

The Empirical Implications of Inter-Party Bargaining in Multiparty Governments

by

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To my parents

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ABSTRACT

Why are some junior coalition members able to extract significantly greater concessions from their partners than others? I argue that junior partners are able to do so if they can credibly threaten to exit the incumbent government. Such exit threats are only credible if they can enter into alternative governments that are both viable and ideologically attractive to them. Thus, I expect junior parties to extract greater concessions, the more exit power they control. I test this hypothesis on three observable implications of multi-party policy-making. First, I expect government spending to vary systematically with the strongest party's bargaining leverage. I find that spending only increases in the number of governing parties if the strongest party controls relatively little exit power. The effect is mitigated as its exit power increases. Second, I analyze under what conditions government parties are able to influence how expenditures are allocated across different spending areas. While all governing parties have the incentive to implement policies that reward their constituents, only exit power provides them with the means to implement their ideologically motivated spending preferences. I find that the composition of the budget reflects the spending preferences of parties with significant exit power more closely. Finally, I address why some parties receive more ministerial portfolios than others. I expect parties to receive more, and more important, portfolios if they can credibly threaten to exit current government negotiations. I present two approaches

to estimate ministerial allocation data as unbalanced and irregular compositional data. In this project, I generate and use a novel measure of parties' exit power that is comparable across countries and over time. It is theoretically motivated and captures parties' next best options in case of a bargaining breakdown. I simulate all approximately 120,000 potential governments that could have formed in developed democracies during the postwar era. For each of these governments, I estimate its formation likelihood and its ideological appeal to each of its members. For each party in government, I calculate its exit power relative to that of its partners and use that as my main explanatory variable.

CHAPTER I

Introduction

Why are some junior coalition parties able to extract significantly greater concessions from their coalition partners than others? This is the over-arching puzzle I address in the following chapters. In line with formal bargaining models, I argue that parties' next best options in the case of a bargaining breakdown determine the leverage they can achieve over their partners in any bargaining situation. The stages in the life-cycle of any government, but particularly so in multiparty governments, are marked by continuous bargaining between actors. The first stage involves negotiations over which parties enter government together, which substantive policy program to implement, and how to divide a finite set of ministerial portfolios among them. Once a government has formed, the bargaining process continues during day-to-day policy-making. While coalition agreements often set out the broad policy agenda of coalition governments, specifics still need to be agreed on, and policies have to be passed. This policy-making stage takes place in the shadow of the coalition negotiation stage because a breakdown of the bargaining process can, and indeed often does, lead to a government breakdown, after which parties enter a new stage of bargaining over which government will enter office next.

I argue that a junior partner's ability to extract concessions is determined by the credibility of its exit threat. Parties can only credibly threaten to exit the incumbent government if they can enter at least one alternative government that is both viable and

ideologically attractive. As such, junior parties that can enter outside options from which they would derive high utility have great *Exit Power*. The greater their exit power, the more concessions these junior coalition members are able to receive from their partners. I derive three testable propositions based on this general hypothesis and test them on three observable implications of multiparty policy-making in the following chapters.

To test the general expectation, I generate a novel measure of exit power that is motivated by theoretical insights from formal bargaining models. It is comparable over time and across countries and based on the simulation of almost 120,000 potential governments that could have formed in developed democracies in the postwar era. For each of these potential governments, I estimate its viability as the probability that they will enter office. In addition, I calculate the ideological attractiveness of each potential government to each of its members. The viability is weighted by the ideological attractiveness to arrive at each potential government's expected utility to each of its members. Since bargaining power is an inherently relative concept, a government party's exit power is the total expected utility it can derive from its alternatives relative to the expected utility its partners can derive from theirs.

In Chapter II, I analyze why some governments spend more than others. Since concessions have spending implications in terms of extending existing policies or implementing new ones, I expect total government spending to vary systematically with the distribution of exit power across coalition members. I expect governments to spend more, the more parties they include only to the extent that the strongest party controls little exit power and has to grant concessions to remain in power. I find that this proposition is supported by the empirical evidence. Moreover, the effect is mitigated as its exit power increases. This shows that existing findings on the common pool resource problem – positing that spending increases in the number of governing parties – is a special case of multiparty policy-making that only arises if the strongest party in office has to buy off its partners to remain in power.

In Chapter III, I examine how governments allocate total spending across different spending categories. Once in office, each governing party has the incentive to implement policies that benefit its constituents in an effort to maximize their re-election chances. However, not every party has the ability to implement its most preferred policies. I argue that parties that have great exit power are able to implement their ideal policies and thus increase spending on their core policy areas relative to all others. I find that the composition of government spending is most responsive to the interests of parties with significant exit power. For instance, relative to all other spending categories, spending on national security increases by more, the more exit power right-wing parties have. Similarly, relative to all other categories, environmental spending decreases by more, the more powerful right-wing government parties are. In my statistical analyses, I take into account dependencies across categories by estimating all spending areas simultaneously.

Finally, in Chapter IV, I analyze why some coalition parties receive more, and more important, ministerial portfolios than others. I argue that parties' exit power rather than their size or status as agenda-setter influences the number and salience of portfolios it can extract during coalition negotiations. I address previously unresolved methodological issues that arise from the compositional character of the data. Ministerial portfolio data are compositional, however, their structure is unbalanced and irregular. This is due to the fact that the number of parties in office, and thus the number of equations to be estimated simultaneously, is not constant across observations. I discuss and present results from two approaches to analyze such data. Results suggest that there is a positive effect between exit power and the share of salience-weighted portfolios a party receives.

Taken together, my empirical results show that the distribution of relative exit power across government parties has a strong effect on policy concessions parties receive, and thus, the policies coalition governments implement. The results are more mixed with respect to portfolio concessions, suggesting that the threat to exit the government is a more powerful tool to use once a government is established and has entered office, often having

overcome investiture votes in parliament. As governments have overcome these hurdles, the cost of a government breakdown increases, so parties with great exit power can make use of their exit threats to a greater extent and extract more policy concessions from their partners.

My dissertation makes several contributions to research on multiparty policy-making, intra-governmental politics, and government formation. The first contribution is theoretical, as I introduce the concept of exit power as the crucial determinant of a party's ability to gain bargaining leverage over its coalition partners. Second, I develop a novel measure of exit power that is theoretically motivated and comparable across space and over time. This measure is based on the simulation of around 120,000 alternative governments and the estimation of their political viability and ideological appeal. I generate this measure for all parties in developed democracies that entered government at least once during the postwar era. Finally, my research resolves an outstanding puzzle in the literature on comparative politics – why do some junior coalition partners extract vastly more concessions than others? It also contributes to several related literatures on inter-party bargaining, government spending, and ministerial portfolio allocation. In addition, my research has wide-ranging implications for different research areas, such as differences in the effective democratic representation of minorities, differences in the extent of a country's engagement with the international economy, and the surge in power of populist movements across the globe.

CHAPTER II

Keep Me If You Can: Exit Power and Government Spending

2.1 Introduction

Why are some junior coalition members able to extract significantly greater concessions from their partners than others? Generally, coalitions contain one senior partner controlling a plurality of government seats and at least one junior member controlling the remainder. However, some junior partners exert significant influence on government policy, including spending, while others hold relatively little sway. As junior coalition members, the German Liberals (FDP) and the Danish Conservative People's Party are often able to extract significant concessions from their partners. Their ability to do so, however, varies over time. Other junior coalition parties that control a similar number of seats, such as Green parties, on the other hand, are consistently unable to extract significant concessions. What, then, can explain the great variation in junior coalition members' ability to extract concessions from their partners?

I argue that a junior partner's ability to receive concessions is determined by the credibility of its exit threat. Parties can threaten to exit the incumbent government if they have at least one alternative government that they can enter. Such threats, however, are only credible if these alternatives are both viable and ideologically attractive. Consequently, junior parties that have outside options of high utility can credibly threaten to exit the incumbent government and so have great *Exit Power*. The greater their exit power, the

more concessions junior coalition parties can extract from their partners.

Concessions granted to junior coalition partners are reflected in overall government expenditures as greater spending on policies or lower revenues due to tax cuts. Moreover, spending questions loom large during negotiations before governments enter office and continue to be contentious and potentially disruptive during the legislative term. Hence, I expect that government spending varies systematically with the distribution of exit power across coalition partners. In line with the existing literature, I expect spending to increase in the number of governing parties, however, I argue that this relationship is conditional on the exit power of the strongest coalition party. As its share of exit power increases, I expect this effect to be mitigated.

I develop a new, theoretically motivated and computationally complex measure of relative exit power and use it to test this proposition. This measure calculates how likely each potential government is to form and how attractive it is to each of its potential members. It is comparable across countries and over time, and is constructed for every government party in developed democracies during the post-war era. I test my expectations using data on government spending for developed democracies between 1970 and 2012. The empirical analysis shows that spending only increases in the number of governing parties if the strongest party controls little exit power. This effect is mitigated as exit power becomes more concentrated in the strongest party.

This paper makes three important contributions. First, I conceptualize parties' bargaining power as deriving from their credible exit threats rather than their size (Crombez 1996; Gamson 1961; Riker 1962), ideological centrality (Laver & Shepsle 1996; Sartori 1976), or government office itself (Bawn & Rosenbluth 2006; Martin & Vanberg 2013; Tsebelis 2002). Second, I develop a new measure of relative exit power that captures the expected utility of government parties' outside options. Finally, I demonstrate that differences in government spending can be explained by the extent to which exit power is concentrated in the hands of one government party. I find that spending only increases in

the number of governing parties to the extent that the strongest party controls relatively little exit power. As the strongest party holds greater exit power, this effect is mitigated.

The remainder of this chapter proceeds as follows. In the following section, I describe alternative explanations for parties' different abilities to extract concessions. Next, I introduce the argument that exit power derives from the credibility of parties' exit threats and explain how this influences policy-making. I apply this argument to government spending and derive a testable proposition connecting exit power with patterns of overall spending. In the next section, I explain my new measure of relative exit power before discussing the results of the empirical analysis. In the last section, I will provide a summary and discuss further implications that arise from the broader theoretical argument.

2.2 Gaps in the Existing Literature

Extant accounts of government formation and multiparty policy-making cannot explain the variation in junior parties' ability to secure concessions. Five propositions concerning the power of coalition parties arise from the existing literature, four of which can be applied to junior partners. I will briefly review each in this section.

First, a significant number of studies on multiparty policy-making argue that all government parties, irrespective of their size or ideological position, are equally powerful (Bawn & Rosenbluth 2006; Martin & Vanberg 2013; Persson, Roland, & Tabellini 2007; Tsebelis 2002). Tsebelis, for instance, argues that the status quo is harder to change, the more veto players need to agree to such a change and the farther away they are located from each other in the ideological space (Tsebelis 2002). Similarly, studies on government expenditures assume that all parties are able to extract additional spending. Government spending is, thus, argued to increase in the number of government parties because each party represents a different constituency for which it seeks to increase spending. Single-party governments are, therefore, expected to spend less than coalition govern-

ments, and spending is argued to increase in the number of coalition parties (Bawn & Rosenbluth 2006; Persson et al. 2007). Recent research has emphasized the importance of insitutional differences, arguing that government spending tends to be lower if budgetary constraints are high (Martin & Vanberg 2013) or if the Finance Minister has the ability to monitor and, if need be, punish spending ministers (Hallerberg, Strauch, & von Hagen 2007; Hallerberg & von Hagen 1997). These arguments, however, still assume that all government parties can extract spending as long as they are in government. Whether or not they are in fact successful depends only on the institutional context.

The second proposition posits that junior coalition members can extract more concessions, the more seats they control. The best known argument along these lines is Gamson's stating that parties receive a share of concessions, in this case ministerial posts, that is proportional to the share of seats they contribute to the government's majority (Gamson 1961). Studies on multiparty policy-making, therefore, tend to use the government's *center of gravity* to analyze the effect of government parties, particularly their ideological positions, on policies. This measure calculates the mean ideological position of all governing parties, wheighting each party's individual position by its share of government seats or portfolios (Boix 1998; Cusack 1999; Franzese 2002, for instance). Similarly, Morelli finds that parties receive concessions that are proportional to their bargaining power, i.e. voting weights in parliament (Morelli 1999). Note that while voting weights are not the same as seat shares, empirical work on the allocation of concessions across coalition members uses their seat shares as a measure of their voting weights (Ansolabehere, James M. Snyder, Strauss, & Ting 2005, for a discussion of the differences).

Another set of studies posits that junior partners receive greater concessions if they are ideologically central. Sartori argues that one source of parties' power is their "coalition potential" (Sartori 1976, p. 122). Thus, centrally located parties tend to be powerful even if they are small because they are needed to form a minimum winning coalition composed of ideologically close parties more often than more extreme parties. "Kingmaker

parties”, small parliamentary parties located in between two large ones, arise as particularly powerful since they can determine which one of the two larger parties enters government office. Crombez, in contrast, finds that junior coalition members receive greater side-payments if they are large and centrally located (Crombez 1996). Laver and Shepsle disaggregate the left-right dimension into individual policy dimensions and argue that parliamentary parties’ power is only determined by the centrality of their positions on each individual dimension, irrespective of their size (Laver & Shepsle 1996).

Finally, formal models of government formation acknowledge that parties’ bargaining power differs and can be divided into two categories, non-cooperative and cooperative models. Non-cooperative models, such as Baron and Ferejohn and models following their tradition, argue that formateurs receive greater concessions than their coalition partners since they enjoy an agenda-setting advantage (Baron & Ferejohn 1989). That is, since agenda-setters draw up the proposal which is presented to other parties, these proposals will contain concessions for the proposal-maker that are greater than its share of voting weights (Ansolabehere et al. 2005; Baron & Ferejohn 1989). Measuring each coalition party’s share of voting weights in parliament rather than their size in seat shares, Ansolabehere and his co-authors find that the formateur status, indeed, gives parties a bonus of portfolio concessions (Ansolabehere et al. 2005).

Cooperative models, on the other hand, comprise voting models and arrive at a different proposition (Ansolabehere et al. 2005; Felsenthal & Machover 1998). The Banzhaf index (Banzhaf 1965), for instance, measures how often a legislator can change the outcome of a vote, i.e. “*swing*” the vote (Leech 2013, emphasis in original). Similarly, the Shapley-Shubik index (Shapley & Shubik 1954) measures the share of all coalitions for which a party is pivotal. Applied to the coalition formation context, junior coalition members are expected to receive more concessions, the more often they are needed to push coalitions over the parliamentary majority threshold.

While the specifics differ depending on the particular institutional context, all of

the non-cooperative models follow in the tradition of classic bargaining models (Ansolabehere et al. 2005; Morelli 1999; Rubinstein 1982). At the heart of all bargaining models, in turn, lies the notion that actors' next best options in the event of a bargaining breakdown in the current round determine their bargaining power (Nash 1950; Rubinstein 1982). This crucial component of all bargaining models, however, has not been properly acknowledged and measured in empirical research on multiparty policy-making. In the following sections, I will introduce this dynamic to decision-making in coalitions during the legislative term and explain how I measure parties' exit power.

2.3 Theoretical Argument: Junior Parties' Exit Power

Multiparty policy-making and government formation are intricately linked processes. Once a government has formed, policy-making does not occur in isolation. Rather, decision-making in the incumbent government takes place in the shadow of other governments that could form instead. Since multiparty policy-making is an ongoing process of negotiations among governing parties that does not stop after a coalition government is formed, government parties' strategic positions in the government formation game determine their bargaining power not only during coalition negotiations but also in the policy-making game. As such, junior coalition members are able to extract significant policy concessions if they have great exit power.

All such concessions have spending implications, such as increased spending on new or existing policies or reduced revenues due to tax cuts, which in turn put pressure on spending. Questions surrounding government spending figure prominently during coalition negotiations and during the government's tenure in office. Conflict surrounding spending, and particularly spending cuts, can be so contentious that it leads to the breakdown of the government. As such, government spending in particular is subject to continued bargaining between all coalition members from the beginning of their tenure

to the very end. Therefore, I expect government spending to vary systematically with junior coalition members' ability to extract concessions.

Agreement on how much the incoming coalition government is willing to spend in the legislative term is important to reaching a coalition agreement. In Germany, government spending was highlighted as a crucial part to the coalition agreements parties reached after the general elections in 2005 and 2013 (Tempest November 11, 2005; Zeit Online October 24, 2013). Similarly, after the 2010 general elections in Great Britain, the Conservatives and Liberal Democrats came to a coalition agreement when, among other things, the Liberal Democrats accepted immediate spending cuts (Wintour May 11, 2010). On the other hand, failure to agree on spending issues often leads to the breakdown of coalition negotiations. After the 2000 general elections in Austria, the outgoing SPÖ Finance Minister attributed the breakdown of the negotiations between the SPÖ and ÖVP to the fact that the ÖVP could not be trusted with taxpayers' money (Rohrer December 12, 2013). Similarly, negotiations between the Liberal Democrats and Labour in Great Britain in 2010 came to a halt due to disagreements over how to finance certain policies (Wintour May 11, 2010).

Once a government has taken office, disagreements over spending issues, especially spending cuts, can cause great tension and ultimately cause the government to break. In 2012, the Dutch government resigned and called for early elections when the coalition's parliamentary support party abandoned negotiations over spending cuts (Waterfeld April 23, 2012). As these brief examples illustrate, government spending looms large over the entire life cycle of a coalition government. But how exactly is spending driven by inter-party bargaining, and how does such bargaining affect variation in spending? I argue that junior coalition members' exit power and, thus, their ability to extract concessions explains variation in overall government spending.

2.3.1 The Source of Exit Power: Parties' Outside Options

In line with classic bargaining models, I argue that junior and senior coalition parties' bargaining power is determined by the options available to them in the event of a bargaining breakdown. In addition, I argue that these outside options do not cease to determine parties' bargaining power once they enter office. That is, I posit that coalition parties' exit power, and thus their ability to extract concessions, is determined by how credibly they can threaten to exit the incumbent government. The credibility of a government party's exit threat, in turn, is determined by the expected utility of its outside options. I define an outside option as an alternative government a governing party can enter. The expected utility of an outside option stems from this potential government's viability and attractiveness to its potential members. While viability is a characteristic of the potential government itself and does not differ across its members, the potential government's attractiveness does.

Potential governments are more viable as outside options, the more likely they are to form. A large body of research on government formation has found that numerical and ideological factors affect how likely different government types are to form (Laver & Schofield 1990; Martin & Stevenson 2001, for an overview). If no single parliamentary party controls a majority of parliamentary seats, a coalition government containing the smallest number of parties to cross the majority threshold (minimum winning coalition) is expected to form (Riker 1962).

Accounting for policy considerations, minimum connected winning coalitions – that is, minimum winning coalitions comprised of ideologically adjacent parties – are more likely to form than others (Axelrod 1970). This is the case because coalition partners can reach compromise more easily if they are adjacent to one another on a single policy dimension. Refining this proposition further, DeSwaan posits that minimum winning coalitions exhibiting the smallest range of ideological positions are most likely to enter office (De Swaan 1973). Taken together, coalition governments containing few and ide-

ologically close parties are more likely to enter government office than other potential governments¹.

Each government party's outside options can be ranked according to their formation likelihood, which is the same for all of its members. However, an alternative government is not equally attractive to all of its members. Attractiveness differs depending on the distance between each member's and the potential government's ideological position. The closer an outside option's ideological position is to one of its members' own position, the more attractive it is to this particular party. This is the case because the outside option's policies are likely to be close to its own ideological position.

Taken together, a governing party is powerful if it can enter at least one other government that is likely to form and ideologically attractive. As such, government parties' exit power increases in the expected utility of their outside options. Parties know how powerful their coalition partners are since the parliamentary bargaining context – the distribution of parties' seat shares and ideological positions – is common knowledge. That is, parties know what other coalitions their coalition partners can enter, if they are likely to form, and how attractive they are to them.

2.3.2 Policy-Making Under Exit Threats

There are benefits and costs associated with inviting a certain junior party into a coalition. The existing literature has focused on the benefits junior parties confer to the formateur by contributing a certain number of seats or a more moderate ideological position to the coalition. Formateurs, however, also incur costs by including certain junior parties

¹Minority and surplus governments, however, make up a significant number of governments during the post-World War II era, one third and one fourth, respectively (Crombez 1996; Strøm 1984; Volden & Carrubba 2004). Minority governments are more likely to form under certain institutional settings (Strøm 1984), and the more fragmented and polarized the opposition is (Martin & Stevenson 2001). Surplus governments can arise in times of crises (Baron & Diermeier 2001), if the formateur is small and not centrally located (Crombez 1996), if legislative logrolls are not sustainable (Carrubba & Volden 2000), or if a different majority in the upper chamber is needed to pass legislation (Lijphart 1984).

in a coalition government, both during the formation process and the ongoing bargaining process once in office. I argue that the extent to which junior parties can extract concessions is determined by how credibly they can threaten to exit the incumbent government and, thereby, by how costly it is to keep them in office. This logic is not exclusive to junior coalition members, however, as it applies to senior coalition members as well. Irrespective of its size in seats, any governing party – junior or senior partner – that can credibly threaten to exit the incumbent government can extract vast concessions from its coalition partners.

Bargaining power, however, is an inherently relative concept, so the extent to which parties can extract concessions depends on their exit power relative to that of their coalition partners. A governing party that has outside options of great expected utility can only extract concessions from its coalition partners if these lack such outside options, that is, parties' willingness to grant concessions decreases with their exit power. Governing parties that have no other viable or attractive alternative governments that they can enter are willing to make concessions to remain in office. Therefore, governing parties' relative bargaining power directly affects multiparty policy-making.

Junior coalition members, and governing parties in general, can control no to all relative exit power in a government. First consider a case where a junior party does not control any exit power relative to its coalition partners. While such a party can demand concessions, its partners will not grant them any. Since such a junior party has no other viable or attractive outside options that it can enter, its threats to exit the incumbent government are not credible. Therefore, junior coalition members that control no relative exit power cannot extract concessions. As junior coalition members' share of exit power increases, however, so does their ability to extract concessions from their partners.

If junior and senior partners have equal exit power, all parties are able to extract concessions. In such a case, none of the governing parties has a bargaining advantage. Moreover, all governing parties can enter alternative governments that are both viable and

attractive, so they can all credibly threaten to exit the incumbent government. Consequently, it is unclear a priori which party can remain in office in the event the incumbent government breaks. As such, junior members are able to extract some concessions from their partners even if they control only a small share of government seats. Therefore, in such a case, both senior and junior partners make concessions to each other to remain in office, and both affect government policies equally.

Finally, junior partners can be the party dominating a coalition government as well. In this case, they control all exit power because only they can credibly threaten to exit the incumbent government. Therefore, such a highly powerful junior party is the only government actor able to extract concessions. In sum, junior coalition members can extract greater concessions from their partners, the more relative exit power they control.

Hypothesis. *A junior coalition member's ability to extract concessions from its partners increases in its relative exit power.*

The question remains, however, why a formateur would invite powerful junior partners into government if those could bring down the coalition by entering one of their outside options before the next general elections. The best case scenario for the formateur is not having to grant any concessions to its coalition partners. This is possible if the formateur itself is powerful and has many equally attractive governments to choose from. In such a case, it prefers to enter into a coalition with weak partners only. At the other extreme, the formateur clearly prefers having a powerful junior partner to the worst case scenario of suspending coalition negotiations and conferring the formateur status to the next largest party.

When inviting powerful junior parties into government, the formateur has to grant them concessions. At the same time, however, the formateur itself is still able to secure concessions as well. Moreover, once a bargain is struck, it is one that is desirable to all

actors involved. If presented with the choice between two equally attractive potential junior partners which only differ in their exit power, the formateur will choose to form a government with the weaker party. If they differ in attractiveness as well, however, the formateur will enter office with the more powerful party if it is significantly more attractive than the weaker one. Moreover, entering office with one powerful party is preferred to entering government with several parties that, combined, have great exit power as well. With increasing transaction costs, the marginal cost of adding one powerful junior partner to the coalition is smaller than adding several weaker ones.

Powerful junior partners, on the other hand, enter a coalition because they prefer it to not entering government at all. Junior partners depend on being invited into government by the formateur, so not entering a proposed coalition always bears the risk of foregoing government office entirely. Powerful junior coalition members can only exert their power and extract concessions if they are in government. Kingmaker parties arise as a special case of this dynamic. If such party a exists, this small party is located in between two large parties. For each of the large parties, the kingmaker is the only option to avoid entering office with the other large one. Therefore, in such a case, the formateur simply does not have any options other than inviting a kingmaker party into the government, which can have great bargaining power even if it controls only a small number of seats.

2.3.3 Exit Power and Variation in Government Spending

The general hypothesis derived above that junior coalition members' ability to extract concessions increases in their relative exit power can be tested using government spending. As mentioned above, concessions that are granted to coalition members, such as increased spending on policies, are reflected in overall spending. Moreover, spending questions loom large during the entire life cycle of a coalition government, with failure to agree often leading to the collapse of coalition negotiations or the government itself. As

such, I expect government spending to vary depending on the distribution of exit power across coalition parties.

Extant studies on the determinants of government spending assume that all governing parties are able to extract spending for their constituents. This line of research can be traced back to Weingast, Shepsle, and Johnsen's "Law of $1/n$ ", which holds that the size of policies increases in the number of districts, and thus, the size of parliament (Weingast, Shepsle, & Johnsen 1981, p. 654). Applied to parliamentary systems, extant research suggests that government spending increases in the number of government parties (Bawn & Rosenbluth 2006; Martin & Vanberg 2013; Persson et al. 2007). Each party in government caters to a different group of voters and seeks to implement policies that reward these constituents in order to maximize the probability of receiving their votes again and being re-elected in the next election. Since such policies necessarily cost money, overall government spending is expected to increase in the number of different constituencies represented in government, and therefore, the number of parties in office. Thus, single-party governments are expected to spend less than coalition governments in general, while coalitions are expected to spend more, the more parties they comprise (Bawn & Rosenbluth 2006; Martin & Vanberg 2013; Persson et al. 2007).

However, coalition governments also vary in their spending patterns. Coalitions exhibit higher levels of debt and deficit, for instance, the more fractionalized and polarized they are (Franzese 2002). In addition, recent research finds that the effect of the number of government parties on overall spending is conditional on the institutional context. Where the institutional strength of the Finance Minister is great (Hallerberg et al. 2007; Hallerberg & von Hagen 1997) or the level of budgetary constraints is high (Martin & Vanberg 2013), overall spending, indeed, does not increase in the number of government parties. Accounting for the international political environment, Clark and Hallerberg also find that the raw number of government parties does not have a significant effect on government debt (Clark & Hallerberg 2000). These accounts, however, still assume all

governing parties to be equally able to extract spending. Parties' ability to do so does not differ across them but is constrained by the institutional context in which they operate. In contrast, I argue that governing parties differ greatly with respect to their bargaining power and, thus, their ability to extract concessions from their government partners. I expect government spending to reflect the extent to which exit power is concentrated in one governing party.

As explained above, all governing parties can control no to all exit power in a coalition government. If one party, whether a junior or senior coalition member, concentrates all exit power in its hands, only this party can extract concessions and affect spending. Adding more parties to the government will not increase spending since these weak coalition members are not able to credibly threaten to exit the government, and thus, cannot extract any concessions. The strongest party, on the other hand, controls all exit power, so it does not have to grant concessions to its coalition partners. Therefore, in contrast to the existing literature on government spending, I do not expect spending to increase in the number of governing parties to the extent that exit power is concentrated in one party.

The less power the strongest party controls, however, the more concessions its coalition partners can extract. If the strongest party in office controls little exit power, it has to make concessions to its partners to remain in government. In such a case, I expect an additional government party to increase spending. Therefore, I argue that spending increases in the number of governing parties in a subset of cases where the strongest party controls little exit power relative to its coalition partners.

Proposition. *Government spending only increases in the number of parties to the extent that the strongest party controls little exit power.*

2.4 Data and Method

In this section, I first explain how I measure governing parties' relative exit power. Next, I describe the data that I use to test the proposition derived above that government spending only increases in the number of parties to the extent that the strongest party controls little exit power. Lastly, I describe the method and sample I use in my empirical analysis.

2.4.1 Measuring Exit Power

In contrast to existing empirical research on multiparty policy-making, I develop a new, theoretically driven and computationally complex measure of governing parties' exit power that is comparable cross-nationally and over time. The Technical Appendix provides a more detailed description of the generation of this new measure as well as a discussion of how it differs from other measures of bargaining power. This measure captures each governing party's next best option in case bargaining in the incumbent government breaks down, which is the crucial component of bargaining models of any kind (Nash 1950; Rubinstein 1982). I construct this measure for all government parties in developed democracies for the entire post-war era². To capture the formation likelihood and attractiveness of each party's outside options, I use data on each parliamentary party's number of seats (Döring & Manow 2012; EJPR 1974–2011; Mackie & Rose 1991; Nordsieck 1997–2016), their ideological position on the general left-right scale (Budge, Klingemann, Volkens, Bara, & (eds.) 2001; Klingemann, Volkens, Bara, Budge, & McDonald 2006; Volkens et al. 2013), and the partisan composition of governments (EJPR 1974–2011; Woldendorp, Keman, & Budge 2000). For the construction of the new exit power measure, the unit of analysis is each government formation process. Parliamentary parties enter a new government formation process after each general election or if

²My sample includes Western and Eastern Europe as well as Australia, Canada, and New Zealand.

the partisan composition of the government changes in between elections.

To measure exit power, I generate all $2^n - 1$ potential governments that can form from any n -party parliament. That is, I generate all governments containing one, two, three, etc. parties that can form up to the one including all parliamentary parties. I do this for all government formation processes in all developed democracies during the post-war era where more than two and up to twelve political parties entered parliament³. I generate the relative exit power measure for all parties that were in office in developed democracies between the first democratic election after the Second World War and 2012⁴. The data set from which I generate this measure contains almost 120,000 potential governments.

The expected utility of outside options is determined by their formation likelihood and ideological attractiveness to each of their potential members. I estimate each potential government's formation likelihood following Martin and Stevenson's approach (Martin & Stevenson 2001), however, I extend the time period covered to 2012 and the sample of countries covered to include Central and Eastern European countries after democratization. Moreover, I include all potential governments in the sample, not excluding any minority or surplus governments, even including the government comprising all parliamentary parties. Following Martin and Stevenson, I estimate a conditional logit model regressing a dummy variable of whether or not the government in fact formed after the formation process on a number of explanatory variables that have been found to affect the likelihood of a government entering office (Martin & Stevenson 2001).

These variables are based on the findings of the government formation literature and include characteristics of the governments' size and ideological composition (see the dis-

³I choose the cutoff of twelve parties as the computation becomes too challenging from thirteen parties onward. Moreover, between 1945 and 2012, only one government formation process (Italy after the 2006 general elections) saw thirteen parliamentary parties compete to enter government. In addition, the ideological position of the parties in government is the same in the CMP data, hence, for these two reasons, I drop the government parties that entered office after the general election of 2006 (Budge et al. 2001; Klingemann et al. 2006; Volkens et al. 2013)

⁴For the Eastern European countries in my sample, I calculate each governing party's relative exit power starting with the second democratic election after democratization.

cussion in section 3.1). I expect a potential government to be more likely to enter office if it is a single-party majority government; if it crosses the parliamentary majority threshold; if it is a minimum winning coalition; and if government parties are adjacent to each other on the ideological dimension (see Table 1). In contrast, I expect governments to be less likely to form if they are surplus governments, including parties not needed to cross the majority threshold, and if the two most extreme parties in the government are located far away from each other on the ideological scale. This is because compromise is harder to reach, the more actors are involved in the decision-making process, and the farther apart they are from each other ideologically. The results of the conditional logit estimation support these expectations. For all potential governments that can form, I generate the predicted values from this estimation and use them as the measure of these potential governments' formation likelihood. This measure is constrained between zero and one and constant for each potential government member.

Table 2.1: Outside Option Formation Likelihood

Variable	Effect on Formation Likelihood
Single-Party Majority Government	+
Majority Government	+
Minimum Winning Coalition	+
Ideologically Connected Government	+
Surplus Coalition	-
Ideological Range	-

For the attractiveness of each potential government, I calculate the distance between each government party's ideological position and the potential government's position. I use each potential government's center of gravity as the measure of its ideological position, that is, I generate the seat share-weighted average ideological position of its members. Since a government's attractiveness decreases in this distance, I re-scale the measure, restrict it to positive values for ease of interpretation, and take the square root of

it⁵.

Finally, I calculate the expected utility of each outside option for each of its member parties by multiplying its formation likelihood by its party-specific attractiveness. To generate each government party's exit power, I sum the expected utilities of all outside options that a government party can enter, excluding the government that in fact formed after each government formation process. Since I argue that a party's *relative* exit power determines its ability to extract concessions, I calculate the share of exit power each government party controls. For this, I divide each governing party's exit power by the sum of all governing parties' exit power.

This new measure of governing parties' exit power differs from existing measures of parties' bargaining power, such as the Shapley-Shubik index (Shapley & Shubik 1954), that restrict the set of potential governments that are considered. The Shapley-Shubik index, for instance, only considers minimum winning coalitions. However, since minority and surplus governments make up one third and one fourth, respectively, of all governments formed in the post-war era, I do not exclude any potential government a priori to capture the fullest and most realistic set of options that parties face while bargaining (Crombez 1996; Strøm 1984; Volden & Carrubba 2004). Moreover, potential governments whose likelihood of entering office is miniscule, such as a single-party minority government of small parties, do not contribute to these parties' exit power greatly because their formation likelihood is small, even if they are highly attractive.

⁵I do this by multiplying the measure by (-1) and adding the observed maximum disutility in each country. Compared to other measures of parties' policy positions, such as expert surveys, the CMP data exhibit more and greater changes in parties' ideological positions. Moreover, such changes often involve parties leapfrogging over others. This suggests that changes tend to be over-estimated, so I use the square root to transform the attractiveness measure.

2.4.2 Data and Research Design

I now turn to describing the data and method used to test the proposition that spending only increases in the number of government parties to the extent that the strongest party holds little exit power. I test this proposition by interacting the *Number of Parties* (weighted by the share of days in office) with the share of exit power the strongest party controls (*Exit Power Strongest Party*). The average number of parties in the sample is 2.7, with a minimum of just over 1, for cases where single-party governments are in office for the vast majority of the year, and a maximum of six (see Table 2). Theoretically, the share of exit power the strongest party controls ranges from zero to one. Empirically, however, it ranges from 15 to 98 percent of all exit power, with a mean of just over half of exit power at 53 percent.

Since I expect spending to increase in the number of government parties only to the extent that the strongest party holds relatively little exit power, I expect the coefficient of the *Number of Parties* to be positive. However, as I argue that this dynamic is mitigated by high levels of exit power concentration in one party, I expect the interaction term (*Number of Parties* \times *Strongest*) to have a negative effect on government spending.

The dependent variable in the following analyses, *Government Spending*, is measured as the government's total disbursements as a share of GDP (Armingeon, Isler, Knöpfel, Weisstanner, & Engler 2015) and ranges from a quarter of GDP to just over 70 percent of GDP with a mean of 46 percent. I include a number of control variables that are in line with previous studies on the determinants of government spending. I control for the *Unemployment Rate*, the share of the *Dependent Population* (younger than 15 or older than 65) (OECD 2015), *GDP per capita* in thousand 2010 US Dollars (OECD 2016), and capital accounts *Openness* (Armingeon et al. 2015). The unemployment rate ranges from 0.3 to almost 20 percent, with a mean of just below seven percent. GDP per capita is measured in thousands of 2010 US Dollars and has a mean value of \$29,470. The minimum lies at just below \$11,000, while the maximum lies at over \$61,000. On average around one

third of the population is classified as dependent, ranging from almost 29 percent to just over 42 percent. Finally, capital account openness has a mean value of 0.74 and ranges from zero to one.

Moreover, I also include the government's ideological position as a control. In contrast to extant research, I generate the government's *Exit Power Ideology* to measure the government's overall position on the left-right dimension. Instead of weighting each governing party's ideological position by its share of government seats, I use its share of exit power as the weight. Greater values of this measure mean that governments are located farther to the right of the general left-right dimension, that is, exit power is concentrated in right-wing parties. I expect governments to spend less if exit power is concentrated in right-wing parties and to spend more if exit power is concentrated in left-wing parties. Left-of-center parties prefer greater levels of spending and redistribution since their core constituents are more likely to be hurt by unemployment, for instance (Hibbs 1987). Right-of-center parties, on the other hand, prefer to decrease government spending or to keep it at its status quo (Hibbs 1987). The average ideological position of governments (*Exit Power Ideology*) lies slightly to the left of the left-right dimension at -0.46 and ranges from -36.25 to 60.90.

Table 2.2: Summary Statistics

Variable	Mean	Std. Dev.	Minimum	Maximum	N
Government Spending (% GDP)	46.66	7.46	25.55	70.207	527
Number of Parties	2.70	1.05	1.06	6	527
Exit Power Strongest Party	0.53	0.20	0.15	0.98	527
Exit Power Ideology	-0.46	15.40	-36.25	60.90	527
Unemployment Rate	6.92	3.70	0.3	19.9	527
GDP per capita	29.47	9.62	10.95	61.42	527
Dependent Population	33.79	2.32	28.69	42.08	527
Openness	0.74	0.31	0	1	527

In line with previous research, all political variables enter the estimation as their first

lag. This is due to the fact that the budget at time t is decided and passed at $t - 1$. I include all economic controls as lagged as well as contemporaneous variables. Economic conditions at $t - 1$ influence the decision-making process, and economic conditions at t affect automatic responses in spending. The results are robust to a number of different specifications of the control variables, such as changes and lags only. I use panel-corrected standard errors to address heteroskedasticity (Beck & Katz 1995) and include the lagged dependent variable to account for serially correlated errors (Beck 2001; Beck & Katz 1996), both standard in this literature (Bawn & Rosenbluth 2006; Martin & Vanberg 2013). In the next section, I present results both with and without country-fixed effects.

My argument about intra-governmental dynamics of policy-making hinges on inter-party bargaining in government, so I restrict my sample to multiparty governments. With only one party in government in single-party governments, the crucial bargaining takes place within the government party rather than between coalition members. Thus, since the dynamic of interest is absent in these cases, I only include coalition governments in the main empirical analyses. Given data availability of the economic variables, my final data set includes coalition governments in developed democracies⁶ between 1970 and 2012.

2.5 Results

In this section, I present results from empirical analyses testing the proposition that government spending only increases in the number of parties to the extent that the strongest party controls little exit power. First, I discuss how parties' relative exit power and government seat shares compare and how strong and large Prime Ministers' parties are. Next, I present some bivariate relationship between spending across governments

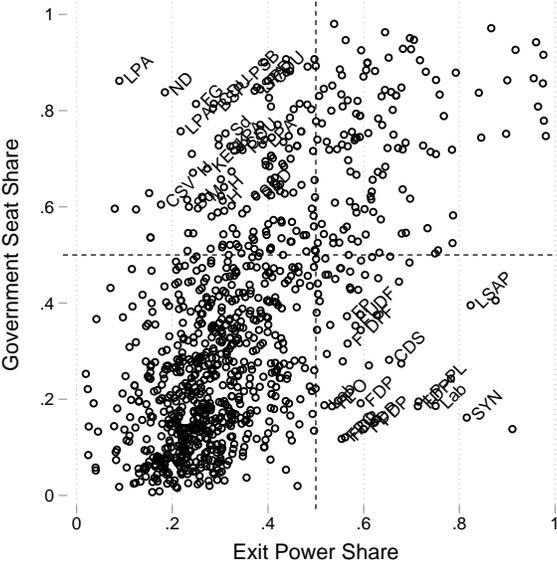
⁶These include Australia, Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Slovenia, Spain, and Sweden.

and the number of government parties and the strongest party's bargaining power. Finally, I will discuss results on the determinants of government spending in coalition governments.

2.5.1 Exit Power, Seat Shares, and Prime Ministers

Before I turn to discussing variation in government spending and results of the analysis of government spending, I focus on a comparison of parties' exit power and their size in government seats. Figure 1 plots each governing party's share of government seats against its share of total exit power. It also highlights cases located along the off-diagonal – parties that control a small share of government seats but great relative exit power or vice versa. Regressing parties' seat shares on their exit power, exit power has a coefficient of 0.97, and the intercept falls at 0.01.

Figure 2.1: Government Parties' Share of Exit Power vs. Share of Government Seats



I generate the new exit power measure for a total of 1,174 government parties in de-

veloped democracies during the postwar era. Of those, 404 parties are simultaneously the strongest and largest party in government. While this includes all 178 single-party governments in the sample, this number also contains 115 such parties in two-party governments, 54 in three-party governments, 42 in four-party governments, 13 in five-party governments, and two in six-party governments. Thus, exit power is not solely measuring junior coalition parties' bargaining power but also captures those cases where a large party can substitute its smaller coalition partners and still remain in office. One example is the Italian DC which regularly entered office with a number of smaller coalition partners that it could easily replace. In contrast, in 73 cases the smallest party is the most powerful coalition partner, with the majority of these cases, 52, occurring in two-party governments. Examples include classic kingmaker parties like the German FDP as well as the Labour Party in Ireland and Social Democrats in the Netherlands and Luxembourg.

117 coalition parties (in addition to all single-party governments) control more than half of the government's seats and also score more than 0.5 in exit power. Further dividing both exit power and seat shares into quintiles, I can compare how often parties fall into the same quintiles in both measures. Only 187 parties in governments, including all 178 single-party governments, fall into the highest quintile for both measures. 22 government parties fall into both fourth quintiles, 70 into both third quintiles, 183 into both second quintiles, and 100 fall into the first quintile of both exit power and seat shares.

Of the 1,174 total parties in government, 448 control the Prime Minister's post. Moreover, of all parties in the sample, 516 control most exit power. Of these most powerful parties, 318 also hold the Prime Minister's position. Similarly, 526 of 1,174 parties are the largest party in office, and of these, 404 also control the Prime Ministership. Of the 404 parties that are the most powerful and the largest in office, 318 are also the Prime Minister's party. Thus, the majority of parties that dominate government in terms of either exit power, seat share, or both also control the Prime Minister's post. In coalition governments, the Prime Minister's party's relative share of exit power lies at 0.43 on

average, ranging from a minimum of 0.03 to a maximum of 0.98. Similarly, the Prime Minister's party controls an average of 59 percent of government seats, ranging from a low of four percent to a high of 98 percent.

I now turn to illustrating the difference between parties' exit power and government seat shares by highlighting a few cases. For ease of interpretation, I consider two-party coalitions that illustrate the relationship between the strongest party's exit power and policy concessions granted to its partner. Some small junior coalition members are able to extract significantly greater concessions from their partners than others. As mentioned above, classic kingmaker parties can fall into the category of small but very powerful governing parties, however, this is not automatically the case. Moreover, kingmaker parties are not the only parties in this category. While these parties' share of government seats cannot explain their ability to extract concessions, the credibility of their exit threats can.

An example of a classic kingmaker party that is often able to extract great concessions is the German FDP. In the two governments in office between 1987 and 1994 (1987 to 1990 and 1990 to 1994), the FDP controlled 17 and 20 percent of the governments seats, respectively, and held slightly more than one third of relative exit power (0.36 and 0.34, respectively). Its coalition partner, the Christian Democrats (CDU), thus, controlled just under two thirds of exit power. Government spending between 1988 and 1995 generally ranged from 43 to 48 percent of GDP⁷. In the succeeding government, the FDP was again in office with the CDU and controlled 14 percent of seats but 60 percent of the government's exit power. Thus, in this coalition, the FDP was the strongest party but held less exit power than the CDU in the preceding legislative term. Between 1995 and 1999, government spending increased to range from 48 to 49 percent of GDP. This brief example lends some initial support to the proposition derived above, and also illustrates that kingmaker parties do not automatically have greater exit power than their larger partners.

Denmark's Conservative People's Party (KF) is another example of a junior party that

⁷Spending in 1995 was an usually high outlier at 54 percent of GDP.

can sometimes extract concessions from its partners. In contrast to the FDP, the KF's ideological position is not consistently central compared to other parliamentary parties, and it is not a kingmaker party since the parliamentary bargaining context in Denmark is comprised of up to eleven parliamentary parties. After the general elections in 2005, the KF entered a coalition government with the Liberals (V) as the junior partner, controlling just over one quarter of the government's seats. Its exit power, however, was greater at almost 0.42. The Liberals, thus, controlled almost three quarters of seats and 0.58 of exit power. Government spending made up 49.82 percent of GDP in 2006 and 49.58 percent of GDP in 2007. After the general elections in 2007, both parties remained in office with similar seat shares but with different exit power. After 2007, the Liberals controlled 72 percent of government seats and 53 percent of exit power, while the Conservative People's Party controlled 28 percent of seats and 47 percent of exit power. Over the next four years, government spending increased from 50.52 percent of GDP in 2008 to 58.78 percent of GDP in 2012. Starting in 2009, spending was consistently at around 57 percent of GDP. In this example, the strongest party in government remained the same, however, its exit power decreased from one legislative term to the next. At the same time, government spending as a share of GDP increased from around half of Denmark's GDP to slightly under 60 percent. Thus, as the KF's exit power increased, it was able to extract concessions, thereby increasing total government spending.

In addition to parties whose ability (or inability) to extract concessions cannot be explained by their size in government seat shares, the credibility of governing parties' exit threats can also explain parties that control a great (small) share of government seats *and* exit power. Examples of small parties that cannot extract concessions from their coalition partners are Green parties. These are generally located farther to the left of the ideological dimension than their coalition partners and hold few seats, so they cannot credibly threaten to exit governments. Government spending in Finland in the late 1990s and early 2000s varies between 47 and 51 percent of GDP, irrespective of whether or not

Green parties are in office, for instance. Similarly, large parties that enter office with a number of smaller parties, such as the Italian DC, are in a bargaining advantage relative to their smaller coalition partners. In these cases, parties controlling many government seats also hold great relative exit power.

2.5.2 Variation in Government Spending

In this section, I will briefly discuss the bivariate relationship between the number of government parties and spending as well as the relationship between the strongest party's exit power and spending. The left panel of Figure 2 plots government spending against the number of government parties for all coalitions in my sample, while the right panel restricts the sample to Western European countries. In both panels, government spending increases from just over 40 percent of GDP for governments with slightly over one party in government⁸ to almost 50 percent of GDP for six-party governments. The relationship is the same regardless of which sample of observations is used. This lends some initial support to arguments positing that each government party can extract additional spending.

However, the figure also shows that the variation in the level of spending differs greatly across coalitions of different size. Government spending as a share of GDP exhibits the smallest variation for five- and six-party governments, with spending ranging from just below 50 percent to just over 60 percent of GDP. Coalitions containing two to four parties, on the other hand exhibit greater variation. For two-party governments, total spending ranges from around 25 percent of GDP to almost 70 percent. In three- and four-party governments, spending ranges from just over 30 percent to 60 percent and from just below 40 percent to over 70 percent of GDP. This clearly shows that not all

⁸These values are due to the fact that I weight the number of parties by days in office. The number of parties can be at just over one if a single-party government is in office for most of the year and is followed or preceded by a coalition government.

coalitions of the same size behave similarly in terms of total government spending.

Figure 2.2: Government Spending and the Number of Government Parties

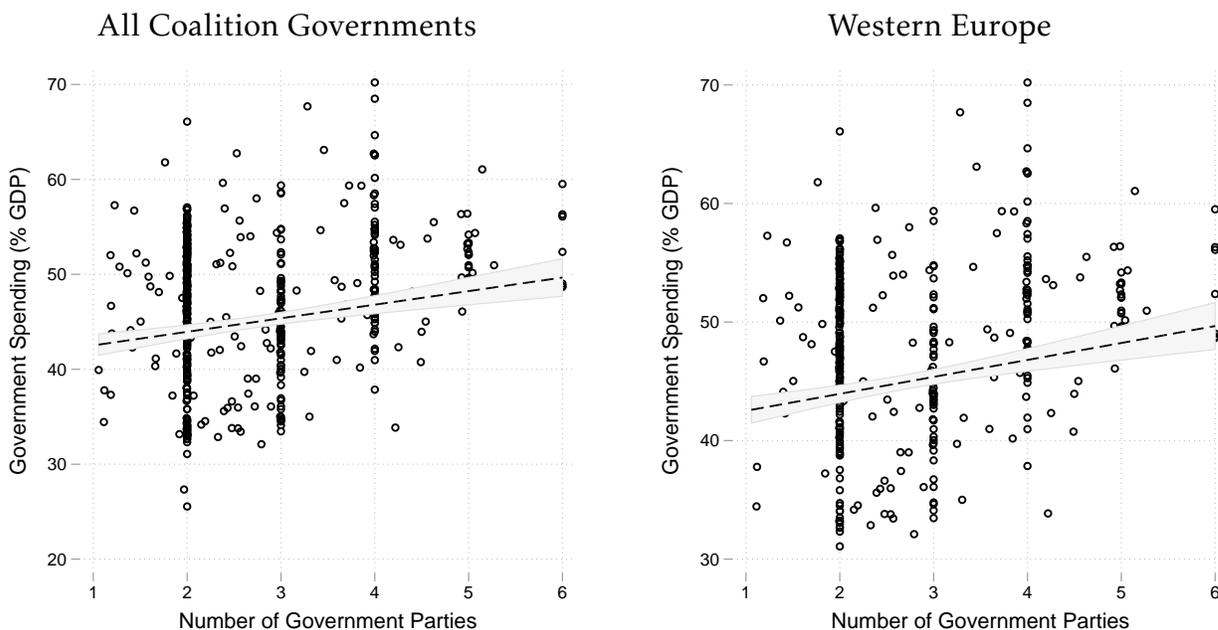
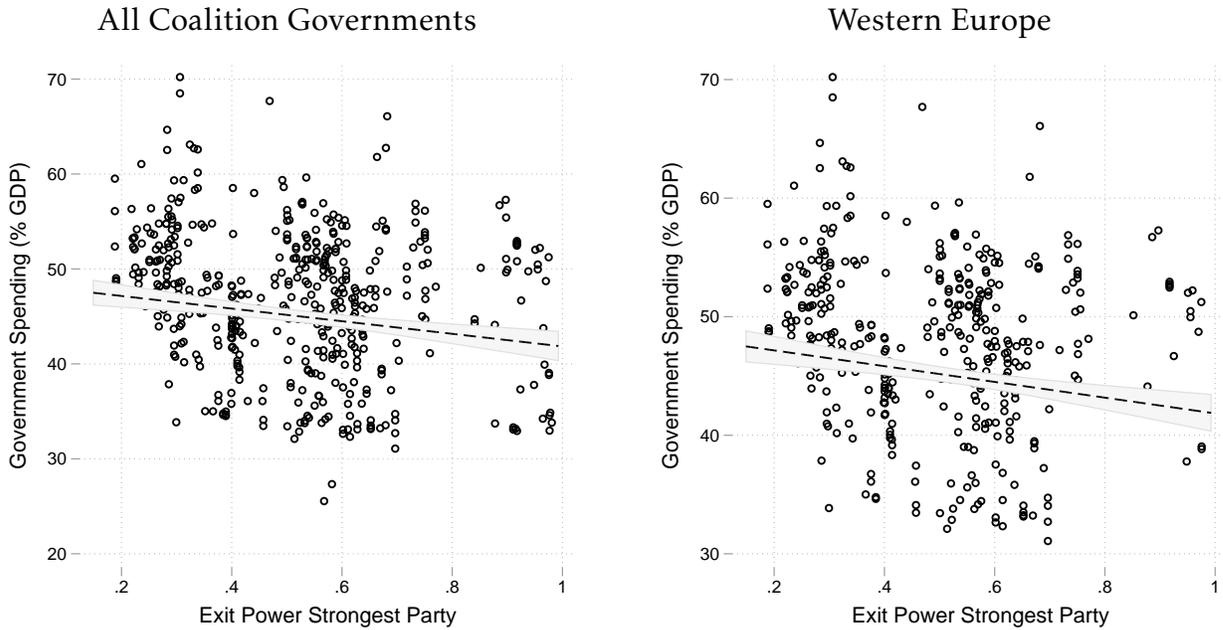


Figure 3 plots government spending against the relative exit power the strongest party controls. As before, the left panel plots this relationship for the full sample of coalition governments, while the right sample restricts it to Western European coalitions. The strongest party's exit power has a negative effect on government spending. Total government spending lies at just under 50 percent of GDP at the minimum of exit power and decreases to just over 40 percent of GDP for governments in which one party concentrates almost all exit power in its hands. The decrease is slightly smaller for Western European coalitions. This lends some initial support to my expectation that the strongest party only has to hand out additional spending to its coalition partners if it controls little exit power. However, as in the preceding figure, the variation in spending is big. While the pattern is not as strong as in the previous figure, the variation in total government spending is smallest at the two extremes of exit power and largest at intermediate levels.

Figure 2.3: Government Spending and Exit Power of the Strongest Party



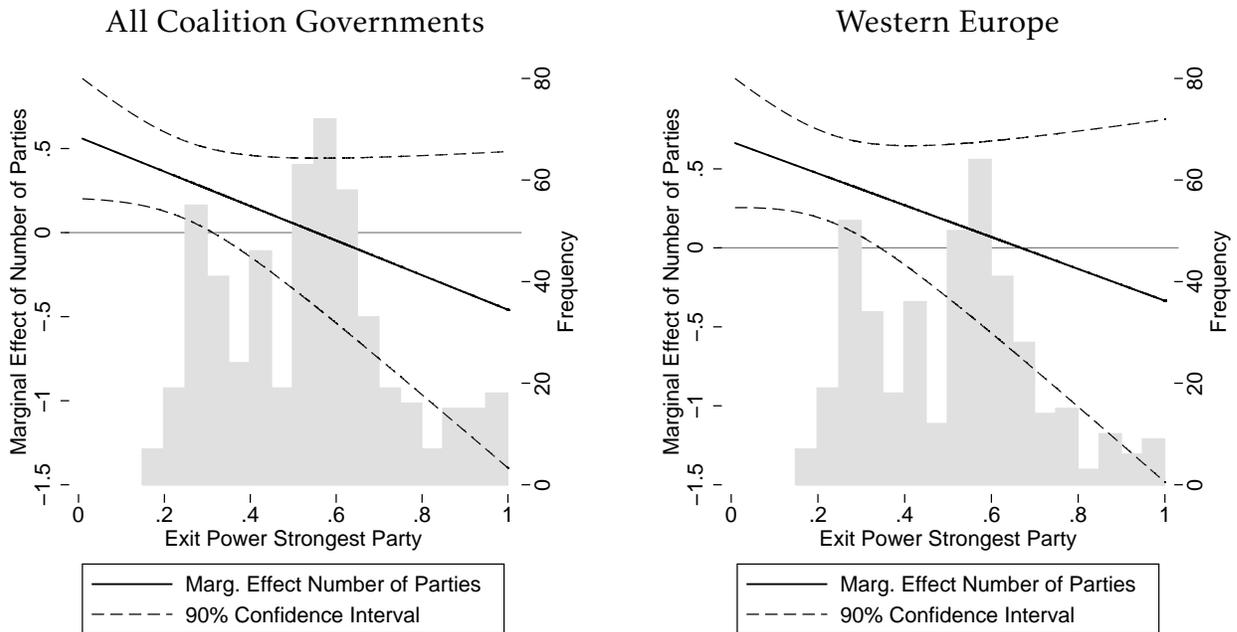
This again shows that not all governments containing the same number of parties nor those characterized by the same distribution of relative exit power exhibit the same pattern in government expenditures. Therefore, in the next section, I analyze the effect of the interaction between the strongest party's share of exit power and the number of parties in government.

2.5.3 The Effect of Exit Power Concentration on Spending

In this section, I present results of an analysis of the determinants of government spending. I find support for the proposition derived above that government spending only increases in the number of governing parties to the extent that the strongest party controls little exit power. As exit power becomes more concentrated in the strongest party, however, adding another party to the coalition does not increase spending. Columns

1 and 2 in Table 3 present results for the full sample of coalition governments in developed democracies between 1970 and 2012. Columns 3 and 4 present results for the subset of Western European coalition governments. This sample of Western European countries has been used to test the relationship between the number of governing parties and spending in state of the art research (Bawn & Rosenbluth 2006; Martin & Vanberg 2013).

Figure 2.4: Exit Power Concentration and Government Spending



I test the proposition that spending only increases in the number of governing parties to the extent that the strongest party controls little relative exit power by including the number of governing parties, the share of exit power of the strongest party, and the interaction of these two variables in my empirical model. If the strongest party controls no exit power at all, an additional governing party increases spending by between 0.5 and up to 0.7 percent of GDP. This effect is statistically significant at least at the five percent level. However, as the strongest party’s exit power increases, this effect is mitigated. If the

Table 2.3: The Effect of Exit Power Concentration on Spending

	All Coalition Governments		Western Europe	
Number of Parties _{t-1}	0.568** (0.223)	0.516** (0.229)	0.672*** (0.254)	0.620** (0.259)
Exit Power Strongest Party _{t-1}	2.571* (1.432)	2.902** (1.433)	3.645** (1.753)	3.817** (1.722)
Number of Parties _{t-1} × Strongest _{t-1}	-1.027 (0.727)	-1.082 (0.733)	-1.007 (0.868)	-0.979 (0.900)
Exit Power Ideology _{t-1}	-0.0134** (0.00550)	-0.0108 (0.00687)	-0.0109* (0.00663)	-0.0100 (0.00764)
Spending _{t-1}	0.938*** (0.0156)	0.833*** (0.0334)	0.922*** (0.0240)	0.822*** (0.0375)
Unemployment Rate _{t-1}	-0.105 (0.113)	-0.104 (0.111)	-0.204 (0.158)	-0.239 (0.154)
Unemployment Rate	0.00695 (0.116)	0.0963 (0.112)	0.115 (0.166)	0.269 (0.165)
GDP per capita _{t-1}	1.411*** (0.179)	1.427*** (0.173)	1.488*** (0.211)	1.447*** (0.210)
GDP per capita	-1.425*** (0.181)	-1.471*** (0.177)	-1.514*** (0.213)	-1.496*** (0.215)
Dependent Population _{t-1}	0.807* (0.474)	0.491 (0.452)	0.720 (0.522)	0.520 (0.505)
Dependent Population	-0.830* (0.477)	-0.617 (0.445)	-0.767 (0.522)	-0.611 (0.500)
Openness _{t-1}	3.428** (1.405)	4.065*** (1.377)	3.991** (1.622)	4.573*** (1.598)
Openness	-3.065** (1.449)	-3.387** (1.446)	-3.367** (1.681)	-3.620** (1.660)
Constant	3.789* (2.158)	14.69*** (4.230)	4.806* (2.830)	12.87*** (4.352)
R^2	0.927	0.933	0.915	0.921
Observations	527	527	418	418
Fixed Effects	No	Yes	No	Yes

Panel-corrected standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

strongest party controls more than one fourth (column 2) or one third (columns 1, 3, 4) of exit power, adding one more party to the government does not lead to greater spending. Figure 4 shows the marginal effect of an additional governing party on spending. The left panel shows the marginal effect for the full sample of coalition governments, and

Table 2.4: Change in Predicted Spending

Exit Power Strongest Party		Δ Number of Parties	Δ Spending (% GDP)
All Coalition Governments			
Minimum	×	Few \rightarrow Many	+1.24***
Mean	×	Few \rightarrow Many	+0.07
Maximum	×	Few \rightarrow Many	-1.31
Western Europe			
Minimum	×	Few \rightarrow Many	+1.56***
Mean	×	Few \rightarrow Many	+0.48
Maximum	×	Few \rightarrow Many	-0.94

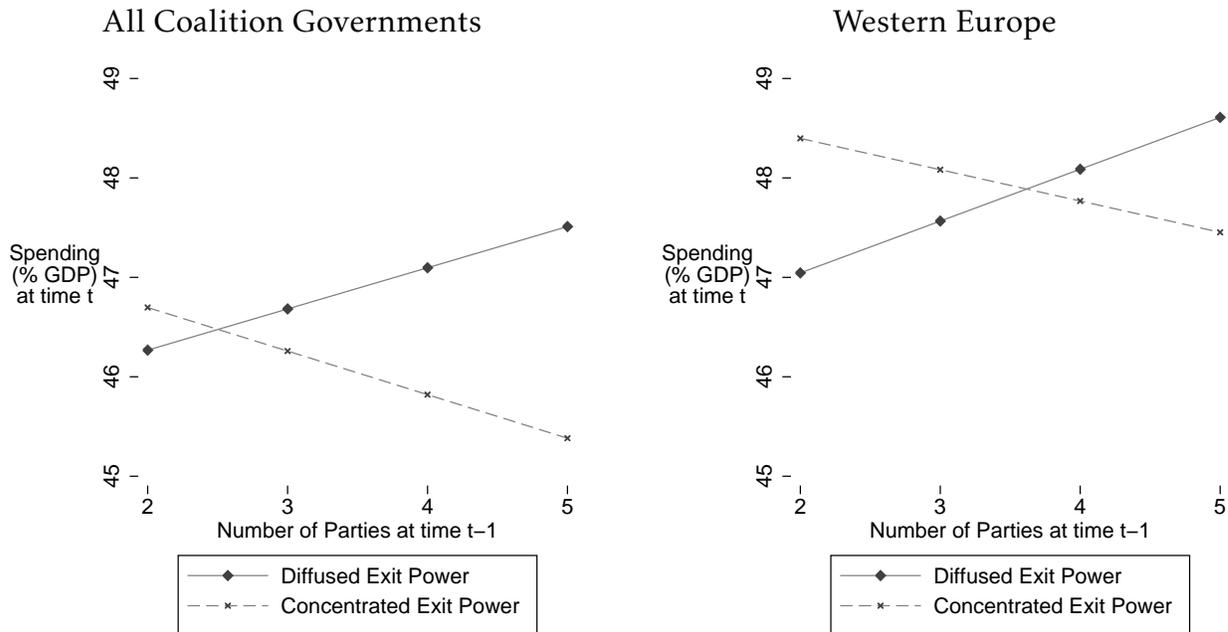
Note: All control variables held at their means

the right panel shows the marginal effect for the restricted sample of Western European coalitions.

Let me illustrate this result by discussing the predicted level of spending for governments where the strongest power holds little to almost all of exit power. For these calculations, only the values of the strongest party's exit power and the number of parties change, while the remaining control variables are held at their mean. If the strongest party's share of exit power is held at its minimum, increasing the number of governing parties from two to five increases predicted spending by 1.24 percent of GDP from 46.27 to 47.51 percent of GDP for the sample containing all coalition governments (see Table 4). In contrast, at the mean and maximum share of exit power the strongest party controls, increasing the number of parties from two to five increases spending by 0.07 (at the mean) and decreases spending by 1.31 (at the minimum) percent of GDP. Similarly, in Western Europe, at the minimum share of exit power the strongest party controls, increasing the number of governing parties from two to five increases predicted spending by 1.56 percent of GDP from 47.04 to 48.61 percent of GDP. Again, at the strongest party's mean share of exit power, predicted spending increases by 0.48 percent of GDP, while predicted spending decreases by 0.94 percent of GDP at the maximum share of exit

power the strongest party controls. Figure 5 depicts these changes graphically.

Figure 2.5: The Number of Parties and Predicted Spending



These results support the proposition that spending only increases in the number of governing parties to the extent that the strongest party holds little exit power. Extant findings on the determinants of government spending, thus, are a special case of these results. They hold if the strongest party controls relatively little exit power, and, therefore, are a subset of the broader dynamics of inter-party bargaining in multiparty governments.

The effect of the government's ideological position is similar to extant studies. The analysis shows that government spending is lower, the farther to the right governments are located on the left-right dimension. That is, governments spend less, the more exit power is concentrated in right-wing parties. A one-unit shift of the government's ideological position to the right decreases spending as a share of GDP by 0.01 to 0.013 percent of GDP. All else equal, shifting the government's center of gravity to the right by one stan-

dard deviation (15.40 and 14.93) decreases spending by 0.21 (all coalition governments) and 0.16 (Western Europe) percent of GDP. This effect reaches statistical significance at the five percent level in models not including country-fixed effects. The magnitude of this effect is very similar to the effects found in previous studies (Bawn & Rosenbluth 2006; Martin & Vanberg 2013).

The effects of the remaining control variables are similar to those found in previous studies as well. The lag of the unemployment rate has a negative, while its contemporaneous measure has a positive effect. Neither, however, reaches statistical significance. The lagged variables of GDP per capita, the share of the dependent population, and openness all have positive, and the contemporaneous variables have negative effects. GDP per capita and openness are statistically significant at least at the five percent level.

These results are robust to a number of different model specifications (see Appendix 1 for a discussion and results). Extending the leading studies on the relationship between the number of government parties and spending, Bawn and Rosenbluth and Martin and Vanberg's studies (Bawn & Rosenbluth 2006; Martin & Vanberg 2013), to account for the strongest party's share of exit power supports the proposition as well. Moreover, including additional control variables, accounting for an AR(1) process, changing the structure of the economic control variables, and restricting the country sample to different sets of countries does not change the main results. These robustness checks further lend support to the above proposition that spending only increases in the number of parties to the extent that the strongest party controls little exit power. As its share of exit power increases, this effect is mitigated.

2.6 Conclusion

To summarize, I find that spending only increases in the number of governing parties if the strongest government party controls little exit power. As the strongest party's share

of exit power increases, this effect is mitigated. These findings help answer the broader question of why some junior coalition members can extract significantly greater concessions from their partners than others.

I argue that junior coalition members' ability to extract concessions from their partners is determined by the credibility of their exit threats. Exit threats, in turn, are only credible if junior partners have outside options of great expected utility, that is, alternative governments they can enter that are both viable and attractive. Since all power is relative, a junior party's share of exit power determines the extent to which it can extract concessions from its coalition partners. Junior coalition members can extract greater concessions, the more relative exit power they control. Those that lack relative bargaining power, on the other hand, are willing to grant concessions to remain in office.

The extent to which junior parties are able to extract concessions is reflected in the government budget. I argue that spending only increases in the number of governing parties to the extent that the strongest party holds little exit power. In this case, the strongest party has to grant concessions to its coalition partners to remain in office. As the strongest party's share of exit power increases, however, this effect is mitigated. At the extreme where the strongest party holds all exit power, only this one party can extract concessions, so adding more parties to the coalition does not affect spending.

I develop a new measure of relative exit power that is theoretically motivated and computationally complex. This new measure captures governing parties' strategic positions relative to their coalition partners and calculates how viable and attractive every outside option is that these parties can enter. I construct this measure for all parties that entered government office in developed democracies during the post-war era. I use it to analyze government spending in developed democracies between 1970 and 2012 and find support for my proposition. Spending only increases in the number of governing parties to the extent that the strongest party controls little exit power. As exit power becomes more concentrated in the strongest party, this effect is mitigated.

This chapter makes three important contributions. First, I conceptualize bargaining power as deriving from governing parties' credible exit threats. The credibility of parties' exit threats explains the great variation in junior coalition members' ability to extract concessions – variation that previous arguments of government formation and multiparty policy-making cannot explain. Second, I develop a new, theoretically motivated measure of governing parties' relative exit power. This new measure captures the expected utility of every potential government that a government party can enter. I construct it for all governing parties in developed democracies between 1945 and 2012. Third, I demonstrate that the extent to which exit power is concentrated in one coalition member explains variation in government spending.

Opening the black box of multiparty policy-making has wide-ranging implications for a variety of different policy areas, coalition negotiations, and government stability. Moreover, analyzing parties' relative exit power also greatly improves our understanding of inter-party bargaining and competition. In addition, understanding intra-governmental bargaining and its effect on policy-making has further implications for questions of representation. Shining light on policy-making in multiparty governments can help us gain a better understanding of whose interests are better represented and why.

This chapter also prompts several new venues of research. Two important questions immediately arise: How does *Exit Power* affect the relative policymaking influence of ideologically diverse governing parties and the composition of the government budget? How does relative bargaining power affect the leverage of potential coalition partners and the allocation of ministerial portfolios across government parties? I answer these two questions and provide further tests of the general hypothesis derived in this chapter in the next two chapters. I find that the composition of the government budget resembles spending preferences of powerful parties more closely. Moreover, government parties' exit power has a positive effect on the salience-weighted share of portfolios they receive.

2.7 Technical Appendix: Measuring Exit Power

In this project, I generate a new measure of bargaining power that captures each actor's next best options in the event of a bargaining breakdown. In this context, where actors are government parties, a government dissolution constitutes a bargaining breakdown. Such a breakdown can be followed by early elections or a reshuffle of government parties, however, all parliamentary parties enter a new government formation process in such a situation (Lupia & Strøm 1995). Thus, to generate the novel exit power measure, the unit of observation is each government formation process.

Table 2.5: The Number of Potential Governments

Parliamentary Parties	Potential Governments
3	7
4	15
5	31
6	63
7	127
8	255
9	511
10	1023
11	2047
12	4095

In any parliament containing n parliamentary parties, $2^n - 1$ potential governments can form. Table 5 reports the number of total potential governments for a parliament containing three to twelve parties. To adequately capture each government party's outside options, I simulate all $2^n - 1$ potential governments that can form during each formation process in developed democracies between the first democratic election after 1945 and 2012. The full sample of countries for which I generate this measure includes Australia, Austria, Belgium, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, the Nether-

lands, New Zealand, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom. In total, the number of potential governments is almost 120,000. I do not exclude any government a priori, that is, I simulate all single-party minority governments up to the government containing all parliamentary parties. Table 6 gives an example for a parliament containing four parliamentary parties, A, B, C, and D.

Table 2.6: Potential Governments in a 4-Party Parliament

Parliamentary Parties	Potential Governments
Single-party Governments	A, B, C, D
2-Party Coalitions	AB, AC, AD, BC, BD, CD
3-Party Coalitions	ABC, ABD, ACD, BCD
4-Party Coalition	ABCD

Two types of data are crucial for the exit power measure – each party’s number of parliamentary seats and its ideological position. I obtain the number of parliamentary seats from a variety of sources and cross-validate them. If discrepancies appear between the first two sources, I consult additional sources. I use the election data from the ParlGov project (Döring & Manow 2012) as the baseline and merge the Comparative Manifestos Project (CMP) data (Budge et al. 2001; Klingemann et al. 2006; Volkens et al. 2013) to this data set to add in parties that are not covered by the ParlGov data. For European countries, I cross-validate the number of seats per party obtained from the ParlGov database with data from Parties and Elections (Nordsieck 1997–2016). In case the numbers diverge, I use the yearly political data from the European Journal of Political Research (EJPR 1974–2011) from 1973 onwards and the International Almanac of Electoral History (Mackie & Rose 1991) for elections prior to 1973. In some cases, I resolve discrepancies by consulting national sources (e.g., Portugal⁹). For Australia, Canada, and New Zealand, I use national sources¹⁰ and the International Almanac of Electoral History up

⁹Assembly of the Republic of Portugal (2014)

¹⁰Elections Electoral Commission. New Zealand (2015); Parliament of Canada (2015); The University of

until 1973 and the EJPR data from 1973 onwards to check the seat numbers obtained from the ParlGov database. In case of discrepancies, I opt to use the data obtained from national sources.

Parties' ideological positions can be obtained from the Comparative Manifestos Project (CMP) (Budge et al. 2001; Klingemann et al. 2006; Volkens et al. 2013), the Chapel Hill Expert Surveys (CHES) (Bakker et al. 2012), and a number of additional expert surveys (Benoit & Laver 2006; F. G. Castles & Mair 1984; J. Huber & Inglehart 1995; Laver & Hunt 1992). All ideological positions are based on the general left-right dimension rather than more specific policy dimensions. I compare the coverage of parties and elections as well as the ideological positions of parties obtained from these sources. The total coverage of parties and elections is greatest for the CMP data as they cover all parties running for office in all general elections since 1945. The sample of parties covered and the temporal coverage in expert surveys, on the other hand, is smaller with the first data obtained in the early 1980s in Castles and Mair's work (F. G. Castles & Mair 1984). On the other hand, parties' positions are more volatile in the CMP data, with parties often leapfrogging over others from one election to the next. Nonetheless, I choose to use the more comprehensive CMP data as the source of ideological positions because using expert surveys would exclude a considerable number of government parties, particularly new parties entering office after a short tenure in parliament.

Using all parliamentary parties' seats and ideological positions, I generate the following variables for each potential government: a dummy variable each denoting its status as a single-party majority government, a majority government, a minimum winning coalition, an ideologically connected coalition, and one denoting its status as a surplus government. Finally, I also calculate the ideological range between the two most extreme parties in each potential government and generate a dummy variable indicating if the government in fact entered office. I use all of these variables in a conditional logit model

Western Australia (2015)

to estimate each potential government's political viability, that is, the likelihood of it entering office (Martin & Stevenson 2001):

$$P_{ij} = \frac{\exp(x'_{ij}\beta)}{\sum_{k=0}^{m_i} \exp(x'_{ij}\beta)}$$

Here, I regress the government's status as having entered office on the remaining variables I generated and calculate a predicted value for each potential government. I use this value as the government's formation likelihood. As expected, only governments' surplus status and ideological range have a negative effect on their likelihood of entering office. This first component of the exit power measure ranges between zero and one and is the same for each member of the government.

The second component of the bargaining measure ought to capture how attractive each outside option is to each of its members. Thus, this component varies across government members. I calculate each government's seat share-weighted average ideological position and the distance between this and each member's own ideological position. For single-party governments, this distance is zero as the government's average ideological position is the same as the party's position. Thus, as this distance measures each government's *disutility*, I re-scale the measure by subtracting the empirical maximum disutility per country. For ease of interpretation, I multiply this measure by (-1) to restrict it to positive values. Moreover, I take the square root of the value to account for likely overestimation of movement in the CMP data as can be seen from the many leapfrogging cases.

Finally, for each government party, I multiply the viability of each of its outside options by its attractiveness and sum these expected utilities. I exclude the incumbent government and generate each party's exit power as the share of exit power it contributes to the sum of all government parties' exit power. Again, this measure is one for all single-party governments. In sum, I calculate this new exit power measure for almost 1,200 parties in government.

By measuring both each potential government's viability and ideological appeal, this measure can account for changes in the expected utility of an outside option that stem

to influence whether or not a potential government in fact enters office.

In contrast, existing measures of bargaining power, such as the Banzhaf index (Banzhaf 1965) and the Shapley Shubik index (Shapley & Shubik 1954) measure the share of minimum winning coalitions for which parties are pivotal. Similarly, voting weights are based on the number of minimum winning coalitions parties can enter (Ansolabehere et al. 2005). Moreover, in all three measures, all minimum winning coalitions are weighted equally (Leech 2013), irrespective of which particular parties comprise the coalition. While restricting the set of coalitions to be considered to minimum winning coalitions greatly simplifies computation, in reality less than half of all coalitions that form are, in fact, minimum winning. In the post-war era, one third of all coalitions that formed are minority governments (Crombez 1996; Strøm 1984), and one fourth are surplus governments (Volden & Carrubba 2004). Thus, by excluding these coalitions that can be viable and attractive, existing measures of bargaining power miss important aspects of inter-party bargaining. In contrast, exit power adequately captures these dynamics.

2.8 Appendix 1: Robustness Checks

In this section, I will discuss a number of robustness checks that I perform. The main results from Table 3 are robust to a variety of different model specifications.

First, I replicate and extend the analyses of two leading studies on the relationship between government parties and spending, Bawn and Rosenbluth's (2006) and Martin and Vanberg's studies (2013) (see Table 7). I replicate their original findings (column 1), restrict their sample to coalitions (column 2), and extend the model specification to account for the strongest party's exit power. In all analyses, the control variables are the same as in their original studies.

Restricting Bawn and Rosenbluth's original sample to coalition governments increases the magnitude of the coefficient of the number of parties. Accounting for exit power concentration further changes the results. If the strongest party controls no exit power at all, adding one more party to the coalition increases spending by almost one percent of GDP. This effect is statistically significant at the one percent level and greater in magnitude than the results presented above. As the strongest party's share of exit power increases, this effect is again mitigated. An additional governing party does not lead to greater spending if the strongest party controls great exit power (see top half of Table 7).

In contrast, the number of government parties has a smaller and statistically insignificant effect on spending if Martin and Vanberg's sample is restricted to coalition governments. Accounting for the strongest party's share of exit power further supports the proposition derived above. Adding a party to the government increases spending by 0.56 percent of GDP if the strongest party controls no exit power and budgetary constraints are held at zero. As exit power becomes more concentrated in the strongest party, that is, as its share of exit power increases, an additional governing party does not increase spending (see lower half of Table 7).

Controlling for the effective number of legislative parties does not alter results, either (see Table 8, columns 1 and 2). In addition, accounting for an AR(1) process also leads to

the same results (see Table 8, columns 3 and 4). Controlling only for the lags or changes of the economic controls again supports the proposition derived above (see Table 9). Finally, excluding France due to its majoritarian electoral and semi-presidential system, which lead to a different bargaining environment, does not change the results, either (results not shown here). As in the main analysis, government spending only increases in the number of governing parties to the extent that the strongest party controls relatively little exit power. As its exit power increases, this effect is mitigated.

Table 2.7: Replication and Extension of Previous Studies

	Full Replication	Replication Coalitions	Extension Exit Power
Bawn & Rosenbluth (2006)			
Number of Parties _{t-1}	0.451*** (0.122)	0.509*** (0.152)	0.970*** (0.302)
Exit Power Strongest Party _{t-1}			3.183** (1.595)
Number of Parties _{t-1} × Strongest _{t-1}			-0.920* (0.488)
Observations	447	297	293
Fixed Effects	Yes	Yes	Yes
Martin & Vanberg (2013)			
Number of Parties _{t-1}	0.367** (0.167)	0.101 (0.248)	0.563* (0.292)
Exit Power Strongest Party _{t-1}			4.036*** (1.503)
Number of Parties _{t-1} × Strongest _{t-1}			-1.342** (0.632)
Observations	511	334	326
Fixed Effects	Yes	Yes	Yes

Control variables suppressed

Panel-corrected standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 2.8: Additional Controls and AR(1)

	Additional Controls		AR(1) Process	
Number of Parties _{t-1}	0.525** (0.217)	0.523** (0.229)	0.582** (0.231)	0.529** (0.236)
Exit Power Strongest Party _{t-1}	2.590* (1.436)	2.798* (1.443)	2.645* (1.475)	2.954** (1.466)
Number of Parties _{t-1} × Strongest _{t-1}	-0.954 (0.722)	-1.087 (0.733)	-1.060 (0.750)	-1.114 (0.752)
Exit Power Ideology _{t-1}	-0.0133** (0.00552)	-0.0105 (0.00691)	-0.0136** (0.00579)	-0.0108 (0.00714)
Eff. No. Legislative Parties _{t-1}	0.0540 (0.0841)	-0.0971 (0.124)		
Spending _{t-1}	0.937*** (0.0157)	0.830*** (0.0339)	0.932*** (0.0168)	0.816*** (0.0352)
Unemployment Rate _{t-1}	-0.110 (0.112)	-0.0957 (0.112)	-0.0736 (0.116)	-0.0777 (0.114)
Unemployment Rate	0.0106 (0.116)	0.0951 (0.112)	-0.0207 (0.120)	0.0906 (0.115)
GDP per capita _{t-1}	1.411*** (0.179)	1.430*** (0.173)	1.443*** (0.181)	1.442*** (0.175)
GDP per capita	-1.426*** (0.181)	-1.470*** (0.177)	-1.457*** (0.183)	-1.488*** (0.179)
Dependent Population _{t-1}	0.825* (0.476)	0.466 (0.458)	0.803 (0.503)	0.455 (0.477)
Dependent Population	-0.848* (0.479)	-0.590 (0.451)	-0.823 (0.506)	-0.580 (0.470)
Openness _{t-1}	3.451** (1.408)	3.939*** (1.385)	3.638*** (1.409)	4.266*** (1.379)
Openness	-3.083** (1.451)	-3.302** (1.447)	-3.252** (1.455)	-3.530** (1.453)
Constant	3.643* (2.148)	15.11*** (4.327)	3.920* (2.307)	15.58*** (4.471)
R^2	0.927	0.933	0.918	0.925
Observations	527	527	527	527
Fixed Effects	No	Yes	No	Yes

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 2.9: Different Specification of Controls

	Lags Only		Changes	
Number of Parties _{<i>t</i>-1}	0.648** (0.254)	0.510* (0.267)	0.395* (0.208)	0.447** (0.225)
Exit Power Strongest Party _{<i>t</i>-1}	3.189** (1.574)	3.024* (1.601)	1.603 (1.394)	2.728* (1.428)
Number of Parties _{<i>t</i>-1} × Strongest _{<i>t</i>-1}	-1.448* (0.774)	-1.244 (0.805)	-0.868 (0.727)	-0.934 (0.742)
Exit Power Ideology _{<i>t</i>-1}	-0.0206*** (0.00658)	-0.0249*** (0.00806)	-0.0145*** (0.00552)	-0.0109 (0.00688)
Spending _{<i>t</i>-1}	0.953*** (0.0204)	0.906*** (0.0372)	0.922*** (0.0144)	0.839*** (0.0238)
Unemployment Rate _{<i>t</i>-1}	-0.143*** (0.0417)	-0.149** (0.0596)		
GDP per capita _{<i>t</i>-1}	-0.00614 (0.0164)	0.0129 (0.0327)		
Dependent Population _{<i>t</i>-1}	-0.0358 (0.0665)	-0.0295 (0.112)		
Openness _{<i>t</i>-1}	-0.200 (0.451)	-0.392 (0.675)		
Δ Unemployment Rate			0.0698 (0.114)	0.121 (0.109)
Δ GDP per capita			-1.405*** (0.182)	-1.387*** (0.180)
Δ Dependent Population			-0.720 (0.453)	-0.716* (0.429)
Δ Openness			-3.327** (1.409)	-3.565*** (1.384)
Constant	3.274 (2.314)	6.747 (5.012)	3.714*** (0.991)	9.129*** (1.534)
<i>R</i> ²	0.906	0.911	0.926	0.932
Observations	528	528	527	527
Fixed Effects	No	Yes	No	Yes

Panel-corrected standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

CHAPTER III

Dividing the Pie: Exit Power and the Composition of the Government Budget

3.1 Introduction

Under what conditions are government parties able to influence which policy areas are prioritized and receive more spending than others? In the German general election of 2013, the Christian Democrats (CDU and CSU) won 311 of 631 parliamentary seats, a mere five seats shy of a simple majority (Bundeswahlleiter 2013). They were described as the clear winner of the election (Geis December 19, 2013), but still had to enter a coalition government. Given their success in the election, one might expect them to fare well during coalition negotiations and to easily implement their electoral platform. The ensuing coalition negotiations, however, were the longest since the end of the Second World War (Geis December 19, 2013), and the Christian Democrats were heralded as the losing party (Geis December 19, 2013) with their government partner, the Social Democratic Party, receiving great policy concessions in the coalition agreement, most importantly the rollout of a federal minimum wage (Schuler et al. November 27, 2013).

Why was the clear winner of the election unable to have its way during coalition negotiations? Why were the Social Democrats, controlling 118 fewer seats than the Christian Democrats, able to include many more of their policy position in the coalition agreement

than the Christian Democrats? In this chapter, I argue that government parties' ability to prioritize policy areas over others and to spend more on these core policy areas increases in their relative exit power. Parties can only credibly threaten to exit the incumbent government if they can enter at least one alternative government that is likely to form and ideologically attractive to them. Therefore, parties' exit power increases in the credibility of their exit threats. In the above example, the Christian Democrats had to enter a grand coalition with the Social Democrats because their previous government partner did not enter parliament. Some members even stated the party had no choice but to enter this coalition (Zeit Online December 9, 2013). The Social Democratic Party, in contrast, had other options, and was, thus, able to make their government participation conditional on implementing key campaign promises (Schuler et al. November 27, 2013).

Parties' ability to prioritize their core policies is reflected in the composition of the government budget. First, implementing new policies or extending the reach of existing ones requires additional funds, and thus, has spending implications. Second, given (external) pressures to decrease overall spending due to high levels of government debt and deficits, increasing spending in one area puts pressure on governments to decrease spending in the remaining areas. As such, since increasing spending on one policy area has a direct effect on the composition of the entire budget, governments are faced with complex trade-offs between individual spending categories. I expect the allocation of money across policy areas to reflect parties' spending preferences more closely if they control great exit power.

I use a novel measure of governing parties' exit power to test this expectation. The measure is comparable across countries and over time and captures the formation likelihood and ideological attractiveness of all governing parties' outside options. I generate this measure from a simulation of almost 120,000 potential governments that could have formed in developed democracies during the postwar era. In contrast to the existing literature, I analyze spending on different spending categories simultaneously to account

for dependencies and trade-offs across these categories.

Analyzing the composition of the government budget in developed democracies from 1995 to 2011, I find that, compared to other spending categories, security spending increases in the exit power of right-wing parties. This increase comes at the expense of all other spending categories, but the trade-off is strongest between security and spending on the environment and economic affairs. Moreover, environmental spending decreases in the exit power of right-wing parties. While this decrease benefits all other spending categories, redistribution, security, and education benefit most. Thus, this analysis shows that government parties can influence the allocation of money across spending categories if they have great exit power. Moreover, spending trade-offs in the budget are more complex than the existing literature suggests.

The remainder of this chapter proceeds as follows. The next section provides a brief overview of differences in parties' spending preferences. In the following section, I introduce my argument that parties' bargaining leverage depends on the credibility of their exit threats and derive a testable proposition regarding the composition of the government budget. Next, I describe the data and method used before discussing the results of simultaneous analyses of spending on different spending areas. The final section provides a summary and concludes.

3.2 Differences in Parties' Spending Preferences

Government parties differ with respect to which policies they prioritize, and hence their spending preferences. The typical way of differentiating between policy priorities is to contrast left- and right-wing parties. Parties located on the left of the ideological dimension cater to constituents that are most vulnerable to unemployment, for instance, so they tend to increase redistribution to alleviate potentially adverse effects on their core constituents (Hibbs 1987). Thus, governments composed of left-wing parties are

expected to spend more on welfare than governments composed of right-wing parties. Huber, Ragin, and Stephens (1993) and Hicks and Swank (1992), for instance, find that an increase in the seat share of left-wing parties in government is associated with greater redistribution, a more expansive public sector, and higher welfare spending. However, this is not the case if left-wing governments are faced with a strong center or right-wing opposition in parliament (Hicks & Swank 1992).

Recent research has extended its focus to the determinants of welfare state retrenchment, finding that right-wing cabinets are more likely to retrench than left-wing governments (Korpi & Palme 2003). Allan and Scruggs find that left-wing cabinets are associated with an increase in welfare state efforts only until the early 1980s. For the time period after the early 1980s, in contrast, right-wing governments are associated with cuts to welfare state efforts (Allan & Scruggs 2004). Lipsmeyer (2011), however, finds that partisan differences in welfare spending are conditional on economic conditions. Changes in welfare spending are consistent with the government's ideological composition during economic booms, while there are few differences during busts (Lipsmeyer 2011).

In addition to cutting welfare state spending, right-wing parties are expected to focus on curbing inflation as their core constituents are adversely affected by high inflation (Hibbs 1987). Moreover, governments comprised of right-wing governments are seen as "more hawkish" than those comprised of left-wing parties (Koch & Cranmer 2007, p. 314). As such right-wing governments are expected to increase spending on defense, even at the expense of other policies (Narizny 2003; Palmer 1990). Given these vastly different emphases on policy areas, early research on government expenditures posits that government spending should exhibit a trade-off between *guns*, i.e. right-wing priorities, and *butter*, i.e. left-wing priorities (Russett 1969). The empirical evidence for such spending trade-offs, however, is mixed at best. Domke, Eichenberg, and Kelleher find such trade-offs only if they include post-war years, specifically 1948 to 1954, in their sample (Domke, Eichenberg, & Kelleher 1983). Similarly, Palmer finds trade-offs between de-

fense and social spending only in small NATO countries (Palmer 1990). While Mintz and Huang do not find trade-offs between defense and welfare spending, they find that education spending decreases as defense spending increases (Mintz & Huang 1991). They argue that this is an indirect trade-off because defense spending dampens growth, which then decreases education spending (Mintz & Huang 1991).

In addition to differences in welfare and defense spending, education spending has also been analyzed through the lens of partisan policy-making (Busemeyer 2009). Castles (1989) argues that governments composed of left-wing parties spend more on education than those composed of right-wing parties as part of their emphasis on redistribution. Boix (1997; 1998) arrives at the same expectation, arguing that left-wing parties invest more heavily in education as part of their “interventionist supply-side strategy” which aims at increasing “the productivity of capital and labor” (Boix 1997, p. 817). The empirical evidence for the general expectation that left-wing parties spend more on education, however, is mixed, especially for the recent time period (Ansell 2008; Jensen 2011). Jensen (2011) and Ansell (2008) find that right-wing parties are more in favor of expanding education since their core constituents participate more in and benefit more from education. In addition, Busemeyer and his co-authors analyze which party families have issue-ownership of education policies (Busemeyer, Franzmann, & Garritzmann 2013). They find that, in the majority of Western European countries, Social Democratic and Liberal parties own education policies, however, in at least one quarter of their sample, Conservative parties are the respective issue-owners (Busemeyer et al. 2013).

The existing literature examining the determinants of government spending on certain policy areas generally analyzes one or two policy area in isolation or the trade-offs between them. Research on the entire composition of the budget, in contrast, is less concerned with the effects of political processes – particularly intra-governmental bargaining and decision-making. Creedy and colleagues, for instance, find that “variations in expenditure patterns indeed reflect differences in preferences resulting from cultural

differences across democratic countries” (Creedy, Li, & Moslehi 2011, p. 95). Elsewhere, Creedy and Moslehi (2009) find that governments tend to spend more on public goods relative to transfers, the less skewed wages are. Finally, greater corruption leads to less spending on education and health relative to other spending items (Mauro 1998).

In this chapter, I analyze under what conditions parties are able to implement their policy and spending preferences. In contrast, to existing research, I examine the composition of the entire budget. In the next section, I discuss what enables parties to implement their policy priorities and how this affects how funds are allocated across different spending areas.

3.3 Implementing Spending Preferences

Once in government, parties seek to implement policies that maximize their chances of remaining in office. That is, governing parties seek to implement policies, and thereby increase associated spending, that cater to their voters. Not doing so carries the risk of losing votes and even government office entirely in the next general election. In the US context, Lowry, Alt, and Feree, for instance, find that Republicans in state elections are punished for greater spending and higher taxes, while Democrats are not (Lowry, Alt, & Ferree 1998). Similarly, Giger and Nelson analyze how parties fare at general elections and find that liberal and religious parties in fact gain votes after having reduced welfare efforts while in office (Giger & Nelson 2010).

This relationship between government parties’ electoral performance and the policies previously implemented is more complicated for coalition partners since coalition governance rests on members compromising to implement policies. Parties are more likely to lose votes during general elections if they (appear to) have compromised too much during the legislative term (Fortunato in press; Martin & Vanberg 2011). Fortunato finds that voters are, indeed, less likely to vote for an incumbent party that compromises on poli-

cies (Fortunato in press). This is because voters are more likely to punish compromising parties for bad outcomes and less likely to reward them for positive ones. In addition, compromising parties are more likely to be punished if they are ideologically far away from voters' own positions. Both of these mechanisms hold particularly for voters who previously supported a compromising party (Fortunato in press).

Therefore, all government parties have the incentive to implement their policy priorities to remain in office and not be punished at the polls. However, they differ with respect to their ability to do so. I argue that parties' ability to successfully implement their policy priorities is determined by their relative bargaining power. At one extreme, parties that do not need a coalition partner to enter office are able to implement all of their policy preferences as they do not have to compromise. At the other extreme, a coalition party that does not have any bargaining power is unable to implement its policies at all. As such, parties can only increase spending on their policy priorities if they control great *exit power*. A government party has great exit power if it can credibly threaten to exit the incumbent government. Parties can only credibly threaten to leave the incumbent government if they can enter at least one alternative government that is viable and ideologically attractive.

First, alternative governments differ in their viability as not all of them are equally likely to enter office. Governments are more likely to form, the fewer parties they contain (Riker 1962) and the closer member parties are to each other ideologically (Axelrod 1970; De Swaan 1973). Each alternative government's viability is constant across its members. Second, the same alternative government is not equally attractive to each of its members. The closer each outside option's ideological position is to an individual member party's ideal position, the more attractive it is to this particular party. This is the case because this party can reasonably expect the government's policy output to be close to its ideal policies. Therefore, an outside option is of great expected utility if it is likely to form and ideologically attractive. A governing party can credibly threaten to exit the incumbent

government if it can enter at least one alternative government of great expected utility. Since the expected utility of each outside option is based on parties' parliamentary seats and ideological positions, both of which are common knowledge, coalition parties know how powerful their partners are.

I argue that governing parties' ability to implement their ideologically motivated spending increases in their exit power. Bargaining power, however, is an inherently relative concept so the extent to which governing parties can use exit threats to their advantage depends on their own as well as their partners' bargaining power. A party that has outside options of great expected utility can only implement its ideal policies if its partners lack such options. As such, government parties' willingness to implement policies not in line with their ideal policy program decreases in their relative exit power. If all governing parties have outside options of (roughly) the same expected utility, none has a relative bargaining advantage, so the government's policies will be an equal mix of coalition members' preferred policies.

At the two extremes of relative bargaining power, a governing party can control all or no exit power at all. If one party controls all exit power, it is able to implement its policy preferences without having to compromise with its partners. Conversely, if a governing party controls no relative exit power at all, it cannot implement its preferred policies. Such a party has no leverage over its partners since it cannot credibly threaten to exit the incumbent government. In between these extremes, I expect parties' ability to implement their policies to increase in their relative exit power.

Implementing policies always has spending implications, so I expect the composition of the government budget to reflect the degree to which a party concentrates exit power in its hands. I expect that governments spend more on those spending areas that most closely align with powerful governing parties' policy preferences. That is, I expect welfare spending to increase if left-wing parties have great exit power, while I expect defense spending to increase if right-wing parties are powerful in government. Parties that are

able to implement their preferred policies can then claim credit for putting greater emphasis on policy areas their core voters care most about. This also enables parties to demonstrate to their core voters that they can deliver on their election promises once in office.

However, governments face budget constraints, particularly those countries that are expected to comply with the EU Stability and Growth Pact¹. Therefore, an increase in one spending area puts pressure on governments to decrease spending in the remaining spending categories. Given this increased pressure to decrease total spending, I expect to see trade-offs between spending areas. However, in contrast to previous research, I expect such trade-offs to involve more spending categories than simply welfare and defense spending. Therefore, I argue that governing parties increase spending on policy areas that align most closely with their core ideological profile at the expense of spending on the remaining areas. For instance, I expect spending on defense to increase relative to all other spending areas in the exit power of right-wing government parties.

Proposition. *Relative to other spending areas, governing parties spend more on their policy priorities as their relative exit power increases.*

In contrast to previous research, I analyze all spending areas simultaneously to account for dependencies across spending shares. In the following sections, I will describe the data and method used to test the above proposition. Since spending on all spending categories has to sum up to one, OLS regressions are not appropriate to capture the dependencies across spending areas. Instead, I use seemingly unrelated regressions.

¹Governments are required to keep the budget deficit at below three percent of GDP and government debt at below 60 percent of GDP (European Commission 2016).

3.4 Data and Method

3.4.1 Main Independent Variable – Exit Power

In this section, I describe the data used to test the proposition derived above, starting with a new measure of governing parties' exit power. Using all parliamentary parties' seats (Döring & Manow 2012; EJPR 1974–2011; Mackie & Rose 1991; Nordsieck 1997–2016) and their ideological position on the general left-right scale (Budge et al. 2001; Klingemann et al. 2006; Volkens et al. 2013), I simulate all potential governments that could have formed in developed democracies during the post-war era. This yields around 120,000 potential governments that include all single-party governments (minority and majority) up to the government containing all parliamentary parties. From this data set, I estimate each potential government's formation likelihood and calculate how attractive it is to each of its members.

I follow Martin and Stevenson's (2001) approach to estimate each potential government's formation likelihood. Thus, I use a conditional logit model regressing whether or not a government formed on a number of variables that have been found to affect a potential government's likelihood of entering office. These explanatory variables include the government's ideological range and dummy variables indicating its status as a single-party majority government, a majority or surplus government, a minimum winning coalition, and whether its members are ideologically adjacent to each other (connected). Since compromise is harder to reach if there are more actors in office and the farther apart their ideological preferences are, I expect the ideological range and a government's status as a surplus coalition to decrease its formation likelihood. I expect the remaining variables to have a positive effect on the formation likelihood. The results of the conditional logit model support these expectations. I generate the predicted values from this estimation and use them as the measure of each potential government's formation likelihood. This measure is constrained between zero and one and is constant for each potential govern-

ment member.

For the attractiveness of each potential government, I calculate the distance between each member party's and the potential government's position. I use each potential government's center of gravity as the measure of its ideological position. For this, I generate the seat share-weighted average ideological position of all government parties. Since a government's attractiveness to a particular party decreases in its distance to this party, I re-scale the measure, restrict it to positive values for ease of interpretation, and take the square root².

Finally, I calculate the expected utility of each potential government for each of its member parties. I do this by multiplying its party-specific attractiveness by its formation likelihood. To generate each government party's exit power, I sum the expected utilities of all outside options that a government party can enter, excluding the government that in fact formed. Since I argue that a party's *relative* exit power determines its ability to implement policies, I calculate the share of exit power each government party controls. That means I divide each governing party's exit power by the sum of all governing parties' exit power. I generate this relative exit power measure for all parties that were in office in developed democracies between the first democratic election after the Second World War and 2012³. Parties that are in a single-party majority government have a relative exit power of one since no other party contributes to the government's total exit power.

Using the new measure of government parties' exit power as weights, I generate the main explanatory variable as the weighted average ideological position of the incumbent government, *Government Ideology*. Governments in which right-wing parties have greater leverage over their partners are, thus, placed farther to the right on the general left-right

²I do this by multiplying the measure by (-1) and adding the observed maximum disutility in each country. Compared to other measures of parties' policy positions, such as expert surveys, the CMP data exhibit more and greater changes in parties' ideological positions. Moreover, such changes often involve parties leapfrogging over others. This suggests that changes tend to be over-estimated, so I use the square root of outside options' utility to transform the attractiveness measure.

³For the Eastern European countries in my sample, I calculate each governing party's relative exit power starting with the second democratic election after democratization.

dimension. I weight each party's left-right score from the Comparative Manifestos Project (Budge et al. 2001; Klingemann et al. 2006; Volkens et al. 2013) by its relative exit power, so positive values of the *Government Ideology* variable reflect governments in which right-wing parties have great exit power. In contrast, governments in which left-wing parties have great exit power receive negative values.

3.4.2 Dependent Variable and Controls

I gather data on total government expenditure on specific budget items from the OECD (OECD 2015). These spending items include general public services, defense, public order and safety, economic affairs, environment, housing, health, recreation and culture, education, and social protection. I generate the share of total spending on each of these items and aggregate these ten categories into broader ones. First, I aggregate all spending categories associated with left-wing policy priorities into a *Left* category. This category contains social protection, health, housing, and environmental spending. Similarly, I aggregate right-wing priorities, defense as well as public order and safety, into a *Right* category. The remaining budget items (general public services, economic affairs, education, and recreation and culture) are aggregated into a *Misc* category since I do not have a priori expectations as to which party seeks to increase spending on them. While the theoretical expectations are unclear regarding education spending, economic affairs lumps together individual items that can clearly be associated with parties' ideological preferences, however, expectations cannot be drawn for the overall economic affairs category.

In addition, I aggregate the ten spending categories into more specific ones. I keep spending on the *Environment*, *Education*, and *Economic Affairs* as separate spending categories. For both *Education* and *Economic Affairs*, it is unclear if right-wing parties increase or decrease spending as they gain exit power. Spending on the *Environment* is kept as a

separate category because, while it is a left-wing priority, it is a rather recent one. Social protection, health, and housing are aggregated into a *Redistribution* category, reflecting traditional left-wing priorities. As before, conservative spending priorities (defense and public order and safety) are aggregated into a *Security* category. Finally, the remaining categories, general public services and recreation and culture, are grouped into an *Other* category.

I estimate seemingly unrelated regressions using spending at all levels of aggregation. With respect to the proposition derived above, I expect the share of total spending allocated to *Right* priorities relative to *Left* and *Misc* categories to increase in right-wing parties' exit power. In contrast, I expect spending on *Left* priorities to decrease relative to *Right* spending as right-wing parties control greater exit power in government. With respect to the slightly more disaggregated categories, I expect security spending relative to redistribution and the environment to increase in right-wing parties' exit power. In contrast, I expect government spending on redistribution and the environment to decrease relative to security spending in right-wing parties' exit power. Again, I do not have a priori expectations for the trade-off between education and economic spending relative to traditional right- and left-wing priorities.

As described above and in greater detail in the next section, I estimate the determinants of spending on different categories simultaneously to analyze the spending trade-offs governments dominated by different parties make. In each equation, I control for the effect of GDP growth (Armingeon et al. 2015). Moreover, for redistributive spending and its components, I also control for the unemployment rate and the share of the population older than 65 (OECD 2015). In the education equation, I control for the share of the population younger than 15 (OECD 2015). I expect all of these control variables to have a positive effect on spending shares. Finally, for security spending and its components, I include a dummy variable indicating whether or not the country is part of the Schengen agreement (European Commission 2016). I expect this variable to have a neg-

ative effect on security spending since border controls were abolished for countries that are part of the Schengen area. Since the budget for t is passed at $t - 1$, I use the first lag of all explanatory variables. In all estimations, I control for the lagged dependent variable to account for serially correlated errors and include country-fixed effects to account for heteroskedasticity (Beck 2001; Beck & Katz 1996). Finally, I restrict my analyses to parliamentary systems and semi-presidential systems that are dominated by parliament since the bargaining context in presidential systems and semi-presidential systems where the president has great power is more complicated than reflected in my argument. Due to restrictions on the availability of spending data, my final sample covers annual spending data from 1995 to 2011 and includes Western and Eastern Europe as well as Canada⁴.

3.4.3 Method

In this section, I describe the method I use to test the above proposition. As described above, the existing literature so far has tested the relationship between governments' ideological positions and spending by analyzing one spending category as a share of GDP, not taking into account the remaining spending categories that together make up the government budget. However, data on the allocation of money across different spending categories are compositional. Given budget constraints, an increase in one category increases the pressure to decrease spending on the remaining categories. Moreover, all spending shares sum up to one. As Tomz and colleagues describe, estimating data with such characteristics using OLS imposes assumptions on these data that are not appropriate: "First, OLS assumes that the dependent variable is theoretically unbounded and could fall anywhere on the real number line, whereas in reality each [party's] share [...] must lie between 0 and 1. Second, OLS treats [...] each [share] independently, but they are

⁴The complete sample of countries includes: Austria, Belgium, Canada, the Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Slovenia, Spain, Sweden, and the United Kingdom

not independent because the proportions for all parties must sum to 1” (Tomz, Tucker, & Wittenberg 2002, p.66–67). Thus, analyzing compositional data with OLS leads to biased and inefficient estimates that can also lead to predicted values that cannot be observed in reality, such as negative values or shares greater than one (Katz & King 1999).

Rather than analyzing separate estimations for each share of spending, I use Seemingly Unrelated Regression (Jackson 2002; Tomz et al. 2002). The dependent variables should be transformed as logged odds ratios of the quantity of interest in relation to a baseline category (Jackson 2002). In this case, the dependent variables are the log of the spending shares on each spending category over a baseline category

$$y_i = L_i = \log\left(\frac{S_i}{S_1}\right).$$

Thus, the following system of equations can be estimated simultaneously:

$$\begin{bmatrix} L_2 \\ L_3 \\ \vdots \\ L_J \end{bmatrix} = \begin{bmatrix} X_2 & 0 & 0 & \dots & 0 \\ 0 & X_3 & 0 & \dots & 0 \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ 0 & 0 & 0 & \dots & X_j \end{bmatrix} \begin{bmatrix} B_2 \\ B_3 \\ \vdots \\ B_j \end{bmatrix} + \begin{bmatrix} \omega_2 \\ \omega_3 \\ \vdots \\ \omega_J \end{bmatrix} \quad (3.1)$$

where $\omega_j = u_j + v_j$. This means that the error term is composed of “the conventional stochastic term in statistical models” (u_j) and the “sampling error” (v_j) (Jackson 2002, p. 51). This accounts for the constraints imposed by compositional data in the variance-covariance matrix, so the coefficient estimates obtained from this estimation are unbiased and efficient.

Since I have data on up to ten ($J = 10$) different spending categories, I simultaneously estimate up to nine ($J - 1$) different equations. This is because the spending shares are expressed relative to a baseline category. As Philips and colleagues (2016) argue, analyses of compositional data oftentimes only use one baseline category. However, an increase in one category can come exclusively from a decrease in one other category or from a number of smaller decreases in several others (Philips et al. 2016). Right-wing governments

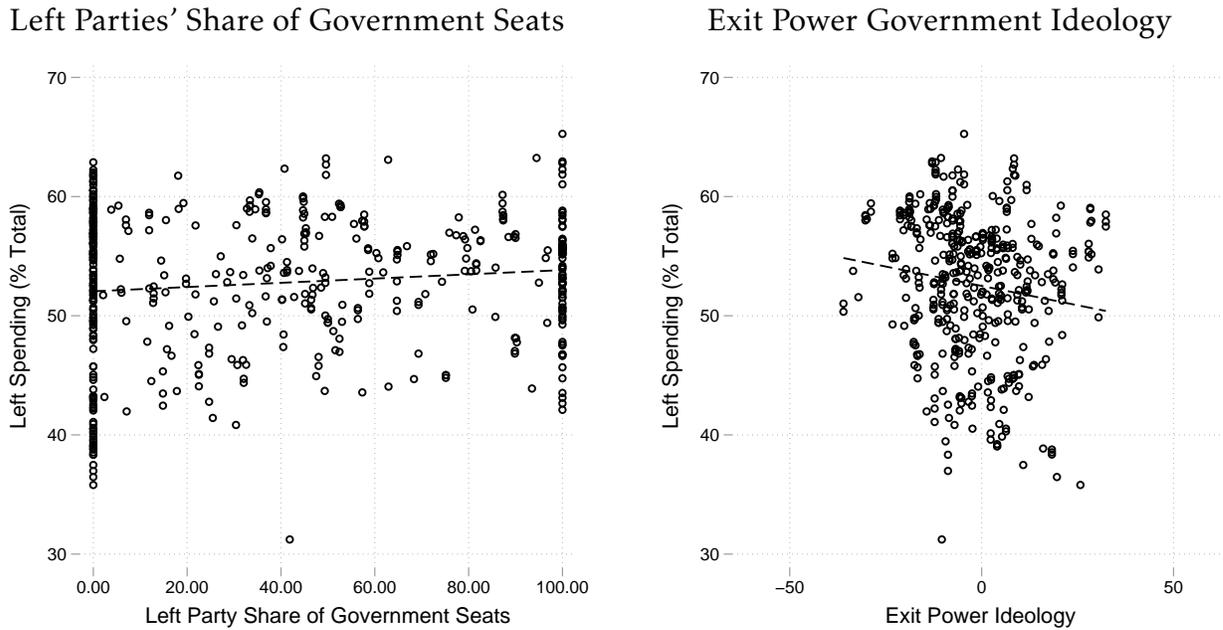
could spend more on security at the expense of redistribution only, for instance, as the existing literature suggests. However, greater security spending could also come at the expense of spending on redistribution and the environment, as I posit above, and/or any other mix of the remaining spending categories. Thus, to assess the trade-offs between different spending categories, in the following analyses, I estimate all models using each category as the baseline once.

3.5 Results

3.5.1 Descriptive Statistics

As mentioned above, existing research tends to analyze spending on individual categories in isolation and as a share of GDP. Moreover, the influence of left- or right-wing parties in government is generally captured as the share of government seats or ministerial portfolios they control. Instead, I argue that parties can only implement their preferred policies, and thereby increase spending on those areas, if they have significant exit power. The left panels in Figures 1 and 2 plot left-wing (Figure 1) and redistributive spending (Figure 2) as a share of total spending against the share of seats left-wing parties control in government (Armingeon et al. 2015). In both panels, the share of government seats left parties control ranges from zero – a government composed of at least one right-wing party – to 100 – a government composed only of one or more left-wing parties. The two left panels in Figures 1 and 2 show that spending on *Left* priorities and *Redistribution* slightly increases in the share of government seats left-wing parties control. The magnitude of the increase, however, is small. The share of total spending spent on left-wing priorities and redistribution is only slightly lower if no left-wing party is in government compared to a government composed entirely of left-wing parties.

Figure 3.1: Left Spending and Government Composition

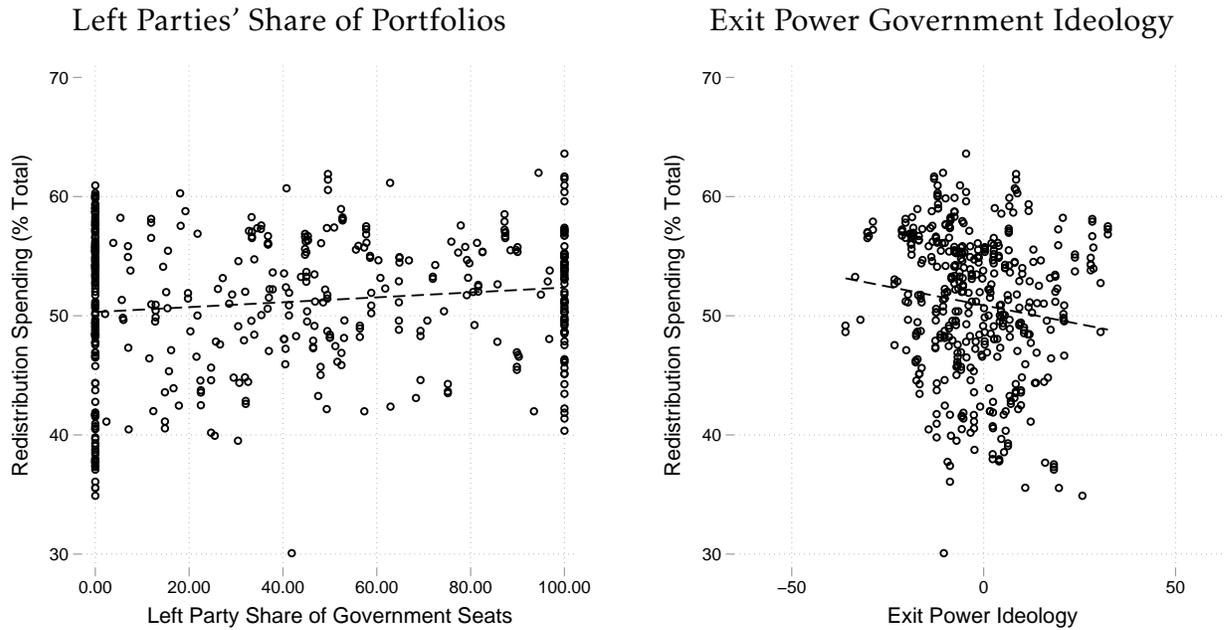


Left spending includes social protection, health, housing, and environment

In contrast, the panel on the right plots *Left* (Figure 1) and *Redistributive* spending (Figure 2) as a share of total spending against the government’s ideological position. As described above, this is calculated as a weighted average of parties’ individual ideological position, using each party’s relative exit power as its weight. Governments in which right-wing parties control great exit power relative to their partners have positive values. Similarly, if left-wing parties control more exit power than their partners, governments are placed farther to the left at negative values. Both figures show that government spending on *Left* issues and *Redistribution* decreases in the governments ideological position, and therefore, in right-wing parties’ exit power.

Similarly, Figure 3 plots government spending on national security (defense and public order and safety) as a share of total spending. The left panel plots security spending against the share of seats right-wing parties control in government (Armingeon et al. 2015), while the right panel plots it against the government’s exit power-weighted ideo-

Figure 3.2: Redistributive Spending and Government Composition

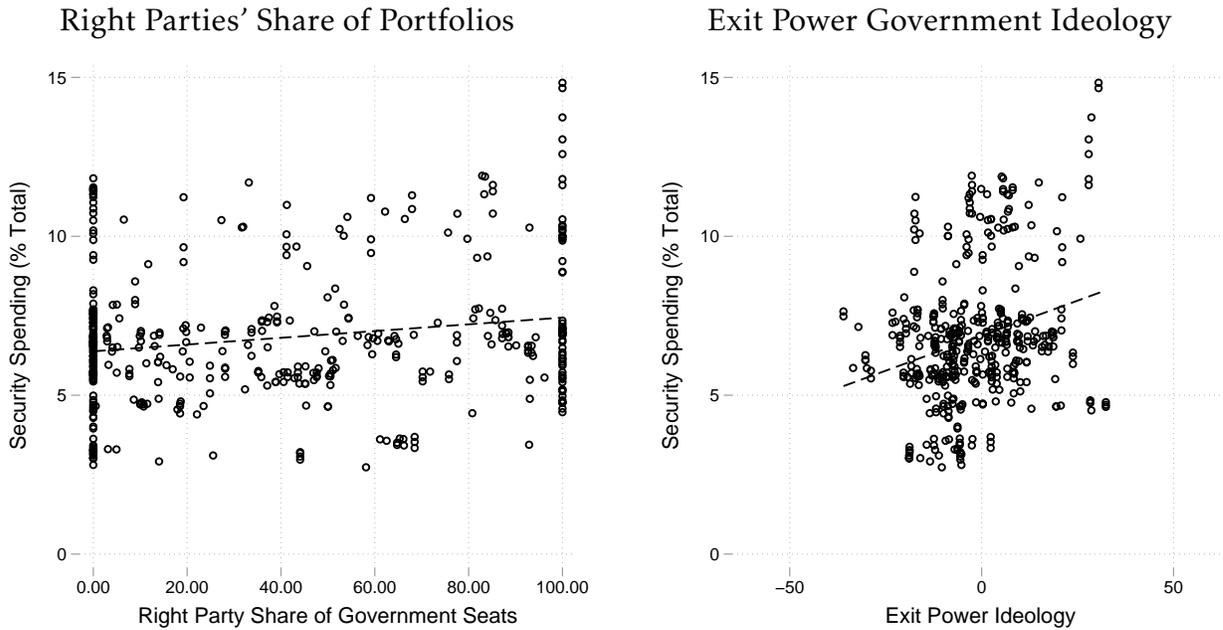


Redistributive spending includes social protection, health and housing

logical position. *Security* spending increases slightly as right-wing parties control more seats in government, however, the difference in spending between a government in which right-wing parties control no seats at all and one in which they control all is small. As before, in the right panel, parties in which right-wing parties control greater exit power are located on the right of the ideological dimension. In contrast to the plot in the left panel, spending on security clearly increases in the exit power right-wing parties control in government.

Table 1 reports summary statistics of governments' ideological positions as well as the more disaggregated spending categories. Across all countries in my sample, the mean ideological position falls slightly left of center at -1.94 . The most left-wing government is placed at -36 , while the most right-wing government has an ideological position of 32.21 . *Redistribution* makes up the biggest share of total spending, ranging from 30 to almost 64 percent, with a mean of just over half of total spending. *Education* comes in

Figure 3.3: Security Spending and Government Composition



Security spending includes defense and public order and safety

as the next biggest share of total spending. At the sample's minimum, six percent of total spending is allocated to education, while this number increases to 20 percent at the maximum. On average, countries spend twelve percent of total spending on education. The mean spending on *Economic Affairs* takes up ten percent of total government expenditures, ranging from four to 37 percent. *Security* spending, in contrast, ranges from slightly below three percent to almost 15 percent, with a mean of 6.5 percent. The smallest share of total spending is allocated to the *Environment*. On average, less than two percent of total spending are allocated to environmental protection, with the minimum at almost 0.3 percent and the maximum at below four percent. General public services and recreation and culture together take up almost 18 percent of total spending on average.

Table 3.1: Summary Statistics

Variable	Mean	Std. Dev.	Minimum	Maximum	N
Government Ideology	-1.94	13.11	-36	32.21	394
Redistribution	51.24	5.85	30.08	63.60	394
Education	12.42	2.52	6.05	19.93	394
Economic Affairs	10.46	3.40	4.07	37.03	394
Security	6.57	2.05	2.73	14.83	394
Environment	1.62	0.74	0.28	3.73	394
Other	17.69	4.27	9.31	29.33	394

3.5.2 Left vs. Right Spending

As described in the preceding section, I use seemingly unrelated regressions to test the proposition derived above that spending on parties' core policy areas increases in their exit power. Following Philips and co-authors, I estimate several seemingly unrelated regressions using each category as the baseline to which spending is compared once (Philips et al. 2016). All results from these estimations are reported in the appendix (Appendix 1 and 2). I use the government's exit power-weighted mean ideological position as the main explanatory variable. I first analyze spending trade-offs between broad left and right spending categories before examining trade-offs between more disaggregated spending categories.

Table 2 reports how spending on *Left*, *Right*, and *Misc* categories changes relative to the same *Left*, *Right*, and *Misc* categories. Table 6 in Appendix 1 reports the coefficient estimates for these estimations. Relative to right-wing spending priorities, a shift of the government's ideology to the right decreases spending on both Left and Misc spending areas. This effect, however, only reaches statistical significance for the decrease in spending on Misc areas. Relative to spending on left-wing priorities, spending on right-wing priorities increases as the government's ideological positions moves farther to the right. This effect reaches statistical significance at the ten percent level. In contrast, spending on Misc categories decreases relative to left priorities, however, this effect is not statistically

significant. Finally, relative to spending aggregated into the Misc category, spending on both left- and right-wing priorities increases as right-wing parties have greater exit power in government⁵. These results suggest that the trade-off between left- and right spending holds to some extent, but it is not the only trade-off that can be observed.

The share of the population aged 65 and older increases spending on left-wing priorities, while countries spend less on right-wing priorities after entering the Schengen agreement. An increase in the unemployment rate is associated with a decrease in left spending, and the effect of the share of the population aged 15 and below is inconsistent. This first analysis of broad left and right suggests that the trade-offs governments face when allocating money across spending areas are more complicated than the existing literature leads us to believe.

Table 3.2: Effect of Government Ideology on Broad Spending Priorities

		Spending on		
		Left	Misc	Right
Relative to	Left		–	+*
	Misc	+		+
	Right	–	–*	

Effect of shifting government’s ideological position to the right

Country set as Germany, Schengen held at one, remaining controls held at mean

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Since the coefficient estimates reported in Appendix 1 are hard to interpret, I calculate the predicted spending shares for Left, Misc, and Right spending for the most left-wing and the most right-wing government. I set the country as Germany after becoming a member of the Schengen area, and hold the remaining control variables at their mean. The predicted values are reported in Table 3 and are the average values obtained from

⁵The coefficients of the government’s ideological position on the share of spending allocated to left and right priorities relative to left and right priorities are smaller and have bigger standard errors when estimating separate OLS models (results not reported here). The magnitude of the effects including miscellaneous spending, on the other hand, are bigger.

the estimations using *Left*, *Right* and *Misc* as the baseline, respectively (i.e. using all estimation results reported in Appendix 1). In addition, I report the percentage change in spending on Left, Right, and Misc priorities that can be observed when changing the government's position from the left- to the right-most ideological position.

I calculate the predicted spending share on *Left*, *Right*, and *Misc* spending priorities as follows. As discussed in section 4.3, the dependent variables are the logged odds ratios of spending shares over a baseline category. That is, using *Right* spending as the baseline, the two equations to be estimated are

$$\ln\left(\frac{L}{R}\right) = \beta_{01} + \beta_{11}X_1 \quad (3.2)$$

$$\ln\left(\frac{M}{R}\right) = \beta_{02} + \beta_{12}X_2 \quad (3.3)$$

To illustrate the findings, I change the government's ideological position from its minimum to its maximum, setting the country as Germany, the Schengen dummy as one and holding all remaining controls at their mean. I then exponentiate the predicted values and receive from this

$$\frac{L}{R} = \exp(\beta_{01} + \beta_{11}X_1) = \theta_1 \quad (3.4)$$

$$L = \theta_1 \times R \quad (3.5)$$

$$\frac{M}{R} = \exp(\beta_{02} + \beta_{12}X_2) = \theta_2 \quad (3.6)$$

$$M = \theta_2 \times R \quad (3.7)$$

I can further use the fact that all shares sum to one to calculate the spending share of the baseline category.

$$(\theta_1 \times R) + (\theta_2 \times R) + R = 1 \quad (3.8)$$

$$R = \frac{1}{\theta_1 + \theta_2 + 1} \quad (3.9)$$

Lastly, I plug the result of equation (9) into equations (5) and (7) to calculate the spending shares of left-wing and miscellaneous priorities. I do this for all estimations, that is using *Left*, *Right*, and *Misc* as the baseline, thereby calculating three different predicted spending shares for each broad area. Table 3 reports the average of these.

Shifting the government’s ideological position from the sample minimum to the sample maximum leads to an increase in spending on *Left* as well as *Right* priorities. The percentage change for *Right* priorities, however, is 7.5 times larger than for *Left* priorities, 3.67 compared to 0.49, respectively. Spending on *Misc* areas decreases by 0.5 percentage points, which corresponds to a percentage change of -1.29. This supports the proposition derived above that, relative to all other spending areas, parties spend more on their priorities as their exit power increases. As the level of aggregation is high, particularly for the misc category, I discuss results from analyzing the allocation of government expenditures across more disaggregated spending areas in the following section.

Table 3.3: Change in Government Ideology and Left, Misc, and Right Spending Priorities

Government Ideology	Left Spending	Misc Spending	Right Spending
Minimum	54.89 %	38.85 %	6.26 %
Maximum	55.16 %	38.35 %	6.49 %
Percentage Change	+0.49	-1.29	+3.67

Shift of Ideology from sample minimum to maximum, controls held at mean
Country set at Germany, Schengen held at one

3.5.3 Allocating Money Across Different Spending Areas

I now turn to analyzing how governments allocate limited spending across different spending areas. Here, I analyze spending on the environment, redistribution, economic affairs, education, security, and a residual other category. Table 4 reports the relationship between these more disaggregated spending categories, while Tables 7 to 12 in Appendix 2 report the coefficient estimates of seemingly unrelated regressions using each category as the baseline once. As described above, I expect security spending to increase relative to spending on redistribution and the environment as right-wing parties' exit power increases.

Relative to *Environment* spending, a rightward shift in the government's ideology increases spending in all other spending areas. The effect does not reach statistical significance for the trade-off between environmental spending and expenditures on economic affairs. All other effects are statistically significant at least at the five percent level. Compared to redistributive spending, spending on education and security increases, while spending on the environment and economic affairs decreases as right-wing parties control more exit power in government. Relative to economic spending, only environmental spending decreases, while spending on all other areas increases. However, only the increase in security spending reaches statistical significance at the five percent level. As right-wing parties' exit power increases, spending on the environment, redistribution, and economic affairs decrease relative to education spending. In contrast, security spending increases. Finally, relative to security spending, the most right-wing spending priority, spending on all other categories decreases. However, only the negative effect on environmental and economic spending are statistically significant at the one percent level⁶

These results suggest that education is, indeed, not a clear left-wing priority as govern-

⁶Using standard OLS models that do not account for dependencies across observations, the magnitude of most of the coefficients of the ideological position increases. If the statistical significance changes, OLS results reach significance where SUR results do not. The effect of the government's ideological position on spending on redistribution and economic affairs relative to security both decrease.

ments in which right wing parties hold great exit power prioritize it over other spending areas, including economic affairs. In contrast, economic affairs appears to be more of a left-wing priority than other spending categories, including education.

Table 3.4: Effect of Government Ideology on Disaggregated Spending Priorities

		Spending on					
		Environment	Redistr.	Econ. Affairs	Education	Security	Other
Relative to	Environment		+	+	+	+	+
	Redistr.	-		-	+	+	+
	Econ. Affairs	-	+		+	+	+
	Education	-	-	-		+	-
	Security	-	-	-	-		-
	Other	-	-	-	-	+	

Effect of shifting government's ideological position to the right

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Since the dependent variables are again logged odds ratios, the magnitude of the coefficients is hard to interpret. Thus, to illustrate the results, I again report spending shares and the percentage changes in spending shares in Table 5. I follow the same steps outlined in the previous section. As in Table 3, I report averages of the predicted values obtained from the estimations using each category as the baseline. Here, I illustrate the results on Belgium, Germany, Sweden, and the United Kingdom. Belgium has a small standard deviation in governments' ideological positions, and both the the minimum and maximum ideological positions lie on the left of the dimension. In contrast, the standard deviations in government ideology for Sweden and Germany are large. Different from Belgium, Germany, and Sweden, the United Kingdom is characterized by single-party majority governments. While the UK also exhibit a large standard deviation in government ideology, governments tend to fall on the right of the ideological dimension. In fact, the left-most UK government in the sample falls to the right of the right-most Belgian government.

Recall from Table 1 that spending on redistribution accounts for the biggest share in the sample, with, on average, over half of all expenditures spent on redistribution. Governments spend around ten percent of the budget on economic affairs and around twelve percent on education. The mean of security spending lies at over six percent of all expenditures, while environmental spending is by far the smallest share of spending, with an average of under two percent. The four illustrative country cases in Table 5 show that shifting the government's ideological position from left to right increases spending on redistribution, security, and education. This contradicts traditional 'guns vs. butter' arguments, since greater spending on security is not financed by cutting welfare spending. The examples reported in Table 5 also show that governments in which right-wing parties have great exit power decrease spending on the environment and economic affairs. These results lend support to the proposition that governing parties spend more on their policy priorities relative to others as their exit power increases.

The result that governments spend more on redistribution as they control more exit power might seem surprising at first, particularly given the traditional notion of 'guns vs. butter', where spending increases in defense are financed by spending cuts in welfare spending. However, this result confirms results from the existing literature on who spends on different types of welfare spending (E. Huber et al. 1993). Huber, Ragin, and Stephens find that Christian Democratic parties – which generally fall to the right of the ideological dimension – spend more on direct transfers, particularly pensions, while Social Democratic parties increase the size of the public sector (E. Huber et al. 1993). Redistribution as I am using it in these analyses includes direct transfers such as pensions and survivor benefits, which biases the results against my expectation since right-wing parties tend to increase direct transfers (E. Huber et al. 1993).

Only interpreting the change in shares of the budget spent on each area, however, is not enough, since changes in those shares have very different effects depending on how much is spent on each area to begin with. Moreover, SUR results capture exactly these

relative changes in spending shares. Therefore, in the remainder of this discussion, I will focus on percentage changes in spending shares since those account for how the baseline spending changes with bargaining power distributions in government.

Table 3.5: Change in Government Ideology and Spending on Disaggregated Policy Areas

Government Ideology	Environment	Redistribution	Econ. Affairs	Education	Security	Other
<i>Belgium</i>						
Country Min (-16.49)	1.47 %	51.48 %	10.42 %	12.37 %	6.23 %	18.02 %
Country Max (-6.72)	1.45 %	51.55 %	10.29 %	12.38 %	6.26 %	18.05 %
Percentage Change	-1.36	+0.14	-1.25	+0.08	+0.48	+0.17
<i>Germany</i>						
Country Min (-13.29)	1.55 %	53.19 %	9.84 %	11.75 %	6.33 %	17.34 %
Country Max (11.72)	1.49 %	53.37 %	9.52 %	11.80 %	6.40 %	17.41 %
Percentage Change	-3.87	+0.34	-3.25	+0.43	+1.11	+0.40
<i>Sweden</i>						
Country Min (-18.32)	1.17 %	52.44 %	9.83 %	12.80 %	6.32 %	17.44 %
Country Max (23.79)	1.10 %	52.72 %	9.31 %	12.88 %	6.44 %	17.55 %
Percentage Change	-5.98	+0.53	-5.29	+0.63	+1.90	+0.63
<i>United Kingdom</i>						
Country Min (-3.09)	1.58 %	52.80 %	8.24 %	12.61 %	7.34 %	17.43 %
Country Max (30.47)	1.50 %	52.99 %	7.88 %	12.67 %	7.45 %	17.50 %
Percentage Change	-5.06	+0.36	-4.37	+0.48	+1.50	+0.40

Controls held at mean, Schengen held at one for Belgium, Germany, and Sweden

In all four countries, powerful right-wing parties increase the percentage of education and redistributive spending by less than one percent. In contrast, the same change in right-wing parties' exit power leads to a percentage increase in national security spending that is about three times larger than the increase in redistribution and lies over one percent in Germany, Sweden, and the UK. In Germany, the difference in percentage increases between redistribution and national security is the smallest, with the percentage change in national security spending slightly more than 3 times the change in redistributive spending. In Dollar amounts, this translates to 2 billion Dollars more spent on redistribution and 850 million Dollars spent more on national security. In the UK, in contrast, the difference is largest. Here, the percentage change in national security spending (1.5) is over four times the percentage increase in spending on redistribution (0.36). Trans-

lating this into Dollar amounts, redistributive spending increases by 1.5 billion Dollars and security spending increases by 800 million Dollars. In both Sweden and Belgium, the percentage increase in total money spent on security is around 3.5 times the increase in redistributive spending. This supports the proposition derived above that, relative to other spending areas, government parties spend more on their priorities as they control greater exit power.

The differences in percentage increases in expenditure shares spent on national security and education vary more across the four cases. In Germany, the difference is smallest, with national security spending increasing just over 2.5 times more than education spending. This difference is reflected in the Dollar amount by which spending on each area increases. Compared to the 850 million Dollar increase in national security spending, education spending increases by 550 million Dollars. In contrast, in Belgium the percentage increase in security spending is six times the percentage increase in education spending. Again, this difference shows up in Dollar terms as spending on education increases by 33 million Dollars compared to 46 million Dollars, by which security spending increases. These results show that, compared to other spending areas, right-wing parties increase security spending by more as they control greater exit power. This supports my expectation about how parties make decisions about allocating a finite amount of money across several spending priorities.

As described above, governments decrease the share of the total budget allocated to the environment and economic affairs as right-wing parties control greater exit power. In all four cases, the percentage decreases in spending on the environment and economic affairs are greater than the percentage increase in any other area, ranging from 1.25 to almost six. In Belgium, for instance, the absolute percentage decrease on economic spending is 2.6 times larger than the increase in security spending. Calculating Dollar changes, spending on economic affairs decreases by 200 million Dollars, while security spending increases by 33 million. In Germany and the UK, this ratio increases to 2.9, while the

right-most government in Sweden decreases economic spending 2.8 times more than it increases security spending. In Sweden, this means that spending on economic affairs decreases by over 800 million Dollars, while security spending increases by almost 200 million Dollars.

In terms of percentage changes, environmental spending exhibits the greatest changes of all spending areas. Since spending on the environment receives the smallest share of the total budget, even small changes in money allocated to this area have significant effects. In Belgium, environmental spending is cut by 34 million Dollars (1.36 percentage points) and security spending receives 46 million Dollars more as right-wing parties control greater exit power. Despite these similar Dollar amounts, the change in environmental spending is 2.7 times that of the change in security spending. In Germany, a shift from the country's left-most government to the right-most one decreases environmental spending by 650 million Dollars. Even though the same shift increases security spending by 850 million Dollars, the percentage change in environmental spending is 3.5 times larger than the change in security spending. Sweden and the UK fall in between Belgium and Germany, with spending on the environment decreasing 3.1 and 3.4 times more than security spending increases. These results show that, as their exit power increases, government parties spend less on spending areas that do not reflect their policy priorities. In fact, as right-wing parties control greater exit power in government they decrease spending on the environment and economic affairs considerably, indeed much more so, than they increase spending on national security, education, and redistribution.

To summarize, analyzing more disaggregated spending categories simultaneously supports the proposition that, as a party's exit power increases, it is able to spend more on its policy priorities relative to other spending areas. Interpreting changes in the allocation of spending across different areas, it is important to account for differences in the relative increase and decrease in spending across areas. That is, rather than analyzing whether or not areas receive a greater share of expenditures, it is important to examine percentage

changes within and across spending areas. While redistributive spending, for instance, increases in right-wing parties' exit power, it increases by less than security spending. In fact, security spending increases about three times more than spending on redistribution. This is because the share of the budget spent on redistribution is vastly greater than the share spent on security. At the other extreme, since environmental spending receives the smallest share of expenditures, small changes have great relative effects. Indeed, the percentage change in environmental spending is largest, with governments spending considerably less on the environment if right-wing parties are powerful. The percentage change is 2.7 to 3.5 times larger than the increase in security spending, which itself has the greatest percentage increase among those spending areas that receive more money from right-wing parties. These results support my expectation that, relative to redistributive and environmental spending, security spending increases in right-wing parties' exit power; and that relative to security spending, redistributive and environmental spending decreases in right-wing parties' exit power.

3.6 Robustness Checks

I now turn to discussing robustness checks. Appendix 3 reports the estimation results for the first set of robustness checks, in which I analyze the budget composition using the fully disaggregated ten spending categories. I expect spending on defense and public order to increase relative to other spending categories as right-wing parties control greater exit power. Similarly, I expect spending on the environment, social protection, housing, and health to decrease relative to other categories in right-wing parties' bargaining power. As before, I remain agnostic about the effect of right-wing parties exit power on economic affairs, education, public services, and recreation and culture. Let me first turn to those categories grouped into the *Left* category above. Relative to all other categories, the government's ideological position has a negative effect on environ-

mental spending. Relative to spending on housing, only defense spending increases as right-wing parties control greater exit power. Relative to health spending, spending on the environment, social protection, economic affairs, and public services decreases, while spending on housing, education, public order, defense, and recreation increases. These results suggest that, among the *Left* priorities, right-wing parties place greater emphasis on housing than on social protection, health, and environmental spending.

Relative to spending on economic affairs, governments increase spending on all other spending categories except the environment as right-wing parties hold greater exit power. This further suggests that economic affairs is a more left-wing rather than a right-wing spending priority. Relative to education spending, governments decrease spending on the environment, social protection, economic affairs, public order, public services, and recreation as right-wing parties hold greater bargaining power. In contrast, spending on housing, health, and defense increases. This suggests that education is more of a right-wing spending priority than a left-wing priority.

Relative to spending on public order, spending on the environment, economic affairs, public services, and recreation decreases in right-wing parties' exit power. In contrast, spending on social protection, housing, health, education, and defense increases. Finally, relative to defense spending, right-wing parties decrease spending on all other categories as they control more exit power. This suggests that among *Right* spending areas, right-wing parties prioritize defense spending over spending on public order and safety. Thus, these additional analyses further support the proposition that government parties increase spending on their priorities relative to other categories as they control greater exit power.

Second, I estimate seemingly unrelated regressions on a number of different samples (results not reported). The main analyses discussed above are restricted to parliamentary systems and semi-presidential systems in which the parliament dominates. As an additional robustness check, I estimate all models reported above on all systems as well as

strictly parliamentary systems only. Not restricting the political system to those clearly dominated by the parliament, *Left* and *Misc* spending both still decrease relative to *Right* spending as right-wing parties control greater exit power in government.

In the same extended sample, relative to environmental spending, spending on all other areas increases in the exit power of right-wing parties. Similarly, relative to spending on redistribution, environmental and economic spending decrease, while education, security, and other spending increases in the bargaining power of right-wing government parties. As before, relative to security spending, spending on all other areas decreases. Finally, as in the main analyses, the results using economic affairs and education as base-lines suggest that education is more of a right-wing priority than economic affairs. In all models, the magnitude of most effects slightly decreases compared to the main results discussed above, however, the direction and statistical significance remain the same as in the main analyses. These results lend further support to the main proposition derived above.

Restricting the sample to strictly parliamentary systems increases the magnitude of the effect of the government's ideology on the composition of the budget, particularly for the coefficients on left- and right-wing spending priorities. Relative to *Right* spending, *Left* and *Misc* spending priorities still decrease in the exit power of right-wing parties. Relative to *Left* spending, *Right* spending increases as right-wing parties control greater exit power. Moreover, relative to *Left* spending, *Misc* spending decreases in right-wing parties' bargaining power. Finally, relative to *Misc* spending, *Left* and *Right* spending still increase in the exit power of right-wing parties in government.

Turning to more disaggregated categories, the magnitude of the coefficients does not uniformly increase or decrease compared to the main analyses, however, the direction of the effect of right-wing parties' exit power all remain the same. Relative to environmental spending, spending on all policy areas increases in right-wing parties' exit power. As above, spending on the environment and economic affairs decreases relative to redistri-

bution, while spending on education and security increases as right-wing parties control greater exit power. Relative to security spending, governments spend less on all other spending areas as right-wing parties control greater exit power. Again, using education and economic affairs as the baseline suggests that education is a more right-wing priority than economic affairs. Restricting the sample of governments to those in office in strictly parliamentary systems lends stronger support to the proposition derived above that parties increase spending on their priorities relative to others as their relative exit power increases.

The results do not change if I exclude Eastern and Central European countries from the sample, either (results not reported here). All of these different analyses support the proposition that government parties increase spending on their priorities relative to others as their relative exit power increases. This suggests that, once in government, parties indeed seek to implement policies that will increase their re-election chances. However, as these analyses demonstrate, not every government party is equally able to do so. Instead, government parties that can credibly threaten to exit the incumbent government because they can enter at least one other alternative government that is likely to form and ideologically attractive are better able to implement their policy priorities and thereby increase spending on these areas.

3.7 Conclusion

To summarize, in this chapter, I find that parties increase spending on their policy priorities relative to other areas if they have great exit power. All parties have the incentive to implement their core policies once in office. Doing so enables them to claim credit for delivering policies to their constituents, which increases their chances of being re-elected. Not being able to implement policy promises runs the risk of losing votes in the next general election and ultimately losing office. However, while all parties have the

incentive, I argue that not all of them have the ability to do so. Parties can only implement their policy priorities if they have great exit power in government. Parties have great exit power if they can credibly threaten to exit the incumbent government. I argue that parties can only do so if they can enter at least one alternative government that is both likely to form and ideologically attractive. The greater the expected utility of parties' outside options, the more exit power they control. Regarding the composition of the budget, governing parties' ability to spend more on their core policy areas increases in their relative exit power.

I use an original measure of governing parties' exit power that captures how likely their outside options are to form and how attractive they are ideologically. In addition, I estimate spending on different categories simultaneously. I use spending on ten categories and aggregate them into broader spending areas. This allows me to examine trade-offs between spending areas more closely, i.e. where additional money to fund spending increases comes from and where money freed up through decreased spending is used instead. I use seemingly unrelated regressions to account for the fact that all spending shares sum up to one and to account for dependencies across categories.

I find that, relative to other spending areas, parties spend more on their policy priorities as they hold greater relative exit power. More specifically, I show that spending on *Left* and *Right* issues both increase in right-wing parties' exit power. However, the percentage increase in spending on *Right* issues is much greater than the percentage increase in spending on *Left* issues. In Germany, changing right-wing parties' exit power from the minimum to the maximum increases right-wing spending 7.5 times more than left spending.

Shifting a government's ideological position from its minimum on the left to its maximum on the right leads to an increase in security, redistributive, and education spending. The percentage increases are smallest for redistribution and education spending and largest for national security spending. Security spending grows three times more than

redistributive spending, while security spending increases 2.5 to six times more than education spending if right-wing parties control great relative exit power in government. In contrast, increasing right-wing parties' exit power in government decreases spending on the environment and economic affairs. The percentage change in spending on economic affairs is almost three times larger than the change in national security spending. Similarly, environmental spending is decreased by 2.7 to 3.5 times the increase in security spending.

All these results support my expectation that governing parties increase spending on their core policies relative to other spending areas as they control greater exit power. The analyses show that, as right-wing parties' exit power increases, governments increase spending on national security by much more than they increase redistribution and education spending. The results also show that, in fact, governing parties tend to decrease spending on areas that are not their core priorities by much more than they increase spending on their priorities if they have the ability to do so. As right-wing parties' exit power increases, spending on the environment and economic affairs decreases by much more than security spending increases. These results illustrate that analyzing budget items simultaneously is important to tease out the trade-offs governing parties make when allocating money. Moreover, results need to be interpreted with an eye toward the baseline level of spending each area receives. Percentage and monetary increases in spending have a very different meaning depending on the baseline amount of spending to which money is added or subtracted.

This chapter furthers our understanding of how governments make decisions once they are in office and under what conditions parties can implement their policy programs after entering office. It allows us to look insight the black box of multi-party policy-making. Parties' strategic position in the government formation game plays a crucial role during policy-making once in office since governments implement policies under the threat of a new round of government negotiations and thus in the shadow of other

potential governments that could enter office. Moreover, I show that parties' bargaining leverage in government is crucial to explaining which policy areas receive more funding and where those additional funds come from. This provides insights into the trade-offs parties are willing to make when allocating money across different spending areas.

3.8 Appendix 2: Broad Left/Right Spending Categories

Here, I report the coefficient estimates of three separate seemingly unrelated regression analyses. For the first two columns, *Right* spending is used as the baseline spending category; in the third and fourth, *Left* is used as the baseline; and in the last two columns, *Misc* is used as the baseline category. All coefficients report changes in one spending category relative to the baseline, and all analyses include country-fixed effects.

Table 3.6: Exit Power and Budget Composition

Spending on Relative to	Left	Misc	Right	Misc	Left	Right
	Right		Left		Misc	
Government Ideology _{t-1}	-0.000356 (0.000268)	-0.000715* (0.000419)	0.000451* (0.000267)	-0.000138 (0.000406)	0.000161 (0.000384)	0.000671 (0.000409)
Real GDP Growth _{t-1}	-0.00334*** (0.000984)	-0.00221 (0.00149)	0.00275*** (0.000991)	0.00289** (0.00144)	-0.00247* (0.00140)	0.00131 (0.00151)
Unemployment Rate _{t-1}	-0.00246** (0.000991)				-0.00161 (0.00114)	
Population Over 65 _{t-1}	0.0126*** (0.00277)				0.0133*** (0.00338)	
Population Under 15 _{t-1}		-0.00461 (0.00369)		0.0131*** (0.00406)		
Schengen _{t-1}			-0.0198*** (0.00748)			-0.0167** (0.00837)
Left _{t-1}	0.775*** (0.0236)				0.678*** (0.0297)	
Misc _{t-1}		0.505*** (0.0395)		0.570*** (0.0375)		
Right _{t-1}			0.792*** (0.0255)			0.661*** (0.0325)
Constant	0.317*** (0.0600)	1.004*** (0.100)	-0.465*** (0.0570)	-0.412*** (0.0815)	-0.0854 (0.0590)	-0.620*** (0.0630)
Observations	394	394	394	394	394	394
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

3.9 Appendix 3: Disaggregated Spending Categories

In this Appendix, I report coefficient estimates of seemingly unrelated regressions of the government budget composition using environment, redistribution, economic affairs, education, security, and other spending as the baseline category once.

Table 3.7: Exit Power and Budget Composition: Baseline Environment

	Spending on				
	Redistribution	Economic Affairs	Education	Security	Other
Government Ideology _{t-1}	0.00145** (0.000588)	0.000966 (0.00104)	0.00149** (0.000585)	0.00175*** (0.000630)	0.00132** (0.000673)
Real GDP Growth _{t-1}	-0.0107*** (0.00213)	-0.00831** (0.00375)	-0.00677*** (0.00211)	-0.00715*** (0.00228)	-0.00892*** (0.00242)
Unemployment Rate _{t-1}	-0.00159* (0.000881)				
Population Over 65 _{t-1}	0.00851*** (0.00226)				
Population Under 15 _{t-1}			0.00124 (0.00223)		
Schengen _{t-1}				-0.0157** (0.00681)	
Redistribution _{t-1}	0.743*** (0.0179)				
Economic Affairs _{t-1}		0.482*** (0.0364)			
Education _{t-1}			0.725*** (0.0185)		
Security _{t-1}				0.762*** (0.0171)	
Other _{t-1}					0.814*** (0.0154)
Constant	1.049*** (0.0879)	1.383*** (0.111)	0.843*** (0.0719)	0.562*** (0.0524)	0.620*** (0.0624)
Observations	394	394	394	394	394
Fixed Effects	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 3.8: Exit Power and Budget Composition: Baseline Redistribution

	Spending on				
	Environment	Economic Affairs	Education	Security	Other
Government Ideology _{t-1}	-0.00153** (0.000597)	-0.00110 (0.000913)	0.0000718 (0.000214)	0.000391 (0.000269)	0.0000235 (0.000306)
Real GDP Growth _{t-1}	0.0115*** (0.00216)	0.00465 (0.00332)	0.00379*** (0.000777)	0.00294*** (0.000994)	0.000537 (0.00112)
Population Under 15 _{t-1}			0.00325* (0.00177)		
Schengen _{t-1}				-0.0177** (0.00689)	
Environment _{t-1}	0.665*** (0.0308)				
Economic Affairs _{t-1}		0.467*** (0.0420)			
Education _{t-1}			0.776*** (0.0267)		
Security _{t-1}				0.812*** (0.0237)	
Other _{t-1}					0.875*** (0.0191)
Constant	-1.555*** (0.148)	-1.064*** (0.0932)	-0.389*** (0.0563)	-0.421*** (0.0530)	-0.159*** (0.0269)
Observations	394	394	394	394	394
Fixed Effects	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 3.9: Exit Power and Budget Composition: Baseline Economic Affairs

	Spending on				
	Environment	Redistribution	Education	Security	Other
Government Ideology _{t-1}	-0.000392 (0.00103)	0.00136 (0.000889)	0.00136 (0.000886)	0.00185** (0.000876)	0.00163* (0.000983)
Real GDP Growth _{t-1}	0.00696* (0.00374)	-0.00422 (0.00323)	-0.000431 (0.00322)	-0.000295 (0.00320)	-0.00253 (0.00358)
BUnemployment Rate _{t-1}		-0.000545 (0.00106)			
Population Over 65 _{t-1}		0.0110*** (0.00303)			
Population Under 15 _{t-1}			0.000475 (0.00234)		
Schengen _{t-1}				-0.0116 (0.00885)	
Environment _{t-1}	0.654*** (0.0270)				
Redistribution _{t-1}		0.708*** (0.0203)			
Education _{t-1}			0.740*** (0.0189)		
Security _{t-1}				0.704*** (0.0233)	
Other _{t-1}					0.763*** (0.0218)
Constant	-0.911*** (0.0886)	0.402*** (0.0701)	0.133** (0.0596)	-0.0709* (0.0422)	0.189*** (0.0491)
Observations	394	394	394	394	394
Fixed Effects	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 3.10: Exit Power and Budget Composition: Baseline Education

	Environment	Redistribution	Spending on Economic Affairs	Security	Other
Government Ideology _{t-1}	-0.00178*** (0.000598)	-0.0000211 (0.000210)	-0.00134 (0.000883)	0.000269 (0.000251)	-0.000123 (0.000318)
Real GDP Growth _{t-1}	0.00683*** (0.00214)	-0.00392*** (0.000774)	-0.00146 (0.00322)	-0.000628 (0.000918)	-0.00278** (0.00114)
Unemployment Rate _{t-1}		-0.00198*** (0.000763)			
Population Over 65 _{t-1}		0.00747*** (0.00200)			
Schengen _{t-1}				-0.0142** (0.00660)	
Environment _{t-1}	0.648*** (0.0326)				
Redistribution _{t-1}		0.770*** (0.0285)			
Economic Affairs _{t-1}			0.444*** (0.0430)		
Security _{t-1}				0.801*** (0.0241)	
Other _{t-1}					0.875*** (0.0194)
Constant	-1.113*** (0.108)	0.224*** (0.0451)	-0.280*** (0.0462)	-0.153*** (0.0205)	0.0255 (0.0157)
Observations	394	394	394	394	394
Fixed Effects	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 3.11: Exit Power and Budget Composition: Baseline Security

	Environment	Redistribution	Spending on Economic Affairs	Education	Other
Government Ideology _{t-1}	-0.00213*** (0.000643)	-0.000366 (0.000268)	-0.00257*** (0.000881)	-0.000296 (0.000253)	-0.000346 (0.000350)
Real GDP Growth _{t-1}	0.00648*** (0.00228)	-0.00369*** (0.000979)	-0.00382 (0.00322)	0.000253 (0.000899)	-0.00235* (0.00127)
Unemployment Rate _{t-1}		-0.00227*** (0.000756)			
Population Over 65 _{t-1}		0.00837*** (0.00210)			
Population Under 15 _{t-1}				-0.00112 (0.00192)	
Environment _{t-1}	0.704*** (0.0280)				
Redistribution _{t-1}		0.788*** (0.0188)			
Economic Affairs _{t-1}			0.355*** (0.0453)		
Education _{t-1}				0.807*** (0.0198)	
Other _{t-1}					0.899*** (0.0231)
Constant	-0.694*** (0.0749)	0.359*** (0.0471)	0.180*** (0.0433)	0.180*** (0.0422)	0.108*** (0.0294)
Observations	394	394	394	394	394
Fixed Effects	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 3.12: Exit Power and Budget Composition: Baseline Other

	Environment	Redistribution	Spending on Economic Affairs	Education	Security
Government Ideology _{t-1}	-0.00178*** (0.000683)	-0.0000544 (0.000288)	-0.00230** (0.000989)	-0.0000894 (0.000318)	0.000131 (0.000352)
Real GDP Growth _{t-1}	0.00852*** (0.00242)	-0.00128 (0.00106)	-0.000310 (0.00361)	0.00230** (0.00114)	0.00163 (0.00129)
Unemployment Rate _{t-1}		-0.00283*** (0.000824)			
Population Over 65 _{t-1}		0.00624*** (0.00225)			
Population Under 15 _{t-1}				-0.00164 (0.00201)	
Schengen _{t-1}					-0.0123* (0.00638)
Environment _{t-1}	0.744*** (0.0236)				
Redistribution _{t-1}		0.825*** (0.0166)			
Economic Affairs _{t-1}			0.552*** (0.0399)		
Education _{t-1}				0.796*** (0.0169)	
Security _{t-1}					0.781*** (0.0217)
Constant	-0.867*** (0.0885)	0.130*** (0.0400)	-0.351*** (0.0554)	-0.0198 (0.0371)	-0.224*** (0.0284)
Observations	394	394	394	394	394
Fixed Effects	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

3.10 Appendix 4: All Individual Spending Categories

In this Appendix, I report results of seemingly unrelated regressions using all ten individual spending categories without aggregating them. I report the results of using all categories as the baseline once, with the exception of social protection. Using social protection as the baseline category does not allow me to analyze the composition of the budget as the model does not converge.

Table 3.13: All Spending Categories: Baseline Environment

	Social Protection	Housing	Health	Economic Affairs	Education	Public Order	Defense	Public Services	Recreation
Government Ideology $_{t-1}$	0.00129** (0.000604)	0.00391** (0.00160)	0.00135** (0.000587)	0.000967 (0.00104)	0.00135** (0.000583)	0.00135** (0.000637)	0.00215*** (0.000802)	0.00102 (0.000707)	0.00135* (0.000704)
Real GDP Growth $_{t-1}$	-0.0128*** (0.00219)	0.00963* (0.00574)	-0.00629*** (0.00213)	-0.00832** (0.00375)	-0.00684*** (0.00211)	-0.00523** (0.00231)	-0.0106*** (0.00292)	-0.0101*** (0.00254)	-0.00613** (0.00255)
Unemployment Rate $_{t-1}$	0.000672 (0.000952)	0.0133** (0.00597)							
Population Over 65 $_{t-1}$	0.00644*** (0.00237)		0.0126*** (0.00247)						
Population Under 15 $_{t-1}$					0.00327 (0.00211)				
Schengen $_{t-1}$						0.00281 (0.00657)	-0.0396*** (0.0150)		
Soc. Protection $_{t-1}$	0.778*** (0.0154)								
Housing $_{t-1}$		0.462*** (0.0404)							
Health $_{t-1}$			0.761*** (0.0160)						
Econ. Affairs $_{t-1}$				0.482*** (0.0360)					
Education $_{t-1}$					0.751*** (0.0158)				
Pub. Order $_{t-1}$						0.760*** (0.0151)			
Defense $_{t-1}$							0.801*** (0.0197)		
Pub. Services $_{t-1}$								0.851*** (0.0142)	
Recreation $_{t-1}$									0.729*** (0.0219)
Constant	0.847*** (0.0776)	0.470*** (0.0980)	0.523*** (0.0642)	1.383*** (0.110)	0.721*** (0.0620)	0.357*** (0.0385)	0.369*** (0.0556)	0.474*** (0.0582)	0.356*** (0.0468)
Observations	394	394	394	394	394	394	394	394	394

Standard errors in parentheses
 * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 3.14: All Spending Categories: Baseline Housing

	Environment	Social Protection	Health	Economic Affairs	Education	Public Order	Defense	Public Services	Recreation
Government Ideology $_{t-1}$	-0.00242 (0.00158)	-0.000636 (0.00145)	-0.000667 (0.00145)	-0.00258 (0.00165)	-0.000570 (0.00146)	-0.000601 (0.00142)	0.000574 (0.00160)	-0.000128 (0.00154)	-0.000892 (0.00149)
Real GDP Growth $_{t-1}$	-0.0106* (0.00572)	-0.0239*** (0.00528)	-0.0176*** (0.00526)	-0.0170*** (0.00598)	-0.0178*** (0.00530)	-0.0157*** (0.00518)	-0.0205*** (0.00586)	-0.0208*** (0.00560)	-0.0171*** (0.00542)
Unemployment Rate $_{t-1}$		0.00169 (0.00113)							
Population Over 65 $_{t-1}$		0.0138*** (0.00411)	0.0155*** (0.00437)						
Population Under 15 $_{t-1}$					-0.0000720 (0.00234)				
Schengen $_{t-1}$						0.0200** (0.00971)	-0.0313* (0.0179)		
Environment $_{t-1}$	0.680*** (0.0205)								
Soc. Protection $_{t-1}$		0.701*** (0.0170)							
Health $_{t-1}$			0.717*** (0.0171)						
Econ. Affairs $_{t-1}$				0.579*** (0.0262)					
Education $_{t-1}$					0.719*** (0.0152)				
Publ. Order $_{t-1}$						0.695*** (0.0166)			
Defence $_{t-1}$							0.721*** (0.0223)		
Publ. Services $_{t-1}$								0.753*** (0.0187)	
Recreation $_{t-1}$									0.689*** (0.0207)
Constant	-0.277*** (0.0791)	0.800*** (0.102)	0.381*** (0.1000)	0.703*** (0.0857)	0.660*** (0.0858)	0.190*** (0.0673)	0.292*** (0.0773)	0.624*** (0.0817)	0.151** (0.0703)
Observations	394	394	394	394	394	394	394	394	394

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 3.15: All Spending Categories: Baseline Health

	Environment	Social Protection	Housing	Economic Affairs	Education	Public Order	Defense	Public Services	Recreation
Government Ideology $_{t-1}$	-0.00133** (0.000594)	-0.0000151 (0.000241)	0.00259* (0.00152)	-0.0000648 (0.000941)	0.0000791 (0.000236)	0.0000914 (0.000287)	0.000974* (0.000585)	-0.000175 (0.000405)	0.0000843 (0.000430)
Real GDP Growth $_{t-1}$	0.00770*** (0.00217)	-0.00656*** (0.000875)	0.0186*** (0.00549)	0.000911 (0.00341)	-0.000268 (0.000852)	0.00121 (0.00105)	-0.00446** (0.00216)	-0.00460*** (0.00146)	0.000790 (0.00156)
Unemployment Rate $_{t-1}$		-0.000692 (0.000976)	0.0103* (0.00591)						
Population Over 65 $_{t-1}$		0.00122 (0.00208)							
Population Under 15 $_{t-1}$					0.00425** (0.00194)				
Schengen $_{t-1}$						-0.00384 (0.00667)	-0.0381** (0.0155)		
Environment $_{t-1}$	0.657*** (0.0322)								
Soc. Protection $_{t-1}$		0.845*** (0.0225)							
Housing $_{t-1}$			0.420*** (0.0420)						
Econ. Affairs $_{t-1}$				0.489*** (0.0391)					
Education $_{t-1}$					0.788*** (0.0240)				
Publ. Order $_{t-1}$						0.786*** (0.0233)			
Defense $_{t-1}$							0.820*** (0.0222)		
Publ. Services $_{t-1}$								0.881*** (0.0156)	
Recreation $_{t-1}$									0.779*** (0.0318)
Constant	-1.074*** (0.106)	0.174*** (0.0489)	-1.277*** (0.117)	-0.245*** (0.0475)	-0.0712** (0.0354)	-0.344*** (0.0382)	-0.224*** (0.0378)	0.0107 (0.0188)	-0.406*** (0.0565)
Observations	394	394	394	394	394	394	394	394	394

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 3.16: All Spending Categories: Baseline Economic Affairs

	Social			Public					
	Environment	Protection	Housing	Health	Education	Order	Defense	Public Services	Recreation
Government Ideology $_{t-1}$	-0.000363 (0.00103)	0.00132 (0.000902)	0.00322* (0.00166)	0.00131 (0.000912)	0.00133 (0.000885)	0.00145* (0.000881)	0.00236** (0.00103)	0.00155 (0.00102)	0.00123 (0.000973)
Real GDP Growth $_{t-1}$	0.00689* (0.00374)	-0.00657** (0.00328)	0.0172*** (0.00601)	-0.000144 (0.00331)	-0.000616 (0.00321)	0.00176 (0.00321)	-0.00404 (0.00378)	-0.00363 (0.00370)	0.000190 (0.00354)
Unemployment Rate $_{t-1}$		0.00198* (0.00108)	0.00655 (0.00570)						
Population Over 65 $_{t-1}$		0.00952*** (0.00318)		0.0135*** (0.00331)					
Population Under 15 $_{t-1}$					0.00176 (0.00200)				
Schengen $_{t-1}$									
Environment $_{t-1}$	0.662*** (0.0259)								
Soc. Protection $_{t-1}$		0.734*** (0.0176)							
Housing $_{t-1}$			0.412*** (0.0401)						
Health $_{t-1}$				0.749*** (0.0175)					
Education $_{t-1}$					0.759*** (0.0155)				
Publ. Order $_{t-1}$						0.700*** (0.0192)			
Defense $_{t-1}$							0.776*** (0.0243)		
Publ. Services $_{t-1}$								0.781*** (0.0204)	
Recreation $_{t-1}$									0.748*** (0.0241)
Constant	-0.888*** (0.0860)	0.284*** (0.0703)	-0.986*** (0.106)	-0.106 (0.0707)	0.101* (0.0550)	-0.345*** (0.0482)	-0.165*** (0.0535)	0.147*** (0.0494)	-0.325*** (0.0546)
Observations	394	394	394	394	394	394	394	394	394

Standard errors in parentheses
 * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 3.17: All Spending Categories: Baseline Education

	Environment	Social Protection	Housing	Health	Economic Affairs	Public Order	Defense	Public Services	Recreation
Government Ideology $_{t-1}$	-0.00181*** (0.000598)	-0.0000715 (0.000238)	0.00206 (0.00148)	0.0000343 (0.000233)	-0.00134 (0.000883)	-0.00000892 (0.000262)	0.000838 (0.000546)	-0.000224 (0.000372)	-0.000139 (0.000431)
Real GDP Growth $_{t-1}$	0.00685*** (0.00214)	-0.00600*** (0.000872)	0.0152*** (0.00537)	0.000896 (0.000849)	-0.00150 (0.00322)	0.00145 (0.000964)	-0.00409** (0.00202)	-0.00388*** (0.00134)	0.000750 (0.00157)
Unemployment Rate $_{t-1}$		-0.000785 (0.000876)	0.00652 (0.00578)						
Population Over 65 $_{t-1}$		0.00472** (0.00218)		0.00792*** (0.00244)					
Schengen $_{t-1}$						0.00627 (0.00616)	-0.0357** (0.0148)		
Environment $_{t-1}$	0.637*** (0.0321)								
Soc. Protection $_{t-1}$		0.841*** (0.0258)							
Housing $_{t-1}$			0.376*** (0.0443)						
Health $_{t-1}$				0.861*** (0.0257)					
Econ. Affairs $_{t-1}$					0.437*** (0.0427)				
Publ. Order $_{t-1}$						0.710*** (0.0276)			
Defense $_{t-1}$							0.818*** (0.0251)		
Publ. Services $_{t-1}$								0.880*** (0.0193)	
Recreation $_{t-1}$									0.772*** (0.0327)
Constant	-1.145*** (0.107)	0.117*** (0.0425)	-1.348*** (0.117)	-0.140*** (0.0449)	-0.283*** (0.0462)	-0.479*** (0.0468)	-0.231*** (0.0405)	0.0109 (0.0174)	-0.421*** (0.0592)
Observations	394	394	394	394	394	394	394	394	394

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 3.18: All Spending Categories: Baseline Public Order

	Environment	Social Protection	Housing	Health	Economic Affairs	Education	Defense	Public Services	Recreation
Government Ideology $_{t-1}$	-0.00163** (0.000644)	0.0000503 (0.000285)	0.00173 (0.00146)	0.000124 (0.000282)	-0.00154* (0.000902)	0.0000723 (0.000263)	0.000975* (0.000588)	-0.0000332 (0.000414)	-0.0000265 (0.000470)
Real GDP Growth $_{t-1}$	0.00554** (0.00230)	-0.00751*** (0.00103)	0.0146*** (0.00532)	-0.000733 (0.00102)	-0.00236 (0.00328)	-0.00128 (0.000940)	-0.00540** (0.00218)	-0.00535*** (0.00150)	-0.000547 (0.00170)
Unemployment Rate $_{t-1}$		-0.000175 (0.000858)	0.00728 (0.00580)						
Population Over 65 $_{t-1}$		0.00581*** (0.00218)		0.0105*** (0.00236)					
Population Under 15 $_{t-1}$						-0.000458 (0.00177)			
Schengen $_{t-1}$							-0.0393*** (0.0148)		
Environment $_{t-1}$	0.690*** (0.0285)								
Soc. Protection $_{t-1}$		0.808*** (0.0186)							
Housing $_{t-1}$			0.390*** (0.0430)						
Health $_{t-1}$				0.817*** (0.0202)					
Econ. Affairs $_{t-1}$					0.432*** (0.0412)				
Education $_{t-1}$						0.740*** (0.0224)			
Defense $_{t-1}$							0.803*** (0.0234)		
Publ. Services $_{t-1}$								0.877*** (0.0184)	
Recreation $_{t-1}$									0.791*** (0.0308)
Constant	-0.471*** (0.0543)	0.449*** (0.0598)	-0.336*** (0.0825)	0.112** (0.0452)	0.638*** (0.0637)	0.432*** (0.0526)	0.0748** (0.0311)	0.215*** (0.0379)	-0.0475** (0.0222)
Observations	394	394	394	394	394	394	394	394	394

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 3.19: All Spending Categories: Baseline Defense

	Environment	Social Protection	Housing	Health	Economic Affairs	Education	Public Order	Public Services	Recreation
Government Ideology $_{t-1}$	-0.00273*** (0.000807)	-0.00113* (0.000580)	-0.000236 (0.00160)	-0.00101* (0.000582)	-0.00313*** (0.00103)	-0.00102* (0.000542)	-0.00116** (0.000584)	-0.000976 (0.000656)	-0.00114* (0.000692)
Real GDP Growth $_{t-1}$	0.00861*** (0.00291)	-0.00359* (0.00212)	0.0132** (0.00592)	0.00366* (0.00212)	-0.00129 (0.00378)	0.00280 (0.00196)	0.00420** (0.00214)	-0.000399 (0.00238)	0.00385 (0.00252)
Unemployment Rate $_{t-1}$		-0.000311 (0.000791)	0.00330 (0.00587)						
Population Over 65 $_{t-1}$		0.00792*** (0.00233)		0.00988*** (0.00240)					
Population Under 15 $_{t-1}$						-0.00146 (0.00189)			
Schengen $_{t-1}$							0.00901 (0.00668)		
Environment $_{t-1}$	0.737*** (0.0208)								
Soc. Protection $_{t-1}$		0.788*** (0.0133)							
Housing $_{t-1}$			0.422*** (0.0419)						
Health $_{t-1}$				0.820*** (0.0118)					
Econ. Affairs $_{t-1}$					0.548*** (0.0353)				
Education $_{t-1}$						0.800*** (0.0123)			
Publ. Order $_{t-1}$							0.786*** (0.0134)		
Publ. Services $_{t-1}$								0.805*** (0.0181)	
Recreation $_{t-1}$									0.815*** (0.0172)
Constant	-0.461*** (0.0545)	0.416*** (0.0527)	-0.457*** (0.0901)	0.0774 (0.0487)	0.382*** (0.0568)	0.306*** (0.0468)	-0.0574** (0.0283)	0.296*** (0.0408)	-0.0876*** (0.0331)
Observations	394	394	394	394	394	394	394	394	394

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 3.20: All Spending Categories: Baseline Public Services

	Environment	Social Protection	Housing	Health	Economic Affairs	Education	Public Order	Defense	Recreation
Government Ideology $_{t-1}$	-0.00181** (0.000717)	-0.0000865 (0.000329)	0.000544 (0.00152)	0.0000456 (0.000400)	-0.00229** (0.00102)	-0.000127 (0.000370)	-0.000270 (0.000412)	0.000757 (0.000659)	-0.000235 (0.000554)
Real GDP Growth $_{t-1}$	0.00927*** (0.00255)	-0.00300** (0.00121)	0.0125** (0.00563)	0.00420*** (0.00145)	0.000632 (0.00373)	0.00304** (0.00133)	0.00446*** (0.00150)	-0.000932 (0.00242)	0.00396** (0.00201)
Unemployment Rate $_{t-1}$		-0.00157* (0.000884)	-0.00740 (0.00594)	0.00709*** (0.00236)					
Population Over 65 $_{t-1}$		0.00659*** (0.00249)							
Population Under 15 $_{t-1}$						-0.00157 (0.00195)			
Schengen $_{t-1}$							0.0104 (0.00674)	-0.0424*** (0.0143)	
Environment $_{t-1}$	0.741*** (0.0219)								
Soc. Protection $_{t-1}$		0.809*** (0.0162)							
Housing $_{t-1}$			0.360*** (0.0432)						
Health $_{t-1}$				0.839*** (0.0127)					
Econ. Affairs $_{t-1}$					0.588*** (0.0374)				
Education $_{t-1}$						0.780*** (0.0147)			
Publ. Order $_{t-1}$							0.763*** (0.0163)		
Defense $_{t-1}$								0.798*** (0.0257)	
Recreation $_{t-1}$									0.797*** (0.0191)
Constant	-0.845*** (0.0806)	0.107** (0.0439)	-1.360*** (0.114)	-0.144*** (0.0464)	-0.267*** (0.0530)	0.00195 (0.0378)	-0.424*** (0.0361)	-0.275*** (0.0493)	-0.403*** (0.0437)
Observations	394	394	394	394	394	394	394	394	394

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 3.21: All Spending Categories: Baseline Recreation, Culture

	Environment	Social Protection	Housing	Health	Economic Affairs	Education	Public Order	Defense	Public Services
Government Ideology $_{t-1}$	-0.00147** (0.000706)	0.0000476 (0.000449)	0.00233 (0.00151)	0.000117 (0.000430)	-0.00103 (0.000974)	0.0000737 (0.000428)	0.0000672 (0.000466)	0.000951 (0.000685)	-0.0000360 (0.000552)
Real GDP Growth $_{t-1}$	0.00639** (0.00256)	-0.00701*** (0.00163)	0.0165*** (0.00544)	-0.000252 (0.00156)	-0.000823 (0.00354)	-0.000863 (0.00155)	0.000660 (0.00170)	-0.00503** (0.00252)	-0.00477** (0.00200)
Unemployment Rate $_{t-1}$		0.000184 (0.000896)	0.0106* (0.00586)						
Population Over 65 $_{t-1}$		0.00543** (0.00223)		0.0107*** (0.00230)					
Population Under 15 $_{t-1}$						0.00218 (0.00189)			
Schengen $_{t-1}$							0.00152 (0.00663)	-0.0344** (0.0152)	
Environment $_{t-1}$	0.685*** (0.0282)								
Soc. Protection $_{t-1}$		0.797*** (0.0182)							
Housing $_{t-1}$			0.376*** (0.0445)						
Health $_{t-1}$				0.815*** (0.0176)					
Econ. Affairs $_{t-1}$					0.442*** (0.0405)				
Education $_{t-1}$						0.773*** (0.0176)			
Publ. Order $_{t-1}$							0.767*** (0.0199)		
Defense $_{t-1}$								0.820*** (0.0213)	
Publ. Services $_{t-1}$									0.857*** (0.0156)
Constant	-0.424*** (0.0540)	0.530*** (0.0653)	-0.284*** (0.0840)	0.157*** (0.0493)	0.702*** (0.0677)	0.382*** (0.0443)	0.0483** (0.0225)	0.111*** (0.0357)	0.292*** (0.0387)
Observations	394								

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

CHAPTER IV

Beyond Gamson's Law: Parties' Exit Power and Portfolio Allocation in Multiparty Governments

4.1 Introduction

Why do some government parties receive more, and more important, ministerial portfolios than others? Allocating available portfolios among a set of potential government partners is a crucial step in coalition negotiations, often presented as on par with substantive questions and agreeing on a policy agenda (Zeit Online October 24, 2013, for an example covering the German 2013 general election). Consequently, the portfolios a party secures can be interpreted as the most immediate manifestation of the bargaining leverage it holds over its partners.

The existing literature posits that parties' governing power derives from one of two sources, their size or control of the agenda. Thus, concerning the number of portfolios parties receive, extant research can be divided into two groups. The first argues that parties receive a share of portfolios that is proportional to the share of seats they contribute to the government's majority (Gamson 1961). The second posits that parties that have agenda-setting power are over-compensated and receive a greater share of portfolios than their partners (Baron & Ferejohn 1989). Here, agenda-setting power refers to the fact that formateurs have the first move in the government formation game. Concerning the type

of ministries received, Laver and Shepsle argue that parties are more likely to receive a ministry if they hold the median ideological position on the dimension associated with that particular ministry (Laver & Shepsle 1996). In addition, the party family each party belongs to has been found to explain which ministries parties receive (Bäck, Debus, & Dumont 2001).

I introduce a more general source of bargaining power that is in line with insights from classic bargaining models (Rubinstein 1982). I argue that a governing party's bargaining power is determined by the credibility of its exit threat. Parties can credibly threaten to abandon negotiations over a potential government if they can enter negotiations over at least one alternative government that is likely to form and ideologically attractive. As such, I expect parties to receive more, and more important, portfolios, the greater their exit power.

Most accounts of government formation and ministerial portfolio allocation assume all portfolios to be equally valuable. Laver and Hunt (1992) and more recently Druckman and Warwick (2005) and Warwick and Druckman (2006), however, show that this is not the case. Certain portfolios are more salient than others and consistently ranked higher than others across all countries, but the salience ranking of portfolios also differs considerably across countries. In this chapter, I use their findings to weight individual portfolios by their salience.

In addition, existing accounts of ministerial portfolio allocation share one methodological shortcoming. While the outcome of interest is the share of portfolios received by each government party, they do not explicitly model the compositional character of the data even though Katz and King explicitly mention the allocation of portfolios across government parties as an example of compositional data (Katz & King 1999, p. 19). With a limited number of portfolios available, an increase in one party's share of portfolios decreases the share of portfolios that can be allocated across the remaining government parties. Moreover, the shares of all government parties add up to one. Not modeling

dependencies across observations, however, leads to biased and inefficient results.

In this chapter, I use a new measure of parties' exit power that is comparable across countries and over time. This measure is based on the simulation of around 120,000 potential governments and an estimation of their likelihood of entering office and their attractiveness to each potential member. I compute this measure for all parties that entered government at least once during the postwar era in advanced democracies. In addition, I model the dependent variable as compositional and estimate the salience-weighted share of portfolios simultaneously for all coalition partners. However, since the number of parties in office is not constant for all governments, the number of equations to be estimated is not constant across observations, either. Here, I use two approaches to introduce dependencies across observations. First, I estimate seemingly unrelated regressions on subsets of coalitions where the number of government parties is held constant. Second, I use a Generalized Estimating Equations (GEE) model to analyze the allocation of portfolios on the full pooled sample of observations (Liang & Zeger 1986; Zeger & Liang 1986). I find some support for the claim that parties that can credibly threaten to abandon negotiations receive more, and more important, portfolios than their partners.

In the next section, I give a brief overview of the literature on ministerial portfolio allocation. Next, I present my argument about the source of parties' bargaining power. In the following section, I describe the methods and data used to test my expectation of the effect of exit power on the share of salience-weighted portfolios parties receive. I report results of my empirical analyses in the penultimate section and conclude with a discussion in the final section.

4.2 Portfolio Allocation

In addition to negotiating substantive issues during coalition negotiations, dividing the finite set of portfolios between future coalition partners is crucial. Extant research on

the allocation of ministerial portfolios across government parties focuses on the number of portfolios as well as which portfolios a party is likely to receive. In this section, I will provide a brief overview of research falling into both categories.

Concerning the question which party receives which ministry, parties' ideological positions are found to be the most important determinant. Laver and Shepsle argue that government parties that are located at the median of an ideological dimension are most likely to receive the ministry associated with this dimension (Laver & Shepsle 1996). Similarly, Bäck and her co-authors find that the party family each government party belongs to affects which portfolios it is likely to obtain (Bäck et al. 2001). This is because these parties share similar policy goals and tend to value portfolios associated with these policy areas more than others. Social Democratic parties, for instance, are more likely to receive the Ministry of Labor and of Social Affairs, *ceteris paribus*, while Green parties are expected to receive the Ministry of Environment when in government (Bäck et al. 2001). However, the same ministry can be associated with more than one party family: Social Democratic, Christian Democratic, and Conservative parties, for instance, all tend to receive the Ministry of Social Affairs when in office (Bäck et al. 2001). Thus, the party family to which each party belongs alone cannot fully explain why some parties receive certain ministries and not others. Finally, Brams and Kaplan (2004) and O'Leary, Grofman, and Elklit (2005) show that differences in the rules governing the sequence with which parties choose ministries can alter which specific portfolios parties choose at which point in the bargaining process, and if they receive their most-preferred post at all.

Research on the question of how many portfolios government parties receive can be broadly divided into two strands. One strand argues that parties' bargaining power derives from their size, while the second argues that their bargaining power derives from their agenda-setting power. Gamson falls into the first category and conceptualizes bargaining power in terms of parties' size in government seats, such that parties receive more portfolios the more seats they contribute to the government's parliamentary ma-

majority (Gamson 1961). He famously argues that government parties receive a share of ministries that is proportional to their share of government seats (Gamson 1961). The empirical evidence is overwhelmingly supportive of this hypothesis, so it is widely known as 'Gamson's Law'. Druckman and Roberts (2005), for instance, find support in the Eastern European context, and Warwick and Druckman (2006) show that this proposition is still supported when portfolios are weighted by their salience. Extending the application to intra-party politics, Mershon finds support that, for factions in the Italian Christian Democratic Party, "the share of seats held by the faction on the DC National Council" has a positive effect on the share of portfolios they receive, with the regression coefficient at 0.77 (Mershon 2001, p. 286).

Studies that fall into the second strand of research are mostly formal models of government formation which posit that one coalition party tends to be overcompensated in terms of ministries because it has greater bargaining power than its partners. One source of such over-compensation is the extent to which a party has agenda-setting power. Controlling the agenda during coalition negotiations, formateur parties are able to offer their potential coalition partners a division of ministries that favors them (Baron & Ferejohn 1989). In addition to the number of portfolios the formateur can claim for itself, Baron and Ferejohn argue that the formateur party is most likely to receive the most important portfolios, most notably the Prime Ministership (Baron & Ferejohn 1989). Lacking agenda-setting power, potential partners cannot counter the formateur's offer but can only agree or walk away from it, waiting for the status of formateur to be conferred to them in case no agreement is reached in this stage (Baron & Ferejohn 1989). Thus, parties with agenda-power are expected to receive a greater share of portfolios, and particularly important ones, than their partners. This share is also greater than their share of voting weights would suggest. Following the setup of formal models closely and using parties' voting weights rather than seat shares, Ansolabehere and his co-authors find that this proposition is supported (Ansolabehere et al. 2005).

Addressing deviations from proportionality, Ono finds that the Prime Minister's party in fact receives fewer ministries than Gamson's (1961) and Baron and Ferejohn's (1989) arguments lead us to expect (Ono 2010). He argues that concerns of government survival and policy-making lead prime ministerial parties to accept a smaller share of portfolios. Smaller parties are overcompensated by the formateur to keep them in office (Ono 2010). In addition, endogenizing both formateur choice and government formation, Bassi finds that parties only receive a share of portfolios that is proportional to their seat shares if coalition partners have the same or entirely orthogonal preferences over portfolios (Bassi 2013). However, the allocation is not proportional if one party prefers one portfolio more than the others, such that "the more skewed party *i*'s preference is, the less than proportional is the share of portfolio [sic] that party *i* is allocated in equilibrium" (Bassi 2013, p. 787).

Finally, not all portfolios are equally attractive to all parties (Bassi 2013), and not all portfolios are ranked the same across countries. Prime Ministership, Finance, Foreign Affairs, and Interior are consistently ranked as the most important and attractive ministries (Laver & Hunt 1992), however, the exact ranking of portfolios and the values attached to them differ across countries (Druckman & Warwick 2005). Druckman and Warwick (2005) provide salience rankings of all portfolios in Western Europe based on an expert survey. Warwick and Druckman (2006) find that government party's receive a greater share of salience-weighted portfolios, the greater their share of government seats.

While formal models such as the one by Baron and Ferejohn (1989) model the probability of being awarded the formateur status as equal across all parliamentary parties, the party controlling the largest share of seats in the newly elected parliament is generally awarded the status of formateur. Moreover, the chances of receiving the position of formateur increase if the party held the Prime Ministership in the outgoing government. That is, while theoretically any party could be the formateur, in fact the formateur status is closely related to size in terms of seat shares as well. Thus, the effect of formateur sta-

tus on receiving portfolios cannot easily be distinguished from the effect of parties' size in terms of seats.

In contrast to the existing literature, I argue that the extent to which a party can credibly threaten to abandon coalition negotiations and enter another government determines their bargaining power and thereby how many important portfolios a party receives. That is, I expect parties to receive more, and more important, portfolios, the greater the credibility of their exit threats is. I explain this argument in the next section. One shortcoming of existing empirical accounts of portfolio allocation is that the dependent variable is not modeled as compositional, which leads to inefficient and biased results. I will discuss this in more detail in section 4.

4.3 Exit Power and the Allocation of Ministerial Portfolios

Formal bargaining models share the notion that bargaining power derives from actors' next best options in case of a bargaining breakdown. The existing literature posits that parties have great bargaining power if they control the agenda when bargaining over a new government (Baron & Ferejohn 1989), or if they control many seats (Gamson 1961). All of these arguments, however, assume that the cost of exiting a government is equal across its members. In contrast, I argue that the costs of bringing down a government are not equal for all governing parties. Coalition negotiations over a specific potential government take place in light of other governments that could form in the event of such a bargaining failure. Parties that can credibly threaten to walk away from negotiations, i.e. bring down the current round of bargaining, without foregoing the chance of entering office have great *Exit Power*. Such threats, however, are only credible if they can enter negotiations over at least one alternative government that is likely to form and ideologically appealing.

A rich literature on government formation has found that a number of factors affect

how likely different governments are to enter office. A government is more likely to enter office, the more similar its coalition parties' ideological positions are (Axelrod 1970; De Swaan 1973) and the fewer parties it comprises (Riker 1962), thereby minimizing the costs of governing by making it easier to find compromises. The government's likelihood of entering office is constant across all governing parties. The ideological appeal of each government, on the other hand, differs across coalition parties. For each potential member, the attractiveness of each government is inversely related to the distance between the member's and the government's overall ideological position. The closer each member's ideal position is to the government's ideological position, the more likely it is that the government's policies will be close to the member's policy preferences. Taken together, alternative governments are of greater expected utility, the more likely they are to form and the more attractive they are ideologically.

Therefore, government parties that can enter at least one alternative government of great expected utility can credibly threaten to bring about a bargaining failure by abandoning coalition negotiations. However, the availability of outside options alone does not determine parties' bargaining power. Rather, bargaining power is inherently relative, so each coalition member's bargaining power is determined by the credibility of its exit threats relative to the credibility of its partners' threats. As such, parties can only take advantage of invoking their outside options if their partners lack the ability to do so. Those parties that can credibly threaten to abandon negotiations over coalitions can reap the benefits and receive concessions if their partners cannot enter alternative governments that are likely to form and ideologically attractive. Instead, such weak parties are willing to grant concessions to be able to enter government in the first place.

While this expectation applies to all types of concessions, in this chapter, I specifically focus on ministerial concessions rather than policy concessions. As described above, regarding the allocation of portfolios, both the number of ministries parties receive and their salience are important. If only one government party can credibly threaten to exit

the government because it controls all relative exit power, it receives all portfolios, including all the most important ones. At the other extreme, if a party is constrained to the one government currently being negotiated, it does not have any viable and attractive alternative governments it can enter. As such, it cannot credibly threaten to abandon negotiations and will grant its partner(s) all portfolios, including all important ones, to be able to enter office at all. In between these two extremes, I expect a governing party's share of portfolios and their importance to increase in the party's relative *Exit Power*.

Proposition. *Government parties receive more, and more salient, ministerial portfolios, the more relative exit power they control.*

4.4 Method and Data

4.4.1 Methodological Issues and Seemingly Unrelated Regressions

In this section, I describe the methodological issues that arise from analyzing the allocation of ministerial portfolios. As briefly mentioned above, the existing empirical literature analyzing how portfolios are allocated across coalition partners does not model the dependent variable – the share of portfolios each government party receives – appropriately. Portfolio shares are compositional as a finite set of portfolios is divided between a number of actors¹. Thus, the portfolio shares of all coalition parties add up to one. Moreover, one party receiving a greater share of portfolios means that there are fewer left to be distributed to its partners. That is, an increase in one share leads to a decrease in the remaining share(s).

Using standard OLS to analyze compositional data, however, leads to a number of problems since doing so imposes assumptions on the data structure that are not borne out

¹Katz and King explicitly mention ministerial portfolios as an example of compositional data that should be modeled as such (Katz & King 1999, p. 19)

by the data. “First, OLS assumes that the dependent variable is theoretically unbounded and could fall anywhere on the real number line, whereas in reality each [party’s] share [...] must lie between 0 and 1. Second, OLS treats [...] each [share] independently, but they are not independent because the proportions for all parties must sum to 1” (Tomz et al. 2002, p. 66–67). Using OLS to analyze compositional data leads to biased and inefficient estimates (Katz & King 1999). Moreover, using such estimates to generate predicted values can lead to values that cannot be observed, including negative shares or shares greater than one (Katz & King 1999).

Seemingly Unrelated Regressions (SUR) can be used to analyze compositional data while explicitly accounting for dependencies across observations (Jackson 2002; Tomz et al. 2002). Here, I analyze several equations simultaneously, so I have one dependent variable for each coalition party (for a maximum of six dependent variables) rather than one containing the portfolio shares of all parties. Similarly, I have several explanatory variables containing the observations for each party in government, again up to six each. The dependent variables are transformed into logged odds ratios of the quantity of interest in relation to a baseline category (Jackson 2002). For this analysis, the dependent variables are the log of each party’s portfolio shares over the portfolio share of a baseline party:

$$y_i = L_i = \log\left(\frac{P_i}{P_1}\right).$$

Thus, the following system of equations of $N - 1$ equations can be estimated simultaneously:

$$\begin{bmatrix} L_2 \\ L_3 \\ \vdots \\ L_J \end{bmatrix} = \begin{bmatrix} X_2 & 0 & 0 & \dots & 0 \\ 0 & X_3 & 0 & \dots & 0 \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ 0 & 0 & 0 & \dots & X_j \end{bmatrix} \begin{bmatrix} B_2 \\ B_3 \\ \vdots \\ B_j \end{bmatrix} + \begin{bmatrix} \omega_2 \\ \omega_3 \\ \vdots \\ \omega_J \end{bmatrix} \quad (4.1)$$

where $\omega_j = u_j + v_j$, so the error term is composed of “the conventional stochastic term in statistical models” (u_j) and the “sampling error” (v_j) (Jackson 2002, p. 51). This accounts for the constraints imposed by compositional data in the variance-covariance matrix, so

the coefficient estimates obtained from this estimation are unbiased and efficient. I estimate several models using each party's portfolio share as the baseline category once to be able to examine if increases in one party's share of portfolios come exclusively at the expense of another one or are shared by several of its partners (Philips et al. 2016).

While portfolio shares of coalition members are compositional, the data structure is irregular and unbalanced such that seemingly unrelated regressions cannot be applied without added complications, either. Here, the dependent variables are the shares of salience-weighted portfolios government parties receive when they enter office. However, the number of parties in government is not equal for all governments. This means that the number of equations to be estimated simultaneously is not constant across observations, either. Rather, it ranges from two in all two-party coalitions to six for the six-party coalitions in my sample.

Attempting to estimate one overall seemingly unrelated regression means I cannot use all the data available. Estimating SUR for the maximum possible number of equations – six – means that only those data are used in the analysis where none of the dependent and independent variables are missing. That is, only the six-party coalitions in my sample are analyzed, but not any of the coalitions comprising fewer parties. On the other hand, if I estimate SUR using three equations, for instance, the model is run on all three-, four-, five-, and six-party governments. For all coalitions containing more than three parties, however, the dependencies with parties 4, 5, and 6 are not captured since these parties do not factor into the estimation. Thus, instead of estimating one SUR analysis on the pooled sample of all coalitions, I analyze the effect of exit power on portfolio shares for subsamples of coalitions where the number of parties in government, and hence the number of equations to be estimated, is the same across observations.

While this approach succeeds in accounting for dependencies across observations, it is hard to compare the effect of the explanatory variables across models, especially because I estimate them using several different baselines. To aid with comparisons, I also estimate

a meta-analysis of all the results obtained in the separate SUR models. In addition, I use a Generalized Estimating Equations on restructured data, which allows me to account for dependencies across parties while still estimating one model on the pooled data.

4.4.2 Generalized Estimating Equations Model

Generalized Estimating Equations (GEE) models use a quasi-likelihood approach, assuming the variance of the dependent variable “is a known function of its expectation” rather than specifying the distribution of the dependent variable (Zeger & Liang 1986, p. 122). This means that this approach can be used for a wide range of dependent variables, including those that are not normally distributed. In addition, GEE models “specify a ‘working’ correlation matrix for the observations”, which leads to consistent estimators even if the correlation matrix is not correctly specified (Zeger & Liang 1986, p. 122). Following the notation in Zeger and Liang (1986), let x_{ij} be an $n_i \times p$ vector of explanatory variables and y_{ij} be an $n_i \times 1$ vector of the dependent variable. In addition,

$$\mu_i = h(x_i\beta) \quad \text{and} \quad v_i = g(\mu_i)/\phi,$$

where ϕ is “treated as a nuisance parameter” (Zeger & Liang 1986, p. 123). The quasi-likelihood estimator then is the solution to the following system of equations:

$$S_k(\beta) = \sum_{i=1}^K \frac{\partial \mu_i}{\partial \beta_k} v_i^{-1} (y_i - \mu_i) = 0, \quad (4.2)$$

for $k = 1, \dots, p$. Specifying $R_i(\alpha)$ as the working correlation matrix for each observation of the dependent variable, equation (2) can be extended to:

$$U_i(\beta, \alpha) = \sum_{i=1}^K D_i' V_i^{-1} S_i = 0, \quad (4.3)$$

where $S_i = y_i - \mu_i$, $D_i = \partial\mu_i/\partial\beta$, and $V_i = A_i^{1/2}R_i(\alpha)A_i^{1/2}/\phi$. V_i is the working covariance matrix of y_i , where A_i is a matrix containing $g(\mu_{ij})$ as the j th element.

After replacing α with a consistent estimator, the estimate of β , β_R , solves the following equation for any working correlation matrix R :

$$\sum_{i=1}^K U_i\{\beta, \hat{\alpha}[\beta, \hat{\phi}(\beta)]\} = 0 \quad (4.4)$$

To be able to use the GEE model with compositional portfolio shares, I reshape my data set to include one overall dependent variable that contains all portfolio shares for all parties in the sample (McDowell 2004). The explanatory variables, however, are kept separate. The overall structure of the data still resembles the one shown in equation (1), with the exception that I am now estimating one dependent variable rather than several. Finally, the data are structured such that coalitions containing the same size are the panels in which different governments are repeated observations over time (McDowell 2004).

In the following analyses, I present a number of different estimation results. First, I present and discuss the results of regular OLS regressions used in extant studies. Next, I present results from seemingly unrelated regressions for several subsets of coalitions where I hold the number of coalition parties constant. That is, I present (SUR) results for all two-, three-, four-, and five-party coalitions separately. I do not report results of SUR for six-party coalitions as my data only include a total of six such coalitions. Finally, I present results from a GEE model and compare the results to those of the SUR and traditional specification.

4.4.3 Main Independent Variable – Exit Power

In this section, I describe how I measure parties' relative exit power. I gather all parliamentary parties' number of seats (Döring & Manow 2012; EJPR 1974–2011; Mackie &

Rose 1991; Nordsieck 1997–2016) and their ideological position on the general left-right scale (Budge et al. 2001; Klingemann et al. 2006; Volkens et al. 2013). Using these data, I simulate all potential governments that could have formed in developed democracies during the post-war era. This yields around 120,000 potential governments that include all single-party governments (minority and majority) up to the government containing all parliamentary parties. From this novel data set, I estimate each potential government's formation likelihood and calculate how attractive it is to each of its members.

To generate the formation likelihood of each of the almost 120,000 potential governments, I follow Martin and Stevenson's (2001) approach and estimate a conditional logit model. Thus, I regress the dummy variable whether or not a government formed on a number of variables that have been found to affect a potential government's likelihood of entering office (see Section 3 above). These explanatory variables include the government's ideological range and dummy variables indicating its status as a single-party majority government, surplus government, a minimum winning coalition, and whether its members are ideologically adjacent to each other (connected). I expect the ideological range and a government's status as a surplus coalition to have a negative effect on the formation likelihood as both factors complicate reaching compromise. I expect the remaining variables to have a positive effect as they minimize the cost of governing. The results of the conditional logit model support these expectations. For each potential government, I generate predicted values from this model that I then use as the measure of the government's viability. Viability ranges from zero to one and is constant for each potential government member.

I calculate ideological appeal based on the distance between each potential member of each potential government and the government's ideological position. The government's ideological position is generated as its center of gravity, that is, as the seat share-weighted average ideological position. The raw distance between each member's position and that of the government indicates the government's *unattractiveness*, so for each government's

attractiveness, I re-scale the measure, restrict it to positive values and take the square root of it².

Finally, I weight each potential government's formation likelihood by its ideological appeal to each of its members. This generates the individual expected utility of each potential government to each of its members. As the penultimate step, I sum all expected utilities of all alternative governments parties can enter, excluding the government that formed. Finally, since bargaining power is a relative concept, I calculate the share of exit power each government party controls. That is, I divide each governing party's exit power by the sum of all governing parties' exit power. I compute this new measure of bargaining power for all parties that were in office in developed democracies between the first democratic election after the Second World War and 2012. All parties in single-party majority governments have a relative exit power value of one since no other party contributes to the government's total exit power. For coalition members, relative exit power ranges between zero and one. In the following analyses, I use each governing party's relative exit power as the main explanatory variable.

4.4.4 Remaining Variables

In the following analyses, the outcome of interest is the number of the ministerial portfolios each government party receives, weighted by the portfolio's salience. I gather data on which government party received which ministry from two different sources. First, for the period from 1945 to 1998, I obtain portfolio data from Woldendorp et al. (2000). Second, for the time period between 1998 and 2012, I gather data on the same portfolios from the Yearly Political Data published for each country in the European Journal of Polit-

²I do this by multiplying the measure by (-1) and adding the observed maximum disutility in each country. Compared to other measures of parties' policy positions, such as expert surveys, the CMP data exhibit more and greater changes in parties' ideological positions. Moreover, such changes often involve parties leapfrogging over others. This suggests that changes tend to be over-estimated, so I use the square root of outside options' utility to transform the attractiveness measure.

ical Research³ (EJPR 1974–2011). For the same ministries, I obtain data on their salience from Druckman and Warwick (2005). To arrive at the dependent variable, I calculate the salience-weighted share of all portfolios each government party controls. As explained above, I expect each government party's share of salience-weighted portfolios to increase in its relative exit power.

These salience values are based on expert surveys and cover Western European countries that are characterized by frequent multiparty governments (Druckman & Warwick 2005). Therefore, my final sample includes Austria, Belgium, Denmark, Finland, France, Germany, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, and Sweden for the time period between 1945 or the first democratic election and 2012. The main explanatory variable is each government party's relative *Exit Power* as described above.

In addition, I test for the effect of each party's share of government seats, *Government Seat Share*, and its status as the Prime Minister's party, *PM*. Moreover, I generate a variable denoting the salience-weighted share of portfolios each party controlled in the previous government, *Portfolio Share*_{*t*-1}.

4.5 Results

4.5.1 Descriptive Statistics

Table 1 provides summary statistics for the explanatory variables used in the following analyses. These values are based on the full pooled model that will be used to replicate existing study results. The unit of observation here is the government party. Parties' relative exit power ranges from 0.02 to 0.98 with a mean of 0.34 (see Table 1). The average of government parties' seat shares is also 0.34, however, seat shares vary more with the

³These portfolios cover the Prime Ministership and the Deputy Prime Minister as well as the Foreign, Defense, Interior, Justice, Finance, Economic, Labor, Education, Health, Housing, Agriculture, Industry and Trade, Environment, Social Affairs, and Public Works ministries (Woldendorp et al. 2000).

minimum at 0.007 and the maximum at 0.97. Parties' lagged salience-weighted portfolio shares range from 0 to one, with a mean at 0.24, which is lower than both the average of relative exit power and seat shares. Finally, of the 780 government parties in my sample, 250 held the Prime Minister's position.

Figures 1 through 3 graph the relationship between parties' salience-weighted share of portfolios and exit power and seat shares, respectively. In each graph, the left panel plots the salience-weighted share of portfolios and parties' government seat shares, while the right panel plots parties' exit power. Figure 1 plots the relationship for all government parties, Figure 2 for the Prime Minister's party, and Figure 3 for all parties not controlling the Prime Ministership.

Table 4.1: Summary Statistics – Explanatory Variables

	Mean	Std. Dev.	Minimum	Maximum	N
Exit Power	0.338	0.160	0.024	0.976	780
Government Seat Share	0.340	0.241	0.007	0.971	780
Portfolio Share _{t-1}	0.239	0.274	0	1	780

Figure 1 shows that observations for all parties fall closer to the 45 degree line when using parties' seat shares, however, the relationship is not as indicative of a proportional relationship as one would expect based on existing results. Using parties' exit power, there are a number of observations that fall far from the 45 degree line. There are many observations that fall below it for parties scoring between 0.2 and 0.4 exit power and many that fall above the line for parties scoring between 0.2 and 0.6 in exit power. Restricting the sample to parties that held the Prime Minister's position, the relationship is closer to the expected proportional one when using parties' seat shares. Using parties' relative exit power, there are many parties that receive a share of portfolios that is greater than their share of exit power. Finally, restricting the sample to parties not controlling the Prime Ministership, there is a considerable number of parties that score between 0.2

Figure 4.1: Share of Saliency-Weighted Portfolios – All Parties

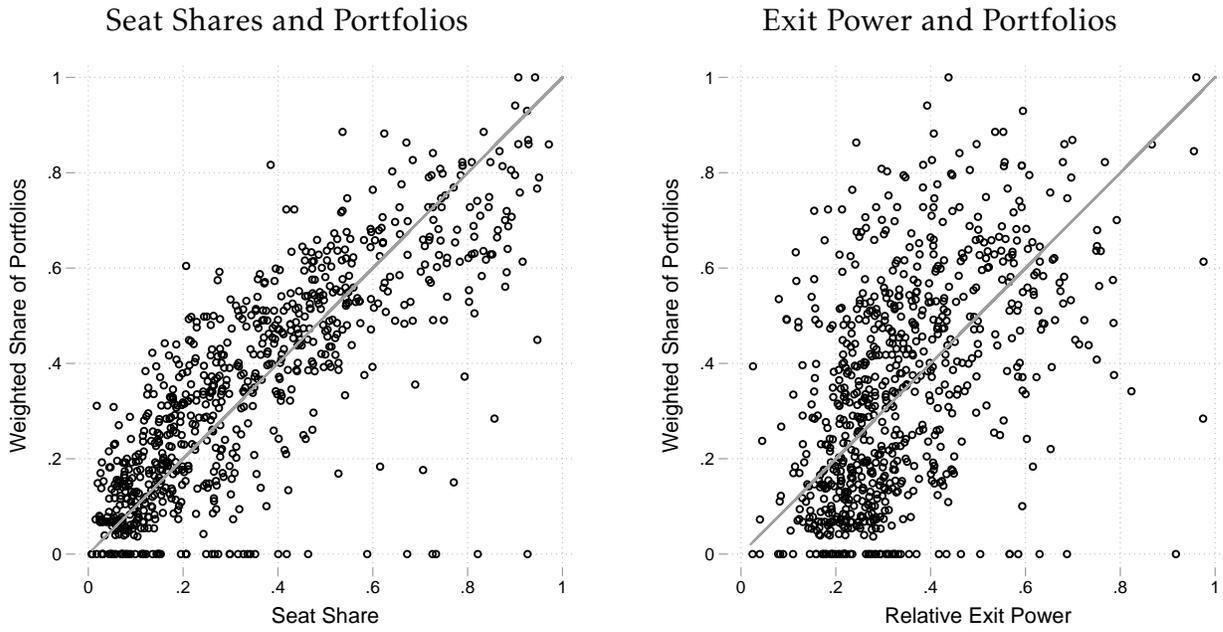


Figure 4.2: Share of Saliency-Weighted Portfolios – PM Parties

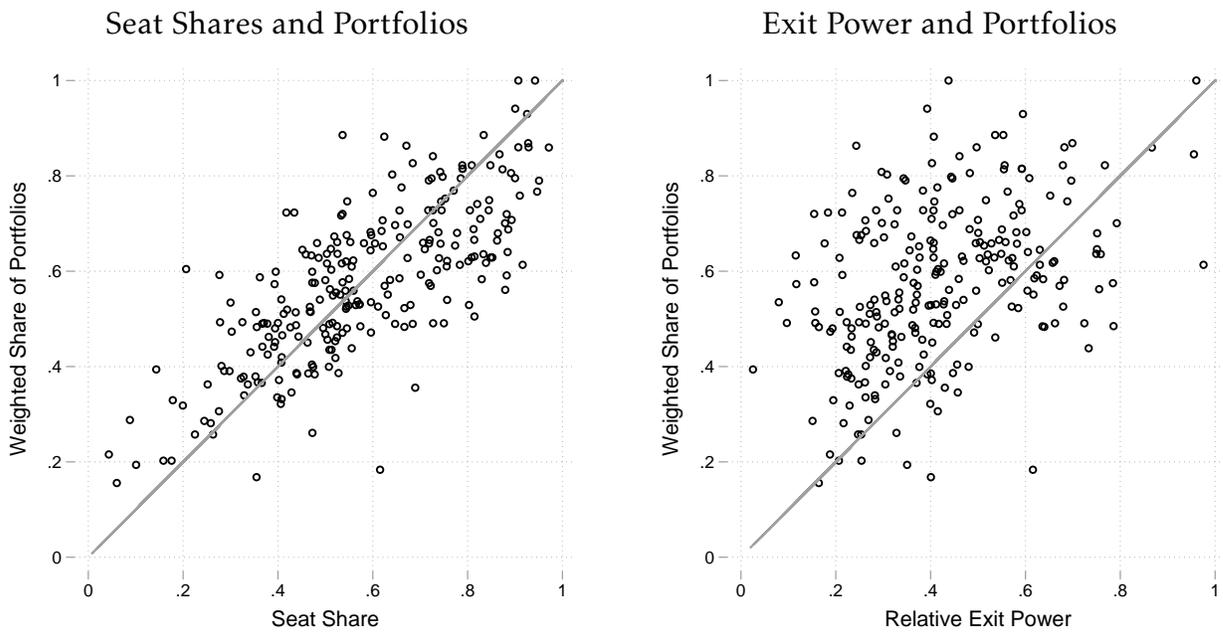
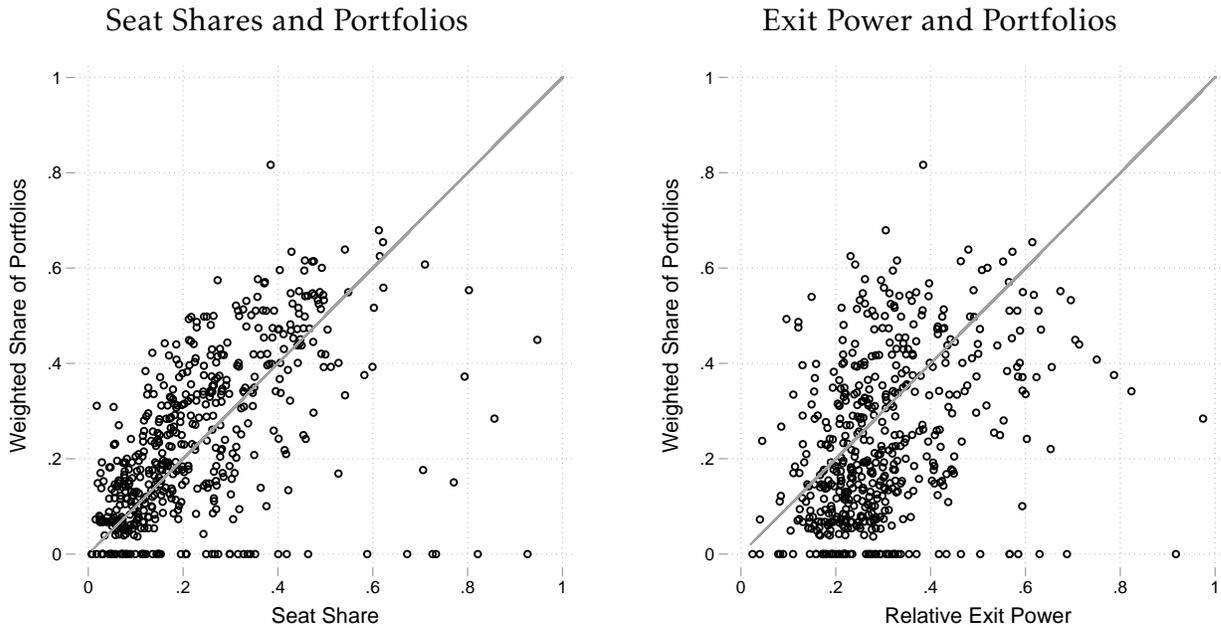


Figure 4.3: Share of Saliency-Weighted Portfolios – non-PM Parties



and 0.4 in exit power but receive a smaller share of portfolios. In contrast, using seat shares, there are many parties that score between zero and 0.3 in seat shares but receive a greater than proportional share of portfolios.

4.5.2 Standard Specification

In this section, I first present results of standard OLS models regressing the saliency-weighted share of portfolios on each government party's relative exit power and its seat share, its status as the Prime Minister's party as well as its portfolio share in the preceding government. Here the unit of observation is each party in government, and the sample is restricted to coalition governments. All explanatory variables that are included in these models have a positive effect on the saliency-weighted share of portfolios, and all achieve statistical significance at the one percent level. Models 1 and 2 include *exit power* as the main explanatory variable, while Models 3 and 4 include each party's share

of government seats. Moreover, Models 2 and 4 include parties' previous portfolio share as an additional explanatory variable.

Increasing a party's exit power by one standard deviation increases the share of salience-weighted portfolios it receives by 0.07 and 0.05, respectively. In contrast, increasing parties' share of government seats by one standard deviation increases the share of salience-weighted portfolios by 0.15 and 0.12, respectively. Parties' share of seats not only has a bigger effect than relative exit power, it also explains more of the variation in the allocation of ministries – 68% and 72%, respectively, compared to 55% and 64%. In addition, controlling for different measures of bargaining power, holding the Prime Ministership still has a positive effect, albeit smaller when using seat shares. The magnitude of the coefficient ranges between 0.11 and 0.29, suggesting that the Prime Minister's party, in fact, receives a bonus in portfolio shares. This lends support to claims that formateur parties receive a greater share of portfolios, and particularly more important ones (Baron & Ferejohn 1989). Moreover, even after controlling for parties' bargaining power and their status as the Prime Minister's party, the lagged portfolio share has a positive effect. Thus, parties tend to not do worse than in the previous government when they return to office.

These results are robust to the inclusion of country-fixed effects as well as the interaction between the party's status as the Prime Minister's party and exit power and seat shares, respectively. Estimation results are reported in Table 6 in Appendix 1. As mentioned above, however, analyzing compositional data using OLS leads to biased and inefficient results. Due to this, predicted portfolio shares could fall outside the range of possible values, taking predicted values greater than one or smaller than zero. Therefore, in the next section, I present results from separate seemingly unrelated regression analyses.

Table 4.2: The Effect of Exit Power and Seat Share on Weighted Portfolio Shares

	Model 1	Model 2	Model 3	Model 4
Exit Power	0.442*** (0.0375)	0.346*** (0.0343)		
Government Seat Share			0.606*** (0.0266)	0.506*** (0.0270)
PM	0.288*** (0.0128)	0.218*** (0.0126)	0.129*** (0.0137)	0.109*** (0.0131)
Portfolio Share _{t-1}		0.293*** (0.0213)		0.200*** (0.0198)
Constant	0.101*** (0.0131)	0.0857*** (0.0118)	0.0952*** (0.00834)	0.0883*** (0.00788)
R^2	0.549	0.638	0.681	0.718
Observations	780	780	780	780

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

4.5.3 Seemingly Unrelated Regression

In this section, I present results from a number of seemingly unrelated regression models where I hold the number of parties constant at two, three, four, and five coalition parties. Thus, the unit of observation now is the (two-, three-, four-, and five-party) government in office. As mentioned above, I do not estimate seemingly unrelated regressions for six-party governments since my sample only includes six such coalitions. There are two to five dependent variables, and I estimate the salience-weighted portfolio share for all coalition members simultaneously. As described above, I transform the dependent variables as the logged odds ratios of all portfolio shares relative to a baseline share. Following recent research, I estimate several models using each party's portfolio share as the baseline category once (Philips et al. 2016). I report results for models including only parties' exit power or seat shares and their status as the Prime Minister's party, not including country-fixed effects or their previous portfolio share. This is due to the fact that I lose many observations by reshaping the data such that each government in office is now the unit of observation. I report the results in Appendix 2.

Since the coefficients are hard to interpret given the transformation of the dependent variables, I focus on discussing broad patterns and some illustrative examples. Table 3 reports the direction and statistical significance of the effect of parties' relative exit power. Parties 1 through 5 are ordered by their strength in relative exit power, with party one being the strongest, party two the second-strongest, etc. Table 4 provides examples how portfolios are allocated across parties in coalitions of different size.

Table 4.3: Effect of Exit Power on Portfolio Shares

<i>2-party coalitions</i>						
		Party 1	Party 2			
Rel.	Party 1		+			
to	Party 2	+				
<i>3-party coalitions</i>						
		Party 1	Party 2	Party 3		
Rel.	Party 1		+**	-		
	Party 2	+*		-		
to	Party 3	+*	+			
<i>4-party coalitions</i>						
		Party 1	Party 2	Party 3	Party 4	
Rel.	Party 1		+**	+	-	
	Party 2	+**		-	-	
to	Party 3	+	+		-	
	Party 4	+*	+	-		
<i>5-party coalitions</i>						
		Party 1	Party 2	Party 3	Party 4	Party 5
Rel.	Party 1		+	+	+	-*
	Party 2	+		+	+	-**
to	Party 3	+	+		-	-*
	Party 4	+**	+	+		-***
	Party 5	+	+	+	-	

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 3 shows that, relative to all parties' portfolio shares, exit power has a consistently positive effect on the share of salience-weighted portfolios the two strongest parties receive. This effect reaches statistical significance for half the coefficients for the strongest party but less often for the second-strongest party. This lends some support to

the proposition derived above. In three-, four-, and five-party coalitions, exit power has a consistently negative effect on the share of portfolios the weakest party receives relative to all of its partners' shares. This effect reaches statistical significance for the weakest party in five-party coalitions. In four- and five-party coalitions, the effect of exit power on the portfolio share of the second-weakest party relative to all others is mixed. This does not support the above proposition. These results, however, show that the effect of exit power on salience-weighted portfolio shares is not the same for all parties in government – a pattern the standard specification cannot uncover. Using parties' seat shares, on the other hand, has a consistently positive effect on the share of portfolios they receive relative to their partners' shares (see Appendix 2).

Table 4 provides examples of portfolio allocations for different coalition sizes, changing each coalition member's exit power. For two-party governments, I increase Party 1's exit power from 0.5 to 0.75 and, hence, decrease Party 2's share from 0.5 to 0.25. For three- to five-party coalitions, I increase Party 1's exit power from 0.4 to 0.6. The remaining parties' exit power is kept equal, dividing the remaining 0.6 and 0.4 equally among them. That is, in three-party coalitions, the weaker two parties' exit power decreases from 0.3 to 0.2; in four-party coalitions, it decreases from 0.2 to 0.13; and in five-party coalitions, it decreases from 0.15 to 0.1. I follow the same procedure as described in Chapter III, Section 5.2 to calculate the allocation of salience-weighted portfolios.

Increasing the strongest party's relative exit power by half of the original share has the biggest effect in three- and four-party governments and the smallest in two-party governments. In a two-party government, increasing the strongest party's exit power from 0.5 to 0.75 increases the share of salience-weighted portfolios it receives from 0.65 to 0.66. Reducing the weaker partners exit power from 0.5 to 0.25 has the mirror effect of decreasing its portfolio share from 0.35 to 0.34. Changing the strongest party's relative exit power from 0.4 to 0.6, in contrast, leads its portfolio share to increase by 0.11 from 0.55 to 0.66 in three-party coalitions and from 0.53 to 0.64 in four-party coalitions. At the same

time, in three-party governments, reducing Party 2 and Party 3's relative exit power from 0.3 to 0.2 decreases their portfolio share from 0.26 to 0.17 for the former and from 0.19 to 0.15 for the latter. Reducing the relative exit power from 0.2 to 0.13 for the weaker parties in four-party coalitions decreases their portfolio share by between 0.02 and 0.06. In four-party governments, the decrease is biggest for the second-strongest party.

Table 4.4: Change in Portfolio Allocation

	Party 1	Party 2	Party 3	Party 4	Party 5
<i>2-party coalitions</i>					
Exit Power Party 1: 0.5	0.65	0.35			
Exit Power Party 1: 0.75	0.66	0.34			
<i>3-party coalitions</i>					
Exit Power Party 1: 0.4	0.55	0.26	0.19		
Exit Power Party 1: 0.6	0.66	0.17	0.15		
<i>4-party coalitions</i>					
Exit Power Party 1: 0.4	0.53	0.15	0.16	0.16	
Exit Power Party 1: 0.6	0.64	0.09	0.13	0.14	
<i>5-party coalitions</i>					
Exit Power Party 1: 0.4	0.83	0.04	0.03	0.03	0.06
Exit Power Party 1: 0.6	0.88	0.02	0.01	0.02	0.08

Only Party 1 held as PM

Finally, in five-party governments the same change in relative exit power of the strongest party still increases its portfolio share but by less than in three- and four-party governments. Here, its salience-weighted portfolio share increases from 0.83 to 0.88. Decreasing its partners' exit power from 0.15 to 0.1 reduces the share of portfolios Parties 2, 3, and 4 hold by 0.02 and 0.01. For Party 5, however, this change in exit power leads to an increase in its portfolio share from 0.06 to 0.08. This is consistent with the results shown in Table 3, and it is the only effect that is inconsistent with the expectation that appears in these sample portfolio allocations.

In coalitions of all sizes, the share of salience-weighted portfolios the strongest party

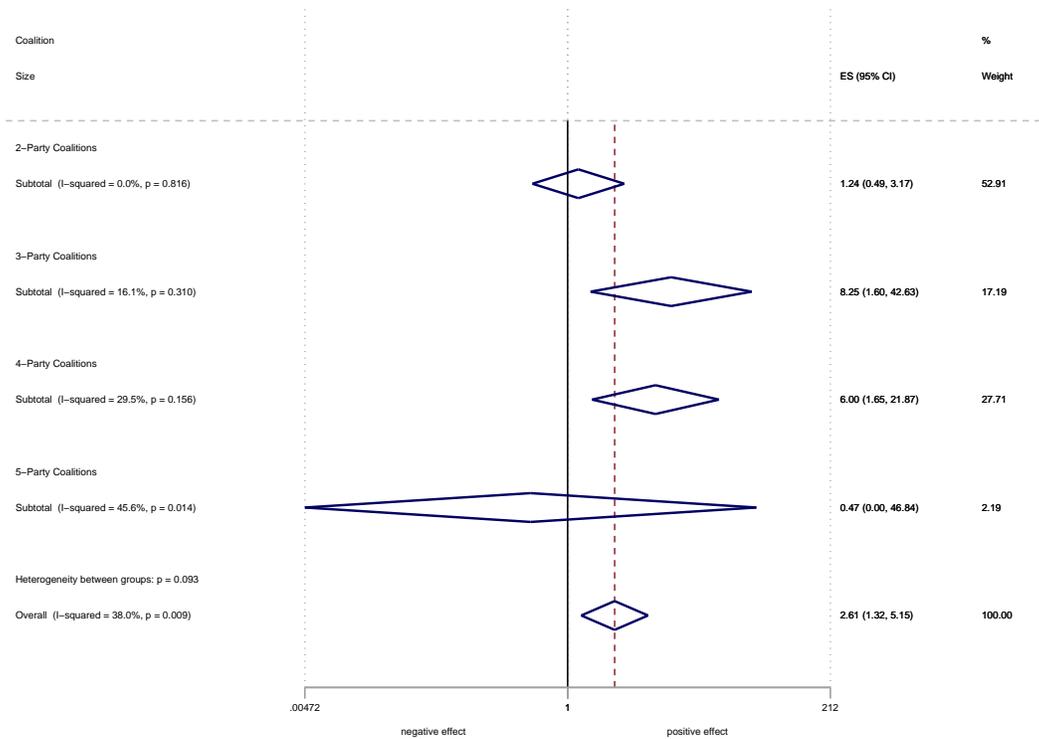
receives is greater than its share of exit power. This ‘bonus’ is greatest in five-party governments and smallest in four-party coalitions. Part of this dynamic is likely due to the fact that I set the strongest party to also hold the Prime Ministership, while its partners do not control this most important post.

4.5.4 Aggregate Results

As discussed before, seemingly unrelated regressions cannot be used with irregular and unbalanced compositional data. The first approach to use all of the existing data to analyze the effect of parties’ exit power on portfolio shares is to estimate separate seemingly unrelated regressions on subsamples of the data where the number of government parties, and thus, the number of equations to be estimated is held constant. However, comparing results across these different models is complicated, making it hard to evaluate the support for the hypothesis derived above. One way to better compare results across these subsamples is to estimate a meta-analysis of the separate results.

Figure 4 plots the results of a meta-analysis of the results of separate SUR models. The forest plot graphs the estimated effect of exit power on portfolio shares for each subgroup and the estimated overall effect. The subgroups here are coalitions of different size, ranging from two- to five-party governments. Since the dependent variables of the separate SUR models are logged odds ratios, I plot exponentiated estimates. The effect of parties’ exit power on the salience-weighted portfolio share they receive is positive for two-, three-, and four-party governments, while the effect is negative for five-party coalitions. However, the effect is not statistically significant from zero for the smallest and largest coalitions. The overall effect of exit power for is positive and statistically significantly different from zero. This pattern is similar to the one found when calculating different portfolio allocations for varying distributions of exit power in Table 4, however, from the forest plot it is unclear which subset of parties is driving the overall results.

Figure 4.4: Forest Plot of Meta-Analysis Results



In this section, I also present results from the second approach described in Section 4.4, a Generalized Estimating Equations (GEE) model for which I restructure the portfolio data by following the steps described in McDowell (2004). As discussed above, when performing SUR analyses on all available dependent variables, I lose observations because the dependent and independent variables are missing where certain coalition parties simply do not exist. However, I can restructure the data in such a way to arrive at a matrix as described in Section 4 and perform GEE analysis on this new data set that will in fact use all available observations, and that will allow for correlation across equations. First, in my SUR data set containing separate dependent variables for the share of portfolios of Parties 1 through 5, I estimate simple OLS models regressing the portfolio share on exit power and each party's status as the Prime Minister's party. Next, I rescale the dependent

and independent variables “using their respective regression root mean squared error” (McDowell 2004, p. 444). This step is needed to allow for heteroskedasticity in the GEE model, which generally assumes homoskedasticity. In addition, I generate a constant that “will be used instead of a single intercept” in the GEE model (McDowell 2004, p. 445). Using these re-scaled variables, I reshape the data to resemble the matrix in equation (1) Section 4.4 and estimate a GEE model. The only difference is that I analyze only one dependent variable. The results are presented in Table 5.

The number of observations in Table 5 is the same as in Table 2, so the transformation of the data, indeed, allows all observations to be used. For Parties 1 through 4, exit power has a positive effect on the salience-weighted portfolio share, while it has a negative effect for Party 5. The magnitude of the effects of the three strongest parties’ exit power is similar to the magnitude of the overall effect of exit power in the standard specification reported in Table 2. The magnitude of this effect for the strongest party is smaller than in the standard specification, while the magnitude is bigger for the second and – where it exists – the third-strongest party. All three coefficients reach statistical significance at least at the five percent level. While the effect of Party 4’s relative exit power on its salience-weighted portfolio share is positive, it is smaller than the effect of the stronger parties’ exit power and smaller than the effect in the standard specification. The effect does not reach statistical significance at conventional levels. All of these differences in how parties’ exit power affects how many portfolios they receive and how important they are are masked in the standard specification where I use one explanatory variable for all parties’ exit power, not differentiating between them. These results lend some support to the hypothesis derived above that the share of salience-weighted portfolios increases in parties’ relative exit power.

Where it exists, an increase in Party 5’s exit power leads to a decrease in the share of portfolios it receives. The effect is statistically significant at the ten percent level. This pattern is the same as can be seen in Table 3, where, in five-party governments, the

weakest party's share of portfolios decreases relative to all other parties' shares as its exit power increases. While separate SUR results and the GEE model uncover this dynamic, it is again not obvious from results using the standard specifications. This result does not lend support to the expectation derived above. Finally, each party's status as the Prime Minister's party has a consistently positive and statistically significant effect on its salience-weighted share of portfolios. The magnitude of the effect is bigger than the effect in the standard specification.

To conclude, this approach of using a GEE model on one common dependent variable and separate independent variables for each coalition party has clear advantages. Doing so means that all observations that are non-missing in the pooled, government party-based data set can be analyzed together in one model. Compared to the standard specification, it uncovers more fine-grained variation in the effect that exit power has on portfolio concessions for different parties because the independent variables are kept separately. Compared to separate SUR models, this approach makes comparisons of effects across different parties easier. The results of the GEE model are similar to the results found in meta-analysis of all SUR results and shown in Figure 4 above. The forest plot shows that the overall effect of exit power is greatest for three- and four-party coalitions. However, the results from the meta-analysis do not resolve if all or some parties are driving these results and, if so, which ones. The GEE model discussed in this section, on the other hand, provides such finer-grained results. In sum, this final approach to estimating unbalanced and irregular compositional data combines the advantages of the SUR and traditional specification.

Table 4.5: GEE: The Effect of Exit Power on Portfolio Shares

	(Model 2)
ExitPower 1	0.331 ^{***} (0.0568)
ExitPower 2	0.614 ^{***} (0.0958)
ExitPower 3	0.577 ^{**} (0.230)
ExitPower 4	0.125 (0.404)
ExitPower 5	-1.888 [*] (1.089)
PM 1	0.322 ^{***} (0.0194)
PM 2	0.303 ^{***} (0.0208)
PM 3	0.329 ^{***} (0.0294)
PM 4	0.317 ^{***} (0.0404)
PM 5	0.240 ^{**} (0.109)
Intercept 1	0.146 ^{***} (0.0291)
Intercept 2	0.0510 (0.0322)
Intercept 3	0.0329 (0.0546)
Intercept 4	0.132 [*] (0.0735)
Intercept 5	0.425 ^{***} (0.156)

Observations 780

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

4.6 Conclusion

To summarize, in this chapter, I use and discuss two approaches to analyze unbalanced and irregular compositional data to answer why some coalition partners receive

more, and more important, portfolios than others. Parties' portfolios are the most immediate manifestation of the bargaining leverage they hold over their partners. Existing research posits that parties' bargaining power, and thus their ability to receive many and important portfolios, derives from their size in terms of parliamentary seats or their role as the agenda-setter. In contrast, I argue that parties' ability to credibly threaten to abandon coalition negotiations determines how many portfolios they can receive and how salient they are. Parties can only credibly threaten to do so if they can enter negotiations over at least one alternative government that is viable and ideologically attractive. As such, I expect parties to receive a greater share of salience-weighted portfolios, the more exit power they have. I use a novel measure of exit power as the main explanatory variable. This measure is theoretically motivated and comparable across countries and over time.

Coalition parties' portfolio shares are compositional data and should be modeled accordingly. Given a limited number of portfolios that can be divided between several parties, one party receiving more portfolios means there are fewer left for the remaining parties to obtain. Using standard OLS regressions with such data leads to inefficient and biased results. Portfolio shares, however, present a unique methodological challenge since the ministerial posts are not always divided between the same number of coalition parties. Rather, the number of coalition parties varies; in my sample, it ranges from two to six. While seemingly unrelated regressions can account for dependencies across observations, and thus, equations, they cannot be used with irregular and unbalanced compositional data since the number of equations to be estimated is not the same for each observation, i.e. government.

Rather than using the standard OLS specification used in existing research, I use two approaches to analyze what determines government parties' portfolio shares. First, I estimate seemingly unrelated regressions for subsamples where the number of government parties is held constant. This allows me to examine trade-offs in portfolio shares between

individual coalition members. However, it makes comparisons across parties and government sizes hard. I find that, in coalitions of all sizes, exit power has a consistently positive effect on parties' portfolio shares for the strongest and second-strongest party in government. For the weaker parties in three-, four-, and five-party coalitions, the results are mixed, with exit power sometimes having a negative effect on salience-weighted portfolio shares. Performing a meta-analysis on all results obtained from the separate SUR estimations shows that exit power has an overall positive effect on portfolio shares. The effect is biggest for three- and four-party coalitions.

Second, I estimate a generalized estimating equations model where I enter explanatory variables separately for each coalition party. This model still allows for dependencies across parties in the same coalition. I find that for the strongest four parties, exit power has a positive effect on the share of salience-weighted portfolios they receive. In five-party governments, exit power has a negative effect on the salience-weighted portfolio shares the weakest party receives. This model uses all observations in one model, which makes comparisons across parties and governments of different size easier.

Both approaches show dynamics in the allocation of portfolios that the standard specification does not. Both show that the magnitude of the effect exit power has on salience-weighted portfolio shares is not the same across all coalition parties. In fact, the effect is bigger and statistically significant for the strongest parties in office. Moreover, both approaches show that the effect is negative for the weakest party in five-party governments. In addition, SUR models show that the effect of exit power is negative for the weakest parties in three- and four-party governments as well. While the GEE model does not uncover this dynamic, the ease of interpretation and easy re-structuring of data make it a valuable approach to appropriately modeling unbalanced and irregular compositional data.

4.7 Appendix 5: Robustness Check OLS

Table 4.6: A1: Exit Power and Seat Shares and Portfolio Allocation

	Model 1	Model 2	Model 3	Model 4
Exit Power	0.454*** (0.0542)	0.356*** (0.0493)		
PM	0.319*** (0.0303)	0.257*** (0.0276)	0.118*** (0.0275)	0.114*** (0.0261)
PM * Exit Power	-0.0952 (0.0751)	-0.114* (0.0675)		
Government Seat Share			0.600*** (0.0356)	0.512*** (0.0350)
PM * Seat Share			0.00817 (0.0558)	-0.0203 (0.0530)
Portfolio Share _{t-1}		0.291*** (0.0215)		0.187*** (0.0199)
Constant	0.108*** (0.0347)	0.102*** (0.0312)	0.111*** (0.0262)	0.108*** (0.0248)
Fixed Effects	Yes	Yes	Yes	Yes
Observations	780	780	780	780
R ²	0.574	0.656	0.710	0.740

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

4.8 Appendix 6: Seemingly Unrelated Regression Results

Table 4.7: The Effect of Exit Power and Seat Share – All 2-Party Coalitions

	Party 2 relative to Party 1		Party 1 relative to Party 2	
Exit Power	0.0991 (0.703)		0.321 (0.651)	
Seat Share		2.358*** (0.336)		2.156*** (0.322)
PM	1.032*** (0.131)	0.263* (0.155)	0.982*** (0.123)	0.290** (0.147)
Constant	-0.682** (0.278)	-1.320*** (0.117)	-0.527 (0.410)	-1.174*** (0.151)
Observations	109	109	108	108

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 4.8: The Effect of Exit Power – All 3-Party Coalitions

	Portfolio Share of ...					
	Party 2 relative to Party 1	Party 3	Party 1 relative to Party 2	Party 3	Party 1 relative to Party 3	Party 2
Exit Power	5.560** (2.355)	-0.412 (2.066)	2.977* (1.555)	-0.796 (2.400)	2.953* (1.731)	0.235 (3.361)
PM	0.620** (0.275)	1.948*** (0.303)	0.710*** (0.212)	1.602*** (0.315)	0.885*** (0.239)	0.482 (0.360)
Constant	-2.430*** (0.765)	-0.901* (0.542)	-1.199* (0.641)	-0.255 (0.623)	-1.100 (0.728)	0.0377 (1.087)
Observations	51		50		50	

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 4.9: The Effect of Seat Share – All 3-Party Coalitions

	Portfolio Share of ...					
	Party 2 relative to Party 1	Party 3	Party 1 relative to Party 2	Party 3	Party 1 relative to Party 3	Party 2
Seat Share	4.024*** (0.526)	4.041*** (0.693)	2.618*** (0.396)	2.219*** (0.807)	2.184*** (0.498)	2.955*** (0.764)
PM	0.0659 (0.226)	0.319 (0.357)	-0.0401 (0.192)	0.560 (0.413)	0.312 (0.248)	-0.300 (0.330)
Constant	-1.518*** (0.137)	-1.769*** (0.166)	-0.772*** (0.173)	-0.853*** (0.200)	-0.581*** (0.215)	-0.491** (0.210)
Observations	51		50		50	

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 4.10: The Effect of Exit Power – 4-Party Coalitions, Part I

	Portfolio Share of ...					
	Party 2 relative to Party 1	Party 3	Party 4	Party 1 relative to Party 2	Party 3	Party 4
Exit Power	5.794** (2.520)	0.383 (3.349)	-0.753 (2.862)	3.631** (1.546)	-2.872 (3.159)	-3.466 (2.745)
PM	0.915*** (0.228)	1.231*** (0.287)	1.118*** (0.328)	0.592*** (0.221)	1.144*** (0.270)	1.159*** (0.292)
Constant	-2.306*** (0.690)	-1.048 (0.781)	-0.751 (0.528)	-0.887* (0.510)	0.355 (0.734)	0.348 (0.501)
Observations	43			45		

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 4.11: The Effect of Exit Power – 4-Party Coalitions, Part II

	Portfolio Share of ...					
	Party 1 relative to Party 3	Party 2	Party 4	Party 1 relative to Party 4	Party 2	Party 3
Exit Power	2.639 (1.659)	3.713 (2.799)	-1.695 (2.599)	2.572* (1.557)	3.753 (2.838)	-2.203 (3.158)
PM	0.412* (0.238)	0.875*** (0.252)	1.128*** (0.296)	0.522** (0.223)	0.813*** (0.253)	1.174*** (0.273)
Constant	-0.304 (0.552)	-0.980 (0.768)	0.175 (0.479)	-0.362 (0.515)	-1.021 (0.779)	0.304 (0.733)
Observations	43			44		

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 4.12: The Effect of Seat Share – 4-Party Coalitions, Part I

	Portfolio Share of ...					
	Party 2 relative to Party 1	Party 3	Party 4	Party 1 relative to Party 2	Party 3	Party 4
Seat Share	3.528*** (0.819)	3.804*** (0.833)	4.388*** (0.803)	2.757*** (0.600)	3.785*** (0.748)	3.848*** (0.727)
PM	0.316 (0.255)	0.396 (0.282)	0.223 (0.287)	0.00478 (0.212)	0.469* (0.252)	0.323 (0.265)
Constant	-1.382*** (0.180)	-1.554*** (0.185)	-1.547*** (0.166)	-0.556** (0.231)	-0.945*** (0.160)	-0.867*** (0.156)
Observations	43			45		

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 4.13: The Effect of Seat Share – 4-Party Coalitions, Part II

	Portfolio Share of ...					
	Party 1 relative to Party 3	Party 2	Party 4	Party 1 relative to Party 4	Party 2	Party 3
Seat Share	3.346*** (0.620)	3.332*** (0.865)	3.432*** (0.783)	2.993*** (0.596)	2.958*** (0.830)	3.898*** (0.806)
PM	-0.0113 (0.221)	0.148 (0.266)	0.428 (0.275)	0.00647 (0.211)	0.347 (0.260)	0.335 (0.269)
Constant	-0.644*** (0.246)	-0.554*** (0.199)	-0.645*** (0.172)	-0.528** (0.238)	-0.548*** (0.191)	-0.817*** (0.176)
Observations	43			44		

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 4.14: The Effect of Exit Power – 5-Party Coalitions, Part I

	Portfolio Share of ...					Party 2 relative to Party 3	Party 4 relative to Party 3	Party 5				
	Party 2 relative to Party 1	Party 3 relative to Party 1	Party 4 relative to Party 1	Party 5 relative to Party 1	Party 1 relative to Party 2							
Exit Power	7.499 (12.40)	12.91 (14.43)	1.668 (10.71)	-14.89* (8.903)	20.01 (13.26)	6.705 (14.31)	10.19 (7.702)	-19.58** (9.697)	16.92 (13.01)	5.494 (13.59)	-8.190 (7.958)	-14.39* (7.751)
PM	0.653* (0.337)	0.0559 (0.610)	0.786 (0.652)	0.938 (0.770)	0.494 (0.478)	0.547 (0.629)	1.072** (0.455)	1.295 (0.832)	0.490 (0.469)	0.0317 (0.385)	1.902*** (0.478)	0.681 (0.653)
Constant	-2.318 (2.819)	-3.524 (2.925)	-1.615 (1.940)	1.399 (1.292)	-4.864 (3.281)	-1.943 (2.896)	-2.805** (1.388)	2.388* (1.389)	-3.540 (3.226)	-0.714 (3.084)	0.984 (1.436)	2.260** (1.107)
Observations	13					13					13	

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 4.15: The Effect of Exit Power – 5-Party Coalitions, Part II

	Portfolio Share of ...					Party 2 relative to Party 5	Party 3 relative to Party 5	Party 4 relative to Party 5
	Party 1 relative to Party 4	Party 2 relative to Party 4	Party 3 relative to Party 4	Party 5 relative to Party 4	Party 1 relative to Party 5			
Exit Power	23.10** (11.64)	12.19 (11.28)	9.426 (13.90)	-24.19** (8.332)	14.21 (14.26)	7.177 (15.00)	5.763 (9.006)	-8.129 (9.782)
PM	0.611 (0.419)	0.0357 (0.326)	0.581 (0.623)	1.209* (0.711)	0.546 (0.519)	-0.0239 (0.429)	0.369 (0.396)	1.553*** (0.584)
Constant	-4.799* (2.879)	-1.892 (2.562)	-1.607 (2.812)	3.925*** (1.192)	-3.190 (3.531)	-1.385 (3.415)	-1.504 (1.830)	0.689 (1.777)
Observations	13					13		

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 4.16: The Effect of Seat Share – 5-Party Coalitions, Part I

Seat Share	Portfolio Share of ...										
	Party 2 relative to Party 1	Party 3 relative to Party 1	Party 4 relative to Party 1	Party 5 relative to Party 1	Party 1	Party 3 relative to Party 2	Party 4 relative to Party 2	Party 5 relative to Party 2	Party 1 relative to Party 3	Party 2 relative to Party 3	Party 4 relative to Party 3
7.462*** (1.608)	2.419 (2.553)	1.998 (2.507)	8.183*** (1.387)	3.384*** (0.934)	0.835 (2.017)	4.602*** (1.320)	7.484*** (1.662)	4.211*** (0.594)	6.655*** (1.748)	0.425 (1.942)	5.139*** (1.573)
0.302 (0.254)	0.256 (0.646)	0.392 (0.732)	-0.342 (0.615)	0.519 (0.316)	0.316 (0.581)	0.984*** (0.334)	0.191 (0.709)	0.677*** (0.207)	-0.294 (0.269)	1.455*** (0.510)	-0.323 (0.695)
-2.175*** (0.372)	-1.496*** (0.336)	-1.220*** (0.431)	-1.806*** (0.257)	-1.155*** (0.421)	-0.686** (0.345)	-1.388*** (0.168)	-1.377*** (0.302)	-0.994*** (0.257)	-0.853** (0.398)	-0.495** (0.245)	-0.439* (0.265)
Observations	13										

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 4.17: The Effect of Seat Share – 5-Party Coalitions, Part II

Seat Share	Portfolio Share of ...										
	Party 1 relative to Party 4	Party 2 relative to Party 4	Party 3 relative to Party 4	Party 5	Party 1	Party 2 relative to Party 5	Party 3 relative to Party 5	Party 4	Party 1 relative to Party 5	Party 2 relative to Party 5	Party 3 relative to Party 5
2.646*** (0.767)	6.911*** (1.479)	1.855 (1.695)	3.822*** (0.797)	6.909*** (2.180)	2.399* (1.273)	0.281 (2.382)					
0.593** (0.250)	-0.203 (0.240)	0.245 (0.485)	0.685** (0.292)	-0.335 (0.350)	0.209 (0.360)	1.362** (0.649)					
-0.00680 (0.367)	-0.602* (0.341)	0.0656 (0.296)	-0.523** (0.230)	-1.205** (0.523)	-0.663*** (0.247)	-0.785** (0.369)					
Observations	13										

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

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