/ Revenue
Election year*Two party government	-0.595*
	(0.349)
Election year*Three or more party government	-0.631**
	(0.316)
Election year	2.028***
	(0.315)
Two party government	-0.163
	(0.227)
Three or more party government	-0.236
	(0.243)
Constant	120.5***
	(3.493)
Observations	6,371
Adjusted R-squared	0.240
Municipality fixed effects	Yes
Control variables	Yes
Mandate period fixed effects	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table E3. Regression 3

VARIABLES	(i) Net cost/ Revenue
Election year*Number of parties	-0.00502
	(0.0750)
Election year	1.366***
	(0.279)
Number of parties	0.0225
	(0.0769)
Constant	117.3***
	(3.409)

Observations	5,383
Adjusted R-squared	0.236
Municipality fixed effects	Yes
Control variables	Yes
Mandate period fixed effects	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix F: Appendix to section 7.2.3 PBC conditional on the ideological distance within coalitions

Table F1. Regression 4

VARIABLES	(i) Net cost/ Revenue	(ii) Net cost/ Revenue	(iii) Net cost/ Revenue
Election year*Maximum ideological distance	0.0780	0.0398	0.0681
	(0.0658)	(0.0682)	(0.0655)
Election year	1.179***	1.627***	1.579***
	(0.195)	(0.185)	(0.173)
Maximum ideological distance	-0.0998**	-0.0644	-0.0855*
	(0.0477)	(0.0493)	(0.0466)
Constant	118.1***	108.3***	115.5***
	(3.513)	(7.580)	(4.711)
Observations	5,383	5,383	5,383
Adjusted R-squared	0.237	0.324	0.251
Municipality fixed effects	Yes	Yes	Yes
Mandate period fixed effects	Yes	Yes	Yes
Municipality time trend	No	Yes	No
County time trend	No	No	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table F2. Regression 4

VARIABLES	(i) Net cost/ Revenue	(ii) Net cost/ Revenue
Election year*Maximum ideological distance	0.0780	0.105
	(0.0658)	(0.0654)
Election year	1.179***	1.063***
	(0.195)	(0.198)
Maximum ideological distance	-0.0998**	-0.115**
	(0.0477)	(0.0518)
Constant	118.1***	114.7***
	(3.513)	(3.706)
Observations	5,383	4,517
Adjusted R-squared	0.237	0.249
Municipality fixed effects	Yes	Yes

Control variables	Yes	Yes
Mandate period fixed effects	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table F3. Regression 4

VARIABLES	(i) Net cost/ Revenue	(ii) Net cost/ Revenue
Election year*Ideological standard deviation	0.174	
	(0.168)	
Election year	1.187***	1.413***
	(0.205)	(0.125)
Ideological standard deviation	-0.223*	
	(0.116)	
Election year*Mixed rule		-0.230
		(0.220)
Mixed rule		-0.0900
		(0.167)
Constant	118.1***	117.6***
	(3.532)	(3.440)
Observations	5,383	5,383
Adjusted R-squared	0.237	0.236
Municipality fixed effects	Yes	Yes
Control variables	Yes	Yes
Mandate period fixed effects	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table F4. Regression 4

VARIABLES	(i) CHES 2007-2018 Net cost/ Revenue	(ii) KOLFU 2007-2018 Net cost/ Revenue
Election year	1.417***	1.737***
	(0.233)	(0.400)
Election*Maximum ideological distance (CHES)	0.0861	
	(0.0773)	
Maximum ideological distance (CHES)	-0.109**	
	(0.0444)	
Election*Maximum ideological distance (KOLFU)		-0.0297
		(0.130)
Maximum ideological distance (KOLFU)		-0.130**
		(0.0633)
Constant	121.0***	121.9***
	(5.513)	(5.545)
Observations	2,996	2,996
Adjusted R-squared	0.258	0.258

Municipality fixed effects	Yes	Yes
Control variables	Yes	Yes
Mandate period fixed effects	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix G: appendix for section 9 future research

G.1 Effective number of parties

Table G1. PBC & effective number of parties

VARIABLES	(i) Net cost/ Revenue
Election year*Effective number of parties	-0.175
	(0.126)
Election year	1.673***
	(0.297)
Effective number of parties	0.0483
	(0.198)
Constant	113.8***
	(3.636)
Observations	4,517
Adjusted R-squared	0.248
Municipality fixed effects	Yes
Control variables	Yes
Mandate period fixed effects	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

G.2 Introduction to dynamic panel bias, difference- and system GMM

Fiscal policy often exhibits some persistency over time and past fiscal policy is sometimes assumed to influence the choice of future fiscal policy[92]. Subsequently, to control for the lingering effect of fiscal policy, a lagged dependent variable could be included as a control variable. However, the inclusion of a lagged dependent variable in a FE regression is a source of dynamic panel bias[93]. To illustrate the problem, consider a generic dynamic FE regression that takes the form:

- $y_{i,t} = \alpha_i + \theta_1 y_{i,t-1} + \beta_1 x_{i,t} + u_{i,t}$

$y_{i,t}$ is the dependent variable in municipality i in year t, $x_{i,t}$ is the independent variable and α_i is municipality fixed effects. $u_{i,t}$ is the error term which is assumed to follow a one-way error

[92]See e.g. Achen (2000) for a critique of the view that past fiscal policy affects current fiscal policy
[93] See e.g. Roodman (2009) for a thorough summery of dynamic panel bias

component model, where the error term is assumed to have a time invariant- and a time variant component i.e. $u_{i,t} = \mu_i + v_{i,t}$. The FE regression is able to eliminate the effect of μ_i, but not $v_{i,t}$, by subtracting the time mean of each variable from said variables, a transformation known as "demeaning" (Stock & Watson, 2015). The transformed term $\tilde{y}_{i,t} = y_{i,t-1} - \bar{y}_i$, where $\bar{y}_i = \sum_2^T \frac{y_{i,t-1}}{T-1}$, is by construct correlated with the transformed term $\tilde{v}_{i,t} = v_{i,t} - \bar{v}_i$ since $\bar{v}_i$ includes $v_{i,t-1}$, a determinant of $y_{i,t-1}$ (Baltagi, 2005).
In his seminal paper, Nickell (1981) shows that the bias created by the inclusion of $y_{i,t-1}$ in FE model is not reduced by the number of cross-sectional observations N, but FE estimates becomes consistent as the number of time observation T tends toward infinity (Nickell, 1981; Kiviet, 1995).

Numerous alternative methods have been suggested to overcome dynamic panel bias. Anderson & Hsiao (1982) suggest a simple instrument variable approach. A first difference transformation (FD) is first made for each variable to expunge the effect of μ_i and the lagged difference of the dependent variable $\Delta y_{i,t-1} = y_{i,t-1} - y_{i,t-2}$ is thereafter instrumented with either the dependent variable lagged two years $y_{i,t-2}$ or the difference of the dependent variables lagged two years $\Delta y_{i,t-2}$. Arellano & Bond (1991) notes that the method proposed by Anderson & Hsiao (1982) yields consistent but inefficient estimates. They instead suggest the use of a GMM method which relies more on internal instrument and is shown to yield more efficient estimates.
To illustrate the method proposed by Arellano & Bond (1991) consider a FD regression that takes the form:

- $\Delta y_{i,t} = \theta_1 \Delta y_{i,t-1} + \beta_1 \Delta x_{i,t} + \Delta v_{i,t}$

Similar to the method proposed by Anderson & Hsiao (1982), the effect of μ_i is expunged by the FD transformation but $\Delta y_{i,t-1}$ is still correlated with $\Delta v_{i,t}$ since $\Delta y_{i,t-1} = y_{i,t-1} - y_{i,t-2}$ and $\Delta v_{i,t} = v_{i,t} - v_{i,t-1}$. Arellano & Bond (1991) notes that if $v_{i,t}$ is not serially correlated, values of the dependent variable lagged two or more years are valid instrument for $\Delta y_{i,t-1}$ since they are related to $\Delta y_{i,t-1}$ but not to $\Delta v_{i,t}$. The method, known as difference GMM, thus use the following moment condition:

- $E[y_{i,t-s}\, \Delta v_{i,t}] = 0$ for $s \geq 2$ and $t = 3, 4, \dots, T$.

The proposed type of instruments can also be used for other variables. If $x_{i,t}$ is endogenous, values of the independent variable lagged two or more years are valid instrument for $\Delta x_{i,t}$

since they are related to $\Delta x_{i,t}$ but not to $\Delta v_{i,t}$. If $x_{i,t}$ instead is predetermined, that is, correlated with $v_{i,t-1}$ but not $v_{i,t}$, values of the predetermined variable lagged one or more years are valid instrument for $\Delta x_{i,t}$ since $\Delta x_{i,t} = x_{i,t} - x_{i,t-1}$ and $\Delta v_{i,t}$ contain $v_{i,t}$ and $v_{i,t-1}$ but not $v_{i,t-2}$. If $x_{i,t}$ instead is strictly exogenous, all observations, including $x_{i,t}$, can be used as instrument for $\Delta x_{i,t}$ (Roodman, 2009). It is notable that the Arellano & Bond (1991) method, in contrast to the method developed by Anderson & Hsiao (1982), allows "deeper" lags of variables to be used as instrument. Thus, for each wave of cross section observations additional instrument becomes available.

While the method proposed by Arellano & Bond (1991) is able to estimate the parameter of interest, Arellano & Bover (1995) and Blundell & Bond (1997) shows that lagged values of the dependent variable are valid but weak instruments. The intuition behind this is that when an explanatory variable is persistent over time, past values of the explanatory variable conveys little information about future change (Roodman, 2009). Thus, GMM estimates obtained from difference GMM are likely to be biased towards zero and be imprecisely estimated. The problems is somewhat mitigated if T increase. However, to overcome these problems when T is small, Blundell & Bond (1997) suggest combining the previous mentioned FD regression with a regression in levels:

- $y_{i,t} = \theta_1 y_{i,t-1} + \beta_1 x_{i,t} + u_{i,t}$

To remove bias arising from μ_i, Blundell & Bond (1997) propose to use the lagged differences $\Delta x_{i,t-1}$ as instruments for $x_{i,t}$. The lagged difference is exogenous from μ_i under the assumption that change in an instrument variable $\Delta x_{i,t}$ is uncorrelated with unobserved municipality specific effect μ_i for all years t. The lagged difference is a valid instrument if $v_{i,t}$ is not serially correlated since $\Delta x_{i,t-1}$ merely contains $v_{i,t-1}$ and $v_{i,t-2}$ but not $v_{i,t}$. Likewise, the contemporary differences $\Delta y_{i,t-1}$ must also be a valid instrument for the lagged variable $y_{i,t-1}$. Additionally, the contemporary difference $\Delta x_{i,t} = x_{i,t} - x_{i,t-1}$ is a valid instrument for $x_{i,t}$ if $x_{i,t}$ is predetermined since $x_{i,t}$ is not correlated with $v_{i,t}$ (Roodman, 2009). The method proposed by Blundell & Bond (1997) is known as system GMM and use two moment condition in addition to the one used by difference GMM:

- $E[\Delta x_{i,t-s}, u_{i,t}] = 0$ for $s \geq 1$
- $E[\Delta y_{i,t-s}, u_{i,t}] = 0$ for $s \geq 1$

Blundell & Bond (1997) shows that the estimator obtain from system GMM have less sample bias and variance than those obtain from difference GMM.

While the methods discussed above yields consistence estimates, there is some uncertainty which estimator would preforms best given a dataset like ours with observation from 283 different municipalities over 24 years. Using Monte Carlo experiment, Judson & Owen (1999) test the performance of different estimators. They find that when the number of time periods is equal to 20 either Anderson & Hsiao, Arellano & Bond or bias corrected FE estimators are preferable to FE estimator. However, when the number of time periods is equal to 30 either bias corrected FE estimator or FE estimator are preferable to either Anderson & Hsiao or Arellano & Bond estimators. Here we will follow other studies of PBC and use system GMM.

G.3 Results using system dynamic FE- and GMM models

To see whether the result from a dynamic model differ from that of a static model, we estimate a dynamic model using FE and system GMM. When we estimate a dynamic FE model we just included the lagged dependent variable as a control variable in the regression presented previous. When we instead estimates system GMM we estimate the following system of equations:

- $y_{i,v,t} = \theta_1 y_{i,v,t-1} + \beta_1 Ele_t + \delta' C_{i,t-1} + \eta' X_{i,t} + P_t + u_{i,t}$
- $\Delta y_{i,v,t} = \theta_1 \Delta y_{i,v,t-1} + \beta_1 \Delta Ele_t + \delta' \Delta C_{i,t-1} + \eta' \Delta X_{i,t} + \Delta P_t + \Delta v_{i,t}$

Where the second equation is a FD transformation of the first equation. The system of equations illustrated above test whether there is an unconditional PBC and is a rough analogue to regression 1. To test the presence of conditional PBCs, interaction terms will be added in a similar fashion to regression 2 to 4. Based on the discussion in the previous section, the lagged dependent variable will be instrumented by its contemporary lagged difference in the level equation and by its level value lagged two or more time periods in difference equation. Variables such as the election year dummy, interaction terms, the deficit rule dummy as well as the mandate period fixed effects are assumed to be exogenous and will be instrumented by themselves. The unemployment rate is assumed to be predetermined. Thereafter, the unemployment rate will be instrumented by its contemporary difference in the level equation and by its level value lagged one or more period in the difference equation. Notably, to avoid the problem of to many instrument, we limit the number of included lags to two. Further, we use a two-step procedural to estimate the standard error since these are more robust against heteroscedasticity and while these standard errors have a downward bias, this is corrected for by using the finite-sample correction suggested by Windmeijer (2000).
Finally, the consistency of the GMM estimator crucially depends on whether the instruments are valid. The validity of GMM instrument rest on whether two assumption are met. The first

assumption is that of jointly valid instruments while the second assumption is that $v_{i,t}$ have no first order serial correlation in levels. Either a Hansen or a Sargan over identification test is commonly used to test the first assumption. Here we will use the Hansen test since it is robust against heteroscedasticity. The test have the null-hypothesis of jointly valid instrument. A test developed by Arellano & Bond (1991) is used to see whether the second assumption is met. The test use first and second order correlation in differences of the time varying error component to identify first order serial correlation in levels. First order correlation in differences is often uninformative because $\Delta v_{i,t}$ and $\Delta v_{i,t-1}$ both contain $v_{i,t-1}$ and should subsequently be correlated. Thus, it is more helpful to lock at second order correlation between $\Delta v_{i,t}$ and $\Delta v_{i,t-2}$ given the idea that this would identify first order correlation between $v_{i,t-1}$ and $v_{i,t-2}$. The test have the null hypothesis that no first order correlation exist (Roodman, 2009).

The results from the static- and dynamic FE models as well the result from the system GMM model is presented side by side in table G2 to G5 below[94]. As previously stated, we fail to find valid instruments for the system GMM model (p-values of Hansen test are 0.000).

Table G2. Regression 1

VARIABLES	Static (FE) Net cost/ Revenue	Dynamic (FE) Net cost/ Revenue	Dynamic (GMM) Net cost/ Revenue
Lagged Net cost/ Revenue		0.286***	0.240***
		(0.0292)	(0.0501)
Election year	1.502***	1.558***	1.451***
	(0.124)	(0.114)	(0.164)
Constant	120.5***	89.16***	69.30***
	(3.460)	(4.810)	(9.861)
Observations	6,371	6,358	6,358
Adjusted R-squared	0.239	0.304	
Municipality fixed effects	Yes	Yes	Yes
Control variables	Yes	Yes	Yes
Mandate period fixed effects	Yes	Yes	Yes
P-value Hansen test	-	-	0.000
P-value Arellano & Bond test	-	-	0.157
Number of munic			283

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table G3. Regression 2

	Static (FE)	Dynamic (FE)	Dynamic

[94] Note that while the Arellano & Bond test cannot reject the null hypothesis of no first order serial correlation in level, the Hansen test reject the null-hypothesis of jointly valid instrument in all regressions. Thus, the GMM estimator are not consistent.

VARIABLES	Net cost/ Revenue	Net cost/ Revenue	(GMM) Net cost/ Revenue
Lagged Net cost/ Revenue		0.285***	0.239***
		(0.0289)	(0.0490)
Election year*Coalition government	-0.621**	-0.411	-0.564
	(0.312)	(0.310)	(0.377)
Election year	2.026***	1.905***	1.938***
	(0.314)	(0.312)	(0.385)
Coalition government	-0.190	-0.147	0.538
	(0.217)	(0.165)	(0.562)
Constant	120.4***	89.30***	68.48***
	(3.473)	(4.795)	(9.860)
Observations	6,371	6,358	6,358
Adjusted R-squared	0.240	0.304	
Municipality fixed effects	Yes	Yes	Yes
Control variables	Yes	Yes	Yes
Mandate period fixed effects	Yes	Yes	Yes
P-value Hansen test	-	-	0.000
P-value Arellano & Bond test	-	-	0.156
Number of munic			283

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table G4. Regression 3

VARIABLES	Static (FE) Net cost/ Revenue	Dynamic (FE) Net cost/ Revenue	Dynamic (GMM) Net cost/ Revenue
Lagged Net cost/ Revenue		0.284***	0.237***
		(0.0289)	(0.0488)
Election year*Coalition government*Three or more party government	-0.0359	0.00848	0.0986
	(0.209)	(0.208)	(0.297)
Election year*Coalition government	-0.595*	-0.418	-0.616
	(0.349)	(0.338)	(0.438)
Election year	2.028***	1.907***	1.930***
	(0.315)	(0.313)	(0.381)
Coalition government	-0.163	-0.111	0.169
	(0.227)	(0.173)	(0.460)
Three or more party government	-0.0728	-0.0858	0.362
	(0.180)	(0.138)	(0.493)
Constant	120.5***	89.36***	68.96***
	(3.493)	(4.801)	(9.854)
Observations	6,371	6,358	6,358
Adjusted R-squared	0.240	0.304	
Municipality fixed effects	Yes	Yes	Yes

Control variables	Yes	Yes	Yes
Mandate period fixed effects	Yes	Yes	Yes
P-value Hansen test	-	-	0.000
P-value Arellano & Bond test	-	-	0.148
Number of munic			283

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table G5. Regression 4

VARIABLES	Static (FE) Net cost/ Revenue	Dynamic (FE) Net cost/ Revenue	Dynamic (GMM) Net cost/ Revenue
Lagged Net cost/ Revenue		0.289***	0.313***
		(0.0250)	(0.0392)
Election year*Maximum ideological distance	0.0780	0.0935	0.0448
	(0.0658)	(0.0725)	(0.0833)
Election year	1.179***	1.289***	1.303***
	(0.195)	(0.193)	(0.231)
Maximum ideological distance	-0.0998**	-0.0864**	-0.211**
	(0.0477)	(0.0401)	(0.104)
Number of parties	0.0604	0.0473	0.512*
	(0.0689)	(0.0531)	(0.296)
Constant	118.1***	87.57***	67.31***
	(3.513)	(4.325)	(8.116)
Observations	5,383	5,244	5,244
Adjusted R-squared	0.237	0.297	
Municipality fixed effects	Yes	Yes	Yes
Control variables	Yes	Yes	Yes
Mandate period fixed effects	Yes	Yes	Yes
P-value Hansen test	-	-	0.000
P-value Arellano & Bond test	-	-	0.211
Number of munic			277

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1