Short versus Long Coalitions:
Electoral Accountability and the Size of the Public Sector

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Abstract

This paper examines the policy consequences of how many parties form governments in parliamentary systems. We argue that parties externalize costs not borne by their support groups; and larger parties internalize more costs than small parties because they represent more groups. This argument implies that the public sector should be larger the more parties there are in government. We test this prediction using yearly time series cross sectional data from 1970 to 1998 in 17 European countries, and find that increasing the number of parties in government increases the fraction of GDP accounted for by government spending by close to half a percentage point, or more than one billion current dollars in the typical year. We find little support for the alternative claim that the number of legislative parties affects the size of the public sector, except by way of the number of parties in government.

Introduction

Democratic government is government by coalition. In many countries, typically in countries with Proportional Representation (PR) electoral rules, governments are formed when parties representing narrow interests build temporary majority coalitions among themselves following an election to form a legislative majority. Single party governments in majoritarian systems are also coalitions in the sense that no party can win majority support without representing a coalition of groups in society. But majority-seeking parties are "long coalitions" forged to create a majority coalition before the election, and are intended to last beyond the next election (Schwartz 1989, Aldrich 1995).

In this paper we consider whether or not the timing and durability of coalitions matter for how society's interests are aggregated. Does it matter if a government is formed by a single party representing a long coalition of interests, or by a short coalition of several parties each representing a single interest? One might think that in either case, a roughly majority-sized coalition of groups in society would control government through their agents. Indeed, work on coalition governments often assumes a single dimensional space in which a median legislator or median party decides policy (Kalandrakis 2002, Huber and Powell 1994). [1]

We argue here that policy outcomes will in fact be different depending on whether a legislative majority is formed prior to an election in the form of a majority-seeking party, or formed after elections as a coalition of parties, even if the composition of societal interests is identical. A government coalition of many parties behaves differently than a single-party coalition of many interests because of electoral accountability. A single party in government is

[1] See also Austen-Smith and Banks (1988) who present a model in which the policy outcome that emerges from the legislative process in a proportional system with three parties is a compromise between the platforms of two parties, one of which adopts the median position, and one other party.

accountable for all policy decisions it makes; if it wants to keep its majority, it must promote the collective interest of a broad support base (Cox 1987). Participants in multi-party coalition governments, by contrast, are held primarily responsible for only a subset of policy decisions, for the policy areas in which they have the biggest stake, and the biggest impact. The difference in electoral accountability, we argue, is reflected in systematic differences in policy decisions.

Specifically, we claim that more parties in a government coalition means less efficient bargains struck between the groups those parties represent, and these less efficient bargains imply a larger public sector, other things equal, as the number of parties in government increases. Examination of yearly government spending patterns in Europe from 1970 to 1998 supports this claim.

In section 1 below, we sketch a model of electoral accountability. We contrast the policy choices of single- and multi-party governments to show how more parties in a government coalition may imply higher levels of spending by increasing the tendency of groups to externalize the costs of their favored projects onto other groups. Section 2 describes the yearly spending data we use to test this theory and Section 3 discusses statistical problems that arise from the time series cross-sectional nature of our data. Section 4 presents our main finding: Increasing the number of parties in government does in fact increase the fraction of GDP accounted for by the public sector, controlling for economic conditions, the fragmentation of the legislative party system, last year's spending, and country fixed effects. Section 5 discusses implications of the number of parties in government for outcomes other than the size of the public sector. Section 6 concludes.

1. Single versus Multi-Party Governments and the Logic of Costs and Benefits

There is substantial scholarly interest in the effects of government forms on public policy, but little agreement as to net effects on government spending or the mechanisms by which structures of accountability matter. While Grilli, Masciandaro and Tabellini (1991) found that majoritarian systems tended to carry smaller government debt than proportional systems, Persson and Tabellini (1999) argued that majoritarian systems should generate less public goods, more redistribution, and larger government by creating incentives to target marginal districts. Lizzeri and Persico (2001), like Persson and Tabellini, emphasize incentives to target in majoritarian systems, but conclude that fewer public goods and more pork barrel predicted for majoritarian systems have ambiguous consequences for total spending.

Theorizing about the effects of electoral rules on government spending yields indeterminate predictions because it fails to incorporate legislative bargaining. We address that problem by focusing on the electoral accountability of governments to groups in society, depending on how many parties are in government. While other scholars have also paid attention to the legislative bargaining dynamics inherent in different electoral rules (Austen-Smith and Banks 1988), we find unduly restrictive their assumption of bargaining unidimensionality and therefore build on a different set of analytic foundations.

We begin with a set of stylized examples that contrast the electoral accountability of short coalitions, long coalitions, and cases in between. For comparability and simplicity, all of these are coalitions of *groups*. In the case of a long coalition, the groups form a single ongoing party, whereas in a short coalition, each group has its own party, and coalitions form anew after each election.

Suppose there are five groups in society and that each group *i* has a "project"[2] or issue that it cares about. Let x_i denote the scale of the *i*-th project – the degree of protection for a particular industry, for example, or the level of public benefits targeted to a particular group. Let the benefits of project *i*, $B(x_i)$, accrue only to the group *i*, while the costs $C(x_i)$ are born by all groups, so that each group's cost share of project *i* is $\frac{C(x_i)}{5}$. In order to focus on cases in which all participants have finite ideal points (i.e., even farmers don't want all of GDP spent on farm subsidies), we assume that benefits are linear, that is, $B(x_i) = x_i$, and that costs are quadratic, or $C(x_i) = x_i^2$, for all projects.

Straightforward maximization of $B(x_i) - \frac{1}{5}\sum_{j=1}^{5} C_j(x_j)$ tells us that the *i*th group's ideal policy grants benefits to itself up to the point where marginal benefit is equal to its own share (1/5-th) of marginal cost ($x_i = \frac{5}{2}$), and no benefits at all to any other group ($x_j = 0$ for $j \uparrow i$). In economist's terms, the group "externalizes" all costs and benefits borne by others.

The question for us is how the preferences of groups are represented by parties and reflected in the policies of governments. We consider three scenarios, corresponding to three configurations of parties.

Scenario 1: Single-party majority. A natural assumption in this scenario is that the majority party implements the policy that maximizes the joint utility of the groups from which it draws electoral support. That is, on each issue, the single party government sets policy at the point where the marginal benefits *accruing to its constituent groups* equal the marginal costs *borne by its constituent groups*. Assuming for simplicity that groups are roughly the same size, the single

[2] The term "project" reflects the historic use of this type of model in studies of pork barrel politics, such as Weingast 1979 and Weingast, Shepsle and Johnsen 1981.

party government must represent a majority of groups, in this example, three. Suppose then that the majority party represents groups 1, 2 and 3. Its policy positions will thus maximize

$$\sum_{j=1}^{3} x_j - \frac{3}{5}\sum_{j=1}^{5} x_j^2 ,$$

implying an ideal policy of $x_i = \frac{5}{6}$ on the dimensions that benefit the party's constituent groups, and zero on the other dimensions. The overall cost of the public sector is $3\times\left(\frac{5}{6}\right)^2 = \frac{25}{12}$. Each group in the party's support coalition gets less than its own ideal of 5/2 on its own policy dimension, but each group benefits from being represented by the party in government. (Note that groups 4 and 5 get no benefits and still pay their share of costs.) The groups represented by the majority party cannot do better *collectively* by supporting any other party.

Individually, however, each constituent group may be tempted to shift its support to a party that espouses a policy closer to its own ideal – that is, a higher level on the group's own policy dimension, and a lower level on the others. Under a first-past-the-post electoral system, this temptation is unlikely to be compelling, because groups will realize that small parties with narrow support bases cannot win office. Under proportional representation, however, narrow-interest parties can win seats in the legislature and may be part of coalition governments. The key question for voters who might support such a party is: what effect will a narrow interest party have on the policy of a government of which it is part?

This is the question at the heart of our paper. The electoral accountability argument above (in which a single majority party is led to maximize the joint utility of its support groups) does not apply to a coalition government composed of parties that will run against each other in the next election. Parties in a multi-party coalition government fall into the broader category of

political agents who contribute to, but cannot unilaterally determine, the policies that affect their electoral principals. (Individual legislators are, of course, another example in this category.) Schwartz (1994) analyzes the broad class of situations in which individual agents are accountable for collective choices. He argues that in this situation, agents try to maximize their *marginal product*. That is, the agent (party) tries to maximize its individual contribution to principal's (group's) welfare. In principle, it is very difficult to determine each coalition member's marginal contribution to government policy, but in practice, reasonable assumptions suggest themselves.

Specifically, we note that parties compete not simply on the basis of policy positions, but also on the priority they give to different issues. Moreover, when a party seeks the support of a particular group, it does so both by adopting something close to the group's ideal policy *and* by emphasizing the priority it will give to the group's most salient issue. Concretely, a party targeting farmers will favor high values of farm support policy, low support for other groups and sectors, and will give highest priority to the farm dimension. We further assume that coalition governments strike efficient bargains among the parties. This means that the coalition partner that gives highest priority to a given policy dimension will be able to set policy on that dimension (and in exchange, the other coalition partners are able to control the dimensions most important to them.) This assumption about policy-making bears some similarity to Laver and Shepsle's (1994, 1996) model of ministerial government.[3] Ministerial independence is one

[3] Our argument is also consistent with the empirical finding that parties in coalition seem to get cabinet positions in rough proportion to their size (Laver and Schofield 1990; Druckman and Wakefield 2001). In our model, a larger party would represent more groups and therefore care about having more ministries, whereas a smaller party would be content to focus on the ministry it cares most about.

plausible mechanism through which these inter-party logrolls can be implemented, but they could also be reflected in binding coalition agreements (Thies 2001).[4]

With this informal model of policy-making by coalition government in mind, we now return to our stylized world of five groups.

Scenario 2: Fragmented Party System. In this scenario, each group is represented by its own party. Continuing to assume that groups are roughly equivalent in electoral strength, and that majorities will be minimal winning, we will now have five parties in the legislature, and a three-party government coalition. Suppose parties 1, 2 and 3 form a government, so that precisely the same groups are represented as in the single party example above. Each party adopts the ideal point of its support group, and is able to implement that idea on the support group's dimension, so that $x_i = \frac{5}{2}$ for $i = 1, 2, 3$ and zero for $i = 4$ and 5. The overall cost of the public sector is now 75/4, substantially more than it would have been with a single-party majority.

Scenario 3: Large and small in coalition. A third possible scenario is a coalition government formed by a larger party A representing groups 1 and 2, and smaller party B that represents group 3. Party A would maximize the joint welfare of groups 1 and 2, giving Party A an ideal point of $x_i = \frac{5}{4}$ for $i = 1, 2$ and would imply that Party A split its priorities evenly between the first two policy dimensions. Party B's priority would be entirely with dimension 3, where its ideal level would be 5/2. Party A would control dimensions 1 and 2, Party B dimension 3, and there would be no disagreement among the coalition partners about dimensions

[4] Thies presents evidence that coalition partners monitor each other, presumably to stay withing the coalitional contract. Our model would imply that this kind of oversight occurs most for ministries that affect multiple dimensions.

4 and 5. The overall cost of the public sector would be 75/8, larger than in Scenario 1, where the same groups were represented by a single party, and smaller than Scenario 2, where they were represented by three, rather than two, parties.

This set of examples is obviously very crude. In a related paper [citation removed], we derive conditions under which this kind of behavior by a multi-party government can be sustained as a Nash equilibrium. Among other things, we show that party configurations along the lines of *both* Scenarios 2 and 3 can be sustained under proportional electoral systems. That is, proportional representation can produce different numbers of parties in government, which will in turn produce public sectors of different sizes. That our model does not simply mirror electoral rules is important for our empirical analysis, where we look at the impact of number of parties in government in a dataset in which almost all of the countries use proportional representation.

While these three examples abstract from reality in drastic ways, some simplifications are relatively innocuous. The model can be extended in straightforward ways to accommodate groups that care about multiple issues, issues that benefit more than one group, costs are not completely diffuse, and groups that are represented by more than one party. None of these extensions would alter our basic claim about the inefficient consequences or fragmented electoral accountability.

Other simplifications are more restrictive. In particular, the model ignores the possibility of a group that cares most about keeping the public sector as small as possible, the sort of group that one might think is represented by, say, the German FDP. There are two (non-mutually exclusive) ways that we could respond to this point. One would be to simply acknowledge this empirical limitation, noting that if this kind of party occurs often, this will limit our ability to

find evidence in support of our theory. A second response would to be to raise the possibility that parties that market themselves as fiscal conservatives sometimes nonetheless have dimensions on which they favor targeted benefits (which may be delivered via regulatory support or tax breaks rather than through spending per se.)

The three scenarios also imply that more parties in the legislature will lead to a larger public sector, but only indirectly, insofar as more parties in the legislature implies more parties will likely be needed to form a government. Return to third scenario above, in which a large party, representing groups 1 and 2, forms a government with a small party representing group 3. Suppose in this legislature that groups 4 and 5 were also represented each by their own party, so that there are 4 parties in the legislature. It would thus be possible in this legislature for a majority coalition to form around three parties representing groups 3, 4 and 5. This alternative coalition would spend just as much as the three-party coalition in Scenario 2 (albeit on different dimensions.) Thus, our model predicts that increasing the number of parties in government will increase the size of the public sector, even when we hold the number of parties (or effective number of parties) in the legislature constant.

We make this last point to highlight a contrast between our argument, which emphasizes the electoral accountability of governments, and an alternative that emphasizes universalist logrolls in legislatures. Scartascini and Crain (2002) and Mukherjee (2003) have argued (following Weingast 1979) that legislatures tend to adopt norms of universalism, and that the size of the public sector is determined by logrolls in which all parties in the legislature get something. We find the universalist model implausible for parliamentary countries in which government and opposition are clearly defined. Nonetheless, we will control for the number of

parties in the legislature in order to rule out legislative universalism as a competing explanation for the patterns we observe.

2. Data: The Size of the Public Sector, Number of Parties, and Controls

Our argument rests on two claims: first, parties externalize costs not borne by their own constituent groups; and second, because electoral accountability is fragmented, participation in a coalition government is not sufficient to internalize these costs. The testable implication of these two claims is that spending to deliver targeted benefits will increase as the number of parties in government increases, other things equal.

We test our claim with data from 17 Western European countries, from 1970 to 1998. This is the broadest time period for which we could get data on all of the variables described below. Table 1(A) displays the years and countries included in our dataset.[5] For three of our countries, Greece, Portugal and Spain, our data series starts later than 1970 because we exclude non-democratic periods. Luxembourg starts later because some of the economic control variables are not available prior to 1974.[6]

(a) Size of the Public Sector

Our dependent variable is overall government expenditure in a given year, measured as a fraction of GDP.[7] Summary statistics for this and all explanatory variables are provided in Table 1-B. We chose to look at overall spending, rather than narrower measures of specific types of spending targeted to specific groups for several reasons. First, narrower categories of

[5] Warwick, on whose careful coding of governments we rely, excludes Switzerland because of its extremely unusual "unanimous executive" in which four main legislative parties split cabinet portfolio's evenly rather than jocky for places in a minimum winning coalition.
[6] Excluding Luxembourg completely from the sample does not alter the statistical signficance of any results we present below, nor does it have much impact on the estimated magnitudes.
[7] Our measure of spending is "Total Government Outlays as a Fraction of GDP" (CN056OTT), extracted from the OECD Quarterly National Accounts database (OECD 2002).

spending are harder to measure in comparable ways across countries. Second, if we focused on a particular type of spending, our predictions about spending levels would become contingent upon *which* parties are in government, not just how many. We would need to be able to identify the particular groups in each country that benefit from a particular type of spending, including groups whose benefits come in the form of government contracts to deliver the final goods and services (Weingast, Shepsle and Johnsen 1981).[8] We would also need to be able to identify the parties that target each group in each country. We have little confidence in our ability to *a prioiri* associate parties with spending categories across a number of countries.[9] Looking at overall spending removes the temptation to focus on the types of spending that best fit our theoretical model. Systematic effects of the number of parties in government on total spending imply not only that smaller parties externalize more costs than large ones, but that the magnitude of cost-externalization is big enough to affect the size of the public sector overall.

(b) Measuring Parties in Government

Our key independent variable is the number of parties in government. Our data of parties in government come from Warwick's (1994) project on government survival. We consider parties "in government" if they are formal members of the governing coalition. That is, we do not count parties that informally support the government by supporting it or abstaining on key votes. A minor difficulty arises from the fact that our dependent variable is observed on an annual basis, and governments may change mid-year. In cases where the number of parties in

[8] Swank 1988, for example, focuses on civilian spending. This type of narrower focus would be only be appropriate for our purposes if we were certain that military spending was driven completely by international considerations, and that there were no domestic groups that would draw benefits from military contracts or other types of spending.

[9] Bawn (1999) discusses the difficulties of associating spending categories with parties in Germany, that is, in a single country with a notably simple and stable party system. These problems would loom even larger in countries like Italy or France, where the party systems are more fluid.

government changes during the year, we take the weighted average (weights are days in power.) [10] For example, if a coalition of 3 parties rules for 9 months and a coalition of 2 parties for the remaining 3 months, the number of parties would be coded as 2.75. In calculating the weighted average, we exclude periods of crisis, so that a year with 6 months of government by 3 parties and 3 months of government by 2 parties and 3 months of crisis would be coded as 3*(6/9) + 2*(3/9) = 2.67. We use this same weighting scheme in constructing a variable to control for government ideology.

(c) Control Variables

As we have discussed, we control for the effective number of parties in the legislature. Our prediction is that once the number of parties in government is accounted for, the number of legislative parties should not matter. Like the proponents of legislative universalism (Scartascini and Crain 2000, Mukherjee 2003), we use the effective number of legislative parties (ENLP), the reciprocal of the sum of squared seats shares across all parties represented in the legislature. Mean values of ENLP and Parties in Government for each country are given in Table 1(A), overall summary statistics in 1(B).

We also control for the government's ideological orientation to capture the common expectation that left-wing governments spend more than their right-wing counterparts. Systematic evidence regarding this claim is mixed, perhaps because party ideology is measured

[10] One might think that it would be better to code the composition of the government at the time that the yearly budget was passed. We have not done this, in part because we do not currently have dates of budget passage. The data problem could be addressed, but there is also a theoretical reason to use the weighted average. Many countries pass supplemental budgets altering allocations from the primary budget. Since our dependent variable reflects actual outlays, our primary independent variable should take account of all governments who have an opportunity to affect public sector spending.

in a number of ways, or because the effects of partisanship may be mediated by other factors.[11] Our own expectation is that all groups prefer more rather than less spending on themselves, and that "ideological differences" are more about types of spending than amounts. On the other hand, our model does not rule out the possibility that some sets of groups have more expensive projects, or benefit more from policies that are delivered via public spending, rather than via tax breaks or regulations.

Our measure of ideology comes from the Comparative Manifestos Project, which undertook a comprehensive content analysis of the party manifestoes released prior to elections from 1945 to 1998 (Budge et al 2001).[12] Higher values for this variable indicate a more right-wing orientation. Examples from single-party governments in the UK provide helpful calibration. The Labour government in the 1970's under James Callaghan has an ideology score of -27.5. In the late 1980's, Margaret Thatcher's Conservative government scores 30.5. In the late 1990's, Tony Blair's "new" Labour government receives a score of 8.07.

[11] Swank (1988) finds evidence that government ideology affects the size of the public sector, while Solano's (1983) and Rice's (1986) studies show no systematic effects of ideology, and Imbeau, Petri and Lamari's meta-analysis finds effects that are small and unstable. More recently, Blais, Blake and Dion (1993) use a time series cross sectional dataset similar to ours and find small ideological effects. Stronger evidence for the effect of ideology come from studies that focus on particular types of spending (Hicks and Swank 1992, Hicks, Swank and Ambuhl 1989).

[12] Specifically, we use the Manifestoes Projects "right-left position of party" variable, compiled from party statements on issues identified by Laver and Budge (1992) to have particular ideological meaning. These include military, democracy, constitutionalism, political authority, free enterprise, incentives, protectionism, economic orthodoxy, welfare state limitation, national way of life, traditional morality, law and order, social harmony, anti-imperialism, military, peace, internationalism, freedom and human rights, economic planning, controlled economy, nationalization, welfare state expansion, education expansion, and labor groups. The variables represent the percentage of quasi-sentences in a manifesto in each category, with the total number of quasi-sentences in each manifesto as the denominator of the fraction. For similar uses of this variable, see Martin and Stevenson (2001), and Hix, Noury and Roland (2005).

We map the Manifestos values of party ideologies onto governments by taking a weighted average of the parties in the government coalition.[13] As with number of parties, we map the ideological codes for governments into observations on years by taking a weighted average based on days.

We also control for whether the government is a caretaker government, using Warwick's coding. Because caretaker governments are generally not empowered to implement new policies, we expect them to spend less. Our variable is the fraction of the year for which there is a caretaker government.

Finally, we also control for socio-economic influences on the size of the public sector, specifically, unemployment, GDP per capita, trade openness and the dependency ratio.[14] GDP per capita is measured in billions of constant U.S. dollars (using 2000 as a base year), divided by population in millions.[15] Unemployment is measured as number unemployed as a percentage of the total labor force. [16] Trade openness of the economy is measured as Imports + Exports, divided by GDP. The dependency ratio is measured as the fraction of the population that is either under 15 or over 64.

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[13] There are a small number of parliamentary parties which participated in governments in our sample, but which have not been coded by the Manifestos Project: the Iceland Splinter Party, Reformists and Independents in Portugal, the Sardinian Action Party and Dini List in Italy. The number of seats held by these parties is generally quite small. In these cases where we don't have an ideology measure from the party, we omit its seats from the denominator of the weighted average calculation.

[14] In preliminary analyses, we also controlled for population and inflation. These variables were never statistically signficant in any specifications, and inflation is arguably endogenous to public sector spending, We do not include either variable here.

[15] We obtain virtually the same results if we use GDP, GDP growth, or logged GDP in place of GDP per capita.

[16] The economic variables are taken from the OECD Economic Outlook Database, OECD 2002b. The unemployment variable may unfortunately be affected by different country's definitions of the labor force. The OECD has attempted to calculate a standardized unemployment rate, but it is available for only a small subset of the countries and years in our dataset.

We include these socio-economic variables as controls that may affect spending either directly or indirectly. Unemployment and the dependency ratio, for example, would be likely to directly increase spending on entitlement benefits (Korpi 2003; Castles 2001; Huber and Stephens 2001). Economic conditions may also influence spending indirectly by influencing the decisions of governments. Governments may spend more when GDP (or growth) is low in an attempt to stimulate the economy via public spending, or they may spend more, following the logic of Wagner's Law that greater affluence stimulates greater demand for the public sector spending (see Cameron 1978, Swank 1988, Glate and Zak 2002, Miljkovic 2004). Open economies have generally been found to spend more (Cameron 1978; Swank 1988, Rodrik 1998; Burgoon 2001; Garrett and Mitchell 2001), possibly reflecting government efforts to insulate trade-exposed domestic economies from global shocks.

A question arises here about timing. Government budgets go through the legislative process, and are generally voted prior to the year in which spending occurs. This would imply that the number of parties in government in 1970, for example, would influence spending in 1971. But many countries allow supplementary budgets to be passed mid-year, and governments may influence current spending in the way they implement policies. Single-country studies of public sector spending (e.g. Hofferbert and Budge, 1989, Budge and Hofferbert 1990, Bawn 1999) often lag all independent variables, on the assumption that decisions about what is spent in year t are made in year $t - 1$ (or even earlier).[17] Multi-country studies, on the other hand, generally ignore any timing difference between spending decisions and the spending itself, though Blais, Blake and Dion (1993) acknowledge that this could be problematic. Rather than take a position *a priori* on whether political or socioeconomic affect

[17] Hofferbert and Budge (1989) offer empirical evidence in support of lagged effects.

the size of the public sector immediately or with a delay, we allow for both possibilities. We estimate our models with both lagged and current values for all variables.

We also control for the previous year's level of spending, by including a lagged dependent variable in all of our regressions. Like most macroeconomic time series, the size of the public sector displays substantial serial correlation. At minimum, including the lagged dependent variable prevents us from, in King's and Laver's words "believing you have more information than you really do" (King et al, 1993, p. 745).[18] Like King et. al., we think that one reason why public sector spending is autocorrelated is that governments may not be able to implement every part of their program right away. Note, however, that this is a separate issue from whether or not to lag the independent variables. Concretely, we lag the independent variable to capture the possibility that the size of the public sector in 1975 was determined in 1974 by the government that was in power then. We include the lagged dependent variable to capture the possibility that spending in 1975 is also affected (via continuing programs, for example) by spending in 1974.

The lagged dependent variable creates some difficulties of its own, however, in terms of its relationship to fixed country effects, its potential endogeneity, and to how it affects the interpretation of the other lagged and contemporaneous variables. We will address these issues below when we discuss our estimation strategies.

A final issue related to control variables is whether to include "fixed effects," a set of dummy variable for each country (minus one). Fixed effects are appealing because they capture all the cultural and institutional factors that do not vary within a given country. For example, Britain's first-past-the-post electoral system, France's semi-presidential system, and

[18] For a dissenting view on including lagged dependent variables in studies of the political causes of public policy, see Hofferbert and Budge 1989.

Germany's federal structure are constant throughout the time period we study, so the fixed effects account for any influence these institutional features may have on the size of the public sector.

The disadvantage of including fixed effects is that the estimated slopes, β, in the regression equation

$$y_{it} = \alpha + x_{it}\beta + \nu_i + \varepsilon_{it}$$

(where ν_i is the fixed effect dummy for country *i*) are identical to those in the model in which all *x* and *y* variables are written in terms of deviations from their country means

$$(y_{it} - \overline{y}_i) = (x_{it} - \overline{x}_i)\beta + (\varepsilon_{it} - \overline{\varepsilon}_i)\,.^{19} \qquad (1)$$

This equivalence means that the when we put country effects into our model, the estimated effect of parties in government is based only on information about how it covaries with spending *within* a single country. That is, the fixed effect estimates of the effect of number of parties ignore the fact England has, on average, a smaller public sector than Belgium. The disadvantage of using fixed effects is thus that the information contained in cross-country variation is not incorporated into the estimated coefficients (see Beck and Katz 2004). We will present results with and without fixed effects below.

3. Estimation Issues

The time series cross-sectional (TSCS) nature of our data means that the standard regression assumption of independent, identically distributed errors is unlikely to hold. Specifically, there is likely to be contemporaneous correlation. A shock that increases Germany's public sector beyond what we would predict a given year is likely to increase the

[19] See, for example, Greene 1997, page 617 for this derivation.

public sector of other countries in that year. Second, there may be so-called "panel heteroskedasticity" in that the errors may have higher variance in some countries than others. Third, even though we include the lagged dependent variable, there may still be autocorrelated errors.[20]

A standard method of handling heteroskedasticity is to calculate panel-corrected standard errors (PCSE's), which use the panel structure to estimate the error covariance matrix. In Monte Carlo studies, PCSE's perform particularly well for data sets like ours in which the number of years (28) is somewhat (but not drastically) larger than the number of units (17 countries) (Beck and Katz 1995, 2004.) Unless otherwise noted, our estimates allow for the possibility of autocorrelation by using the standard Prais-Winsten transformation to estimate an autocorrelation coefficient (ρ), and we estimate a separate ρ for each country.[21]

The lagged dependent variable introduces endogeneity problems with respect to both the fixed effects and the lagged political and economic variables. That is, if the dummy variable (fixed effect) for Ireland affects spending in 1975, it presumably also affected spending in 1974, making the lagged spending variable endogenous to other regressors (Nickel 1981). Along the same lines, if current political and economic variables affect current spending, then the lagged

[20] Franzese and Hays (2005) point out that TSCS datasets may have spatial as well as temporal autocorrelation. We do not regard this as a likely problem for our dependent variable, as it might be for capital taxation or other policy areas in which spatial proximity is a significant consideration.

[21] Beck and Katz (1995) discuss some advantages of estimating a single autocorrelation coefficient for all panels. Doing so slightly increases the magnitude of our coefficients on number of parties and decreases the standard error. We choose to report the results using the panel-specific autocorrelation coefficients for two reasons. First, the estimated values of ρ did vary a great deal across countries (from -0.57 to 0.58). Second, following King et. al. , if we interpret ρ as essentially representing the speed at which governments can implement their desired programs, it seems quite reasonably that this would vary from country to country, depending on the relationship between government and civil service, staff sizes, etc.

dependent variable will be endogenous to the lagged economic and political variables. This endogeneity produces potentially biased estimates on the endogenous variables.

One way to correct for this bias begins by taking the first difference of all variables. This removes the fixed effects (the differences in these variables are always zero), but there remains a correlation between the lagged dependent variable (now in differences) and the error term. Anderson and Hsiao (1982) addressed the latter problem by using a further lag of the dependent variable as an instrumental variable. Subsequent work has shown that this type of estimator works best when the lagged levels of the dependent variable (rather than lagged differences) are used (Arellano 1989), and when all available lags are incorporated into a Generalized Method of Moments (GMM) estimator (Arellano and Bond 1991).[22]

Beck and Katz (2004) question the value of the Anderson-Hsiao style estimators for TSCS datasets as commonly analyzed in political science. As they point out, Nickel (1981) showed that the bias decreases as the number of time periods increases, so that problem is much more acute in "true panel" datasets (that is, those in which the number of units is quite large and the number of time periods quite low) than in a TSCS dataset like ours (in which the number of time periods is greater than the number of units.) Moreover, the bias affects the coefficient on the lagged dependent variable much more than the estimates of the other coefficients. The disadvantage of the Anderson-Hsiao family of estimators is that, like all estimators involving instrumental variables, mean squared error can increase drastically if the instruments are not highly correlated with the endogenous variable. As Beck and Katz put it, "We might be trading a small reduction in bias for a large decrease in efficiency." Beck and Katz also present results from Monte Carlo simulations that compared the Anderson-Hsiao estimator to the standard least-

[22] Wawro (2002) provides a good overview of the uses of the Anderson-Hsiao set of estimators in political science contexts.

squares model with fixed effects. In their Monte Carlo trials, the least squares estimates of the independent variable coefficients are slightly biased (around 2% of true coefficient value for a dataset like ours where N = 17 and T = 28), but its root mean squared error is notably smaller than that of the Anderson-Hsiao estimator. Judson and Owen's (1999) Monte Carlo results, however, indicate higher bias from uncorrected least squares (9% of true coefficient value for a dataset comparable to ours). Note also that some of the efficiency loss Beck and Katz find with the Anderson-Hsiao estimator may be mitigated by the Arellano and Bond's (1991) variant that uses all available lags as instruments.

Our approach to the conflicting Monte Carlo results is to estimate our fixed effects models both with and without the instrumental variable corrections. We present results using, first, Prais-Winten AR1 regressions with panel-corrected standard errors and panel-specific autocorrelation, and second, the Arellano-Bond GMM estimator.[23] The first approach emphasizes efficient estimation; the second emphasizes minimization of bias.

4. Results

Table 2 presents the main results on the determinants of the size of the public sector. Each column displays the coefficients from a single regression. The first three columns include both lagged and current values of all independent variables. The first two columns are AR1 regressions, with panel corrected standard errors and panel specific auto-correlation. Column (a) does not include fixed effects by country; column (b) does. The estimates in column (c) use the Arellano-Bond GMM estimator in which country effects are controlled for by taking first

[23] We are not able to calculate PCSE's in the GMM model, but we do report robust standard errors that make less efficient heteroskedasticity corrections. This estimator requires there to be no second-order autocorrelation. According to the test developed in Arellano and Bond (1991), our data meet this criterion.

differences. The specifications in columns (b) and (c) are thus substantively similar; the only difference is in the estimation procedure.

Focusing first on columns (a) through (c), we begin with the control variables. The lagged dependent variable is, as expected, always significant.[24] Second, both current and lagged values of the economic control variables are significant in at least some of the specifications The effects of current per capita GDP and unemployment are in the directions that Keynesian fiscal policy would predict: governments increase spending (relative to last year's spending) when GDP is low and unemployment is high. The lagged effects are in the opposite direction, and generally of similar magnitude. These economic variables all display extremely high degrees of autocorrelation, implying that the net effect of these economic variables is close to zero. That is, the fact that the value of lagged unemployment is generally very close to contemporaneous unemployment means that effect of the positive contemporaneous coefficient is offset of by the effect of the negative lagged coefficient. This is not surprising, given the presence of lagged spending in the equation.

Our statistical analysis generally corroborates the findings of the scholarly literature that claims that the welfare state is an insurer against economic dislocation (Cameron 1978; Swank 1988, Rodrik 1998; Burgoon 2001; Garrett and Mitchell 2001), though collinearity between the lagged and current values creates unstable results across specifications. More importantly for our purposes, trade openness does not eliminate the effects of number of parties on government spending.

None of the current political variables (Parties in Government, ENLP, Ideology and Caretaker) are statistically significant, but all lagged political variables except ENLP achieve

[24] Although the fixed effects estimates are not reported, they are jointly significant in columns (b) and (f).

statistical significance, at least in column (a). Furthermore, in columns (b) and (c), the *p*-values for lagged Ideology and Caretaker are much lower ($p < 0.2$) than the *p*-values for current values of these variables ($p > 0.5$). We interpret this as evidence that the effects of the composition of government are felt primarily at the stage when budgets are drafted and passed, and less at the implementation stage. Given the results in columns (a) – (c), we ran the same regressions with the current political variables omitted. We are particularly concerned that serial correlation in our variable of interest, Parties in Government, is artificially inflating the coefficient on the lagged value (although the coefficient on the current value is not significant and the magnitude is small, the sign does go in the opposite direction of our prediction.)[25] Indeed, when we eliminate the current political variables, the coefficients on the lagged values are reduced in magnitude. The *p*-values on the estimates are also somewhat reduced, as would be expected when we remove collinear regressors. We thus regard columns (d) through (f), which eliminated the insignificant and collinear variables, as superior specifications for evaluating the impact of the number of parties in government.

Focusing on columns (d) through (f), we find the expected signs on Ideology and Caretaker, thought neither remains significant once country effects are controlled for. ENLP is similarly only significant without the fixed effects, but in this case, the sign is the opposite of what is expected. Controlling for Parties in Government, a higher ENLP seems to reduce the size of the public sector. When Parties in Government is excluded from the regression (not reported), however, ENLP has the expected positive sign in the regression without fixed effects. More important, ENLP is insignificant when country effects are controlled for with, either traditional fixed effect dummy variables (column e) or the Arellano-Bond method (column f).

[25] The autocorrelation coefficient on Parties in Government is .87 -- high, but not in the range (over .95) of the economic variables.

In this sample, there is very little support for universalism theory's prediction that the number of parties in the legislature has a direct effect on the size of the public sector.

Turning our attention now to our main variable of interest, the main implication of the six regressions in Table 2 is this: the more parties in government at budget-passing time, the larger the public sector. Moreover, the effect of Parties in Government is not diminished when we control for country effects. Indeed, adding fixed effects to the AR1 regressions (going from column (a) or (d) to column (b) or (e)) increases the magnitude of the coefficient on Parties in Government. This is unusual. Because the fixed effects restrict attention to within-country variation, they generally depress the estimated effects when much of the variation is cross-national, but the opposite seems to occur here and gives us confidence that we are capturing a variable that is independent of structural features, historical legacy, or cultural disposition. Without controlling for country effects, the estimated impact of an additional party in government is that an additional 0.387% of GDP will be spent in the public sector (column (d)). This is a substantial amount of money. The mean value of GDP in our sample is 394 billion dollars; 0.387% of this is an additional 1.52 billion dollars in the government's yearly budget.

Adding fixed effects, the marginal impact of an additional party in government rises more. The estimated marginal effect of 0.568% in the regression with PCSE's (column (e)) corresponds to 2.24 billion dollars. Using the Arellano-Bond method (in which country effects are controlled for by taking first differences and the lagged dependent variable is instrumented to address endogeneity issues), the estimated impact of an additional party in government is essentially the same as in the model without fixed effects. The systematic effect of Parties in Government is (at minimum) based entirely on within-country variation (compare columns (d)

and (e) or (a) and (c)). Taking the less conservative estimate (column (e) or (b)), it seems that cross-country variation actually offsets the strong within-country effects.

The most plausible explanation for this is that countries that *routinely* have many parties in government look for ways to counteract the incentive to overspend. Hallerberg (2004) and von Hagen and Hallerberg (1999) have argued some forms of fiscal governance can reduce the common pool resource problem faced by coalition governments. They contrast "commitment" strategies (in which detailed spending targets are negotiated up front) and "delegation" strategies (in which finance ministers play the role of fiscal watchdogs) to more decentralized "fiefdom" strategies (in which the power of spending ministers is mostly unchecked). Hallerberg argues that the type of fiscal governance strategy depends on the nature of the party system.

The contrast between our estimates with and without fixed effects seems to support Hallerberg's claim. Our estimated effects are higher (or at least no lower) when we consider the impact of an additional party, accounting for the country's typical coalition size (see Equation (1) above.) Incorporating cross-country variation in the number of parties may dilute the impact because countries that *typically* have large coalitions have the strongest incentive to develop fiscal governance institutions to offset the tendency for larger coalitions to spend more. Obviously, not all countries that might profit from fiscal governance strategies have incorporated them, for our prediction about the tendency for parties to externalize the costs of their spending projects is substantial and robust.

5. Discussion: Beyond Size of Public Sector

The previous section offered evidence that multiparty governments externalize costs. In this section, we consider how this tendency may impact policy in ways not reflected in the size

of the public sector. Some of the targeted benefits promoted by multiparty government may appear, for example, in regulatory policy, and there is some suggestive evidence for this claim. The literature on the "varieties of capitalism"[26] identifies "coordinated market economies" in which workers have high levels of wage security and firms are buffered from some of the vagaries of market swings and competitive pressure. Consistent with our model, these coordinated economies are routinely governed by coalitions of many parties, each with a fairly narrow support base. Our logic implies that governments with fewer parties, and therefore less fragmented support bases, would limit regulatory insulation from market pressures because of the diffuse costs (higher prices, unemployment.) Along similar lines, Rogowski and Kayser (2002), and Rogowski, Chang and Kayser (2003) have found that more proportional electoral systems are associated with higher levels of consumer prices. Again, the higher consumer prices may reflect policy decisions in which targeted benefits are delivered to particular groups (industries protected from competitive pressure) at a level that externalizes diffuse costs (higher consumer prices.)

Somewhat less directly related is Persson and Tabellini's (1999) finding that plurality electoral systems are associated with a lower supply of public goods, measured as the sum of expenditures on transportation, education, and order and safety, in percent of GDP. They interpret this as evidence that parties in plurality systems maximally redistribute income to the marginal district. Our model suggests an alternative explanation.[27] As Weingast, Shepsle and Johnsen (1981) have argued, public goods may be provided not so much in response to the

[26] See the book by the same title, edited by Peter Hall and David Soskice, 2000.
[27] Of course, to the extent that districts are heterogeneous with respect to voter preferences, and that parties in (presidential) district based systems are unable to prioritize spending across districts in a forceful way, spending in SMD systems may represent inefficient logrolls as well, as Persson and Tabellini (2003) and Franzese (2000) have argued.

diffuse demand of those who consume them, but rather response to the intense "demand" of organized groups who reap rents by, for example, contracting to build the bridge, staff the schools and police forces, etc. By promoting the less efficient, multi-party logroll among the groups (for whom the costs of the public good count as benefits), proportional representation leads to higher levels of public goods.

While our argument and evidence here are broadly consistent with the findings of others who have examined differences in policies and outcomes across systems, our claims about the theoretical mechanisms are different.[28] Rogowski, Chang and Kayser focus on the trade-offs parties face between pro-consumer policies (which attract votes) and pro-producer policies (which attract money). Because major parties in more proportional systems usually face lower seats-votes ratios, they are more inclined to go after more money. Other writers (Persson and Tabellini 1999, 2003 and McGillivray 1997, 2004) emphasize the key role of swing districts in single-member electoral systems. Thus, most cross-national studies of policy making focus on direct effects of the electoral system,

Our argument, in contrast, predicts systematic differences *among* PR countries -- indeed, *within* a given country -- based on the number of parties in government. If the effect of number of parties on the size of the public sector were merely due to differences between PR and plurality, it should vanish in the presence of fixed country effects. We have shown that, not only does it not vanishy, it actually grows stronger with conventional estimation techniques.

We note, however, that Rogowski, Chang and Kayser's theory also predicts differences among PR countries, based on the seat-vote ratio. But the seat-vote ratio is highly correlated with ENLP, and our analysis higher ENLP does not have the predicted effect on size of public

[28] Though for a similar argument, see Rosenbluth and Schaap, 2001.

sector once number of parties in government is controlled for. The weak performance of ENLP is evidence in favor of our causal mechanism (fragmented electoral accountability for policy decisions) over Rogowski, Chang and Kayser's (relative importance of money over votes.)

6. Conclusion: Short Coalitions Govern Differently from Long Ones

We began by asking whether a given coalition of groups would be represented differently in government by a single "long coalition" party or by a transient coalition government of narrow-interest parties. Our claim is that the difference derives from differences in electoral accountability because parties, big and small, seek to maximize their marginal contribution to their support groups' welfare. Electoral accountability leads all parties to externalize those costs of policies that are not borne by their own support groups and motivates parties in coalition governments to seek greatest influence over the policy issues in which their support groups have the biggest stakes. A policy decision by a coalition government reflects the preferences of the coalition partner that cares most about the policy area, and that these preferences reflect a greater externalization of costs than with government by a single coalition party. Long coalition parties negotiate less inefficient logrolls than do short coalitions of parties.

This conjecture implies that the greater inefficiencies of multiparty coalitions should show up as greater government spending when there are more parties in government. This is not to say that most government spending is inefficient, but rather that inefficient trade-offs will be reflected in spending. Our analysis of the size of the public sector across countries and across time in Europe shows the pattern we expect. Government spending, as a fraction of GDP, increases with the number of parties in government. The effect is robust, and substantively large. An additional party in government corresponds to roughly an additional half percentage

point of GDP spent in the public sector. Our core theoretical claim is that electoral agency relationships change as a single party represents more and more groups. What we have shown here is that these changes are reflected in policy.

Our focus here has been on the short-run consequences of fragmented electoral accountability. We end with a cautionary note. A growing literature has documented that the same PR systems that generate big spending governments are also better than plurality systems at creating and maintaining income equality in their societies (Iversen and Soskice 2003; Powell 2002; Alesina, Glaeser, and Sacerdote 2001; Tabellini 2000; Persson and Tabellini 1999, 2001; Persson, Roland, and Tabellini 2003). Levels of public spending that may be inefficiently high in the short-run can perhaps produce long-run benefits that we have not captured in our model. A better understanding of the long-run consequences of political institutions must rest, however, on an accurate understanding of the short-run electoral agency relationship between parties and their support groups.

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Table 1: Summary of Data

(A) Countries and Years in Dataset

Country	Years	Avg. Parties in Govt.	Avg.ENLP
Austria	1970-1998	1.5	2.57
Belgium	1970-1998	4.3	6.89
Denmark	1970-1998	2.4	4.92
Finland	1970-1998	4.0	5.22
France	1970-1998	2.2	3.31
Germany	1970-1998	2.0	2.59
Greece	1974-1998	1.0	2.17
Iceland	1970-1998	2.4	4.04
Ireland	1970-1998	1.7	2.77
Italy	1970-1998	4.0	4.32
Luxemburg	1974-1998	2.0	3.63
Netherlands	1970-1998	2.9	4.68
Norway	1970-1998	1.5	3.57
Portugal	1976-1998	1.4	3.04
Spain	1979-1998	1.0	2.65
Sweden	1970-1998	1.6	3.48
UK	1970-1998	1.0	2.17

(B) Overall Summary Statistics

Variable	Mean	Std. Dev.	Minimum	Maximum
Size of Public Sector (Govt spending as % GDP)	45.8	7.80	25.0	67.4
Parties in Government	2.23	1.25	1	5.26
Effective Number of Legislative Parties	3.69	1.37	1.72	8.41
Ideology (Manifestos Project)	-3.51	19.3	-45.6	61.1
Caretaker	0.01	0.07	0	1
GDP Per Capita (thousands real $ dollars per head)	18.9	5.18	8.08	42.7
Unemployment (Unemployed as % of labor force)	6.5	4.63	0	23.8
Trade Openness (Imports + Exports, divided by GDP)	68.0	46.3	21.8	246.2
Dependency Ratio (% population under 15 or over 64)	34.7	2.52	29.9	42.3

Table 2: Effect of Number of Parties in Government on Size of Public Sector

Dependent Variable: Total Government Outlays as Percent GDP

	(a) PCSE's	(b)PCSE's w/ FE	(c) A-B GMM	(d) PCSE's	(e) PCSE's w/ FE	(f) A-B GMM
Lagged						
Parties in Govt.	0.495***	0.597***	0.509*	0.387***	0.568***	0.385*
	(0.152)	(0.156)	(0.307)	(0.090)	(0.129)	(0.228)
ENLP	-0.046	-0.060	0.367	-0.140*	-0.120	0.049
	(0.258)	(0.266)	(0.444)	(0.081)	(0.153)	(0.251)
Ideology	-0.014*	-0.010	-0.015	-0.012**	-0.008	-0.009
	(0.008)	(0.008)	(0.010)	(0.005)	(0.006)	(0.006)
Caretaker	-2.59*	-2.36	-4.17	-2.62*	-2.37	-4.65
	(1.60)	(1.55)	(3.53)	(1.59)	(1.54)	(4.05)
GDP per capita	2.25***	2.17***	2.28***	2.24***	2.14***	2.27***
	(0.260)	(0.254)	(0.317)	(0.260)	(0.252)	(0.306)
Unemployment	-0.171*	-0.156	-0.189**	-0.170*	-0.163	-0.172**
	(0.099)	(0.103)	(0.080)	(0.098)	(0.101)	(0.088)
Dependency	0.206	0.432	0.952*	0.168	0.427	1.01**
	(0.382)	(0.404)	(0.519)	(0.384)	(0.403)	(0.442)
Openness	0.086***	0.084**	-0.013	0.087***	0.085**	-0.011
	(0.033)	(0.036)	(0.031)	(0.033)	(0.036	(0.031)
Spending	0.911***	0.827***	0.745***	0.912***	0.828***	0.749***
	(0.016)	(0.028)	(0.072)	(0.016)	(0.028)	(0.072)
Current						
Parties in Govt.	-0.137	-0.066	-0.149			
	(0.150)	(0.153)	(0.242)			
ENLP	-0.074	-0.080	-0.458			
	(0.254)	(0.248)	(0.431)			
Ideology	0.002	0.002	0.007			
	(0.008)	(0.008)	(0.010)			
Caretaker	-0.095	-0.181	0.607			
	(1.61)	(1.56)	(1.13)			
GDP per capita	-2.23***	-2.16***	-2.47***	-2.22***	-2.13***	-2.48***
	(0.253)	(0.250)	(0.268)	(0.244)	(0.249)	(0.261)
Unemployment	0.123	0.210**	0.239***	0.121	0.204**	0.225***
	(0.099)	(0.106)	(0.075)	(0.098)	(0.104)	(0.072)
Dependency	-0.156	-0.492	-1.00**	-0.117	-0.482	-1.06**
	(0.381)	(0.404)	(0.506)	(0.383)	(0.403)	(0.441)
Openness	-0.082***	-0.090***	-0.029	-0.083**	-0.090***	-0.031
	(0.033)	(0.033)	(0.039)	(0.033)	(0.033)	(0.039)
Constant	8.05***	5.45	0.159	8.12***	8.90***	0.158
	(3.03)	(4.33)	(0.114)	(3.03)	(1.45)	(0.112)
R2	0.988	0.989		0.988	0.989	
Number of obs.	447	447	429	447	447	429

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

Notes: (1) Columns (a), (b), (d), and (e) report panel-corrected standard errors with panel-specific AR1 error process. Columns (b) and (e) include fixed effects by country. (2) Columns (c) and (f) use Arellano-Bond GMM dynamic panel estimator based on first differences. (3) Government spending and socio-economic data from OECD. Political variables from Survival Dataset II (Warwick 1999) and Manifestoes Project.